# WELCOME AND MEDAL PRESENTATIONS

Jürgen Hennig, *President*
07:45 – 08:20

# FOURTH ANNUAL LAUTERBUR LECTURE
## Fourier's Heritage

Richard R. Ernst
ETH
Zurich, Switzerland
Ballroom
08:20 –09:00

# PLENARY LECTURES
## Interventional MR: Thermotherapy

Ballroom
09:00 – 10:15

**Chairs: Jeffrey L. Duerk**
**Jorg F. Debatin**

**Educational Objectives**
At the conclusion of this session, Participants should be able to:

- Identify the role of local tumor treatment and control in cancer therapy.
- Recognize the techniques used for MR monitoring of thermotherapy.
- List methods of thermal energy deposition used for tumor ablation.
- Discuss the current role of MR image-guided thermotherapy in clinical care.
- Recognize the potential and limitations of thermal ablation treatment in the future of local cancer therapy.

09:00 *1.* **Concepts in Local Therapy for Liver Cancer.**
*David Mulligan.*
Mayo Clinic Arizona, Scottsdale, AZ, USA.

09:25 *2.* **Thermal Imaging and Technological Aspects for MR-Guided Thermotherapy.**
*R. Mark Henkelman.*
University of Toronto and Sunnybrook & Women's College Health Sciences Centre, Toronto, ON, Canada.

09:50 *3.* **Clinical Applications of MR-Guided Thermotherapy.**
*Hans-Joachim Schwarzmaier.*
Heinrich-Heine-University of Duesseldorf at Krefeld, Germany.

# Hyperpolarized Gas Imaging in the Lung

Room A102
11:00 – 13:00

**Chairs: James R. Brookeman**
**John P. Mugler, III**

11:00 *4.* ***Young Investigator Awards Finalist:*** **Probing Lung Physiology with Xenon Polarization Transfer Contrast (XTC).**
*K. Ruppert, J.R. Brookeman, K.D. Hagspiel and J.P. Mugler III.*
University of Virginia School of Medicine, Charlottesville, VA, USA.

11:20 *5.* ***Young Investigator Awards Finalist:*** **Hyperpolarized $^{3}$He MR Lung Ventilation Imaging in Asthmatics: Preliminary Findings.**
*T.A. Altes, P.L. Powers, J. Knight-Scott, G. Rakes, T.A.E. Platts-Mills, E.E. de Lange, B.A. Alford, J.P. Mugler, III and J.R. Brookeman.*
University of Virginia, Charlottesville, VA, USA.

11:40 *6.* **100% Oxygen-Enhanced Magnetic Resonance Imaging of the Lung.**
*Y. Ohno, K. Sugimura, D. Takenaka, T. Yoshikawa, Y. Kojima, A. Motoyama and S. Adachi.*
University of Kobe, Kobe, Hyogo, Japan.

11:52 *7.* **Breathhold $^{19}$F-MRI of Porcine Lungs Ventilated with Fluorinated Gas ($SF_6$).**
*W.G. Schreiber, B. Eberle, K. Markstaller, S. Laukemper-Ostendorf, N. Weiler, A. Scholz, K. Bürger, H-U. Kauczor and M. Thelen.*
Johannes Gutenberg-University, Mainz, Germany.

12:04 *8.* **Simultaneous Dynamic Regional Measurements of Both Lung Ventilation and Perfusion Using Laser-Polarized He$^{3}$.**
*M. Viallon, Y. Berthezène, M. Décorps, M. Wiart, V. Callot, M. Bourgeois, H. Humblot, A. Briguet and Y. Crémillieux.*
Université Claude Bernard and Creatis, Lyon France; Unité INSERM and Institut Laüe-Langevin, Grenoble, France.

12:16 *9.* **Detection of Regional Microstructural Changes of the Lung in Emphysema Using Hyperpolarized $^{3}$He Diffusion MRI.**
*M. Salerno, J.R. Brookeman, E.E. de Lange, J. Knight-Scott and J.P. Mugler III.*
University of Virginia School of Medicine, Charlottesville, VA, USA.

12:28 *10.* **Perfusion Assessment Using Hyperpolarized $^{3}$He Microspheres.**
*M.S. Chawla, G.P. Cofer, L.W. Hedlund, J.K. Tajik, M.B. Kerby, T.B. Ottoboni and G.A. Johnson.*
Duke University Medical Center, Durham, NC, USA and Point Biomedical Corporation, San Carlos, CA, USA.

12:40 *11.* **MRI of Laser-Polarized $^{129}$Xe: Pulmonary Applications.**
*S.D. Swanson, M.S. Rosen, R.C. Welsh and T.E. Chupp.*
The University of Michigan, Ann Arbor, MI, USA.

# MRI and MRS of Epilepsy and Electrical Brain Activity

Room A108
11:00 – 13:00

**Chairs: Thomas Ernst**
**Douglas L. Arnold**

11:00 ***12.*** **In Which Cases of TLE is $^{1}$H-MRSI Not Predictive For Good Surgical Outcome After Selective Amygdalo-Hippocampectomy?**
*G. Ende, B. Pohlmann-Eden, M. Müller, W. Weber-Fahr, S. Walter, D.F. Braus and F.A. Henn.*
Central Institute of Mental Health and Mannheim Hospital, University of Heidelberg, Mannheim, Germany.

11:12 ***13.*** **GABA Synthesis and Cycling in Human Brain as Studied by $^{1}$H and $^{13}$C NMR Spectroscopy.**
*R.A. de Graaf, K.F. Petersen, G.F. Mason, J. Shen, K.L. Behar, G.I. Shulman, R.H. Mattson, D.L. Rothman and O.A.C. Petroff.*
Yale University School of Medicine, New Haven, CT, USA and Nathan S. Kline Institute, Orangeburg, NY, USA.

11:24 ***14.*** **Gabapentin Raises Human Brain GABA Within Thirty Minutes.**
*O.A.C. Petroff, F. Hyder, T.L. Collins, R.H. Mattson and D.L. Rothman.*
Yale University, New Haven, CT, USA.

11:36 ***15.*** **Hippocampal Imaging and Volumetry in Temporal Lobe Epilepsy at 1.5 and 4.0 Tesla.**
*I. Levy-Reis, J.B. Gonzalez-Atavales, D.S. King, J.A. French, D.C. Alsop and J.A. Detre.*
University of Pennsylvania, Philadelphia, PA, USA.

11:48 ***16.*** **Magnetization Transfer MR Imaging Demonstration of Presumed Perilesional Gliosis Around a Healed/Healing Neurocysticercosis and its Relationship with Epilepsy.**
*R.K. Gupta, M.K. Kathuria and S. Pradhan.*
SGPGIMS, Lucknow, India.

12:00 ***17.*** **Diffusion Tensor Imaging of Cryptogenic and Acquired Partial Epilepsies.**
*F.J. Rugg-Gunn, S.H. Eriksson, M.R. Symms, G.J. Barker and J.S. Duncan.*
Institute of Neurology, London, UK.

12:12 ***18.*** **Localization of Epileptiform Activity Using Spike-Triggered fMRI.**
*K. Krakow, L. Lemieux, D. Messina, M.R. Symms, P.J. Allen, J.S. Duncan and D.R. Fish.*
Institute of Neurology, London, UK.

12:24 ***19.*** **Combining EEG and Functional MRI: Cleaning Up the Electrical Signals.**
*R.I. Goldman, M. S. Cohen, J. Engel and J. Stern.*
UCLA School of Medicine, Los Angeles, CA, USA.

12:36 ***20.*** **Restoration of EEG Recorded During Functional EPI.**
*A. Hoffmann, L. Jäger, K. Werhahn, S. Noachtar and M. Reiser.*
Klinikum Grosshadern, University of Munich, Munich, Germany.

12:48 ***21.*** **Removal of Scanner Artifact from EEG Recorded during fMRI.**
*P.J. Allen and O. Josephs.*
The National Hospital for Neurology and Neurosurgery, and Institute of Neurology, London, UK.

# CLINICAL CATEGORICAL:
# Fetal and Newborn Imaging

Room A201
11:00 – 13:00

**Chair: Donald G. Mitchell**

**Educational Objectives**
Upon completion of this course, participants should be able:

- To establish technical protocols for obstetric and neonatal MRI;
- To recognize when MRI might add important information following ultrasound.

11:00 **Fetal Imaging Overview.**
*Eric Outwater.*

11:30 **MRI of Fetal and Neonatal CNS Abnormalities.**
*Deborah Levine.*

12:00 **Impact of Fetal MRI on Management.**
*Anne Maria Hubbard.*

12:30 **Discussion.**

# Musculoskeletal MR Spectroscopy

Room A207
11:00 – 13:00

**Chairs: M. Joan Dawson**
**Klaas Nicolay**

11:00 ***22.*** **TCA Cycle Flux Measurements in Human Skeletal Muscle.**
*V.P. Lebon, S. Dufour, K. Falk Petersen, B.M. Jucker, D.L. Rothman and G.I. Shulman.*
Yale University School of Medicine, New Haven, CT, USA.

11:12 ***23.*** **Assessment of Mitochondrial Energy Coupling *In Vivo* Using a Novel $^{13}C/^{31}P$ NMR Approach.**
*B.M. Jucker, S. Dufour, J. Ren, X. Cao, S.F. Previs, B. Underhill, K. Cadman and G.I. Shulman.*
Yale University School of Medicine, New Haven, CT, USA.

11:24 ***24.*** **Characterisation of Muscle Metabolism and Function by MRI and MRS in Inflammatory Myopathy.**
*J.G. Cea, D. Bendahan, D.N. Manners, D. Hilton-Jones, R. Lodi, P. Styles and D.J. Taylor.*
John Radcliffe Hospital, Headington, Oxford, UK and University of Oxford, Oxford, UK.

11:36 ***25.*** **Very Low Levels of the mtDNA A3243G Mutation Associated with Mitochondrial Dysfunction *in vivo*.**
*R. Lodi, D.J. Taylor, D.T. Brown, D. Manners, P. Styles and P.F. Chinnery.*
University of Oxford, Oxford, UK; University of Bologna, Bologna, Italy and The University of Newcastle upon Tyne, Newcastle upon Tyne, UK.

11:48 ***26.*** **$^{31}P$ NMR Study of Bioenergetics in the Rat Hindlimb in Response to $VEGF_{121}$ Gene Therapy.**
*X. Wang, K.W. Fishbein, M.C. Capogrossi and R.G.S. Spencer.*
National Institute on Aging, Baltimore, MD, USA.

12:00 ***27.*** **Contractions and Glycolysis are Closely Coupled in Skeletal Muscle: A $^{1}H$ and $^{31}P$ MRS Study.**
*A.C. Hsu and M.J. Dawson.*
University of Illinois at Urbana-Champaign, Urbana, IL, USA.

12:12 ***28.*** ***In Vivo* $^{31}P$ MRS Evidences a Paradoxical Reduction of ATP Cost of Contraction Associated with Muscular Fatigue in Rat Gastrocnemius Muscle.**
*B. Giannesini, D. Bendahan, M. Izquierdo, Y. Le Fur and P.J. Cozzone.*
Faculté de Médecine de Marseille, Marseille, France.

12:24 ***29.*** **Sequential $^{13}C$- and $^{1}H$-MRS Measurements in Human Skeletal Muscle: Influence of Diet on Recovery Rates of Glycogen and Intramyocellular Lipids (IMCL).**
*C. Boesch, R. Kreis and J. Décombaz.*
University Bern, Bern, Switzerland and Nestlé Research Center, Lausanne Switzerland.

12:36 ***30.*** **Regional Difference in Intramyocellular Lipids Detected by $^{1}H$ Spectroscopic Imaging at 4T: Enhanced Spectral/Spatial Resolution.**
*J-H. Hwang, J.W. Pan, H.P. Hetherington and D.T. Stein.*
Albert Einstein College of Medicine, Bronx, NY, USA and Brookhaven National Laboratory, Long Island, NY, USA.

12:48 ***31.*** **Orientation Dependence is the Rule, Not the Exception in $^{1}H$-MR Spectra of Skeletal Muscle: The Case of Carnosine.**
*R. Kreis and C. Boesch.*
University of Bern, Bern, Switzerland.

# Myocardial Perfusion

Room C106
11:00 – 13:00

**Chairs: Michael Jerosch-Herold**
**Markus Scheidegger**

11:00 ***32.*** **First-Pass Myocardial Perfusion MRI Using Dipyridamole Infusion and Handg rip Exercise: Comparison with Cardiac Catheterization and Stress Myocardial SPECT.**
*N. Kawada, H. Sakuma, H. Kubo, K. Takeda, M. Motoyasu, Y. Saito, T. Nakano, A. Nozaki and H. Kabasawa.*
Mie University School of Medicine, Tsu, Mei, Japan and GE Yokogawa Medical Systems, Hino, Tokyo, Japan.

11:12 ***33.*** **Transmyocardial Laser Revascularization: Treatment Follow-up with Cine Magnetic Resonance Imaging and Magnetic Resonance First-Pass Perfusion Imaging in a Chronic Ischemic Pig Model.**
*O.M. Muehling, N.M. Wilke, Y. Huang, Y. Wang, M. Jerosch-Herold, S. Wann, M.M. Cayton and M.M. Mirhoseini.*
University of Minnesota Medical School, Minneapolis, MN, USA and Heart and Lung Institute Wisconsin and St. Luke's Hospital, Milwaukee, WI, USA.

11:24 ***34.*** **Echo-Planar MR Perfusion Imaging is Highly Reliable in Detection of Coronary Artery Disease: A Comparison with Positron Emission Tomography and X-Ray Coronary Angiography.**
*J. Schwitter, K. Bertschinger, D. Nanz, S. Kneifel, M. Buechi, T.F. Luescher, B. Marincek and G.K. von Schulthess.*
University Hospital, Zurich, Switzerland.

11:36 ***35.*** **Myocardial Perfusion Quantification in Infarct: One Compartment Model or Up-Slope Method?**
*J-P. Vallée, F. Lazeyras, A. Righetti and D. Didier.*
Geneva University Hospital, Geneva, Switzerland.

11:48 ***36.*** **First-Pass Myocardial Perfusion Imaging Using Interleaved Notched Saturation.**
*G.S. Slavin, S.D. Wolff, S.N. Gupta and T.K.F. Foo.*
GE Medical Systems, Milwaukee, WI, USA and Integrated Cardiovascular Therapeutics, Woodbury, NY, USA.

12:00 ***37.*** **Predictive Registration of Cardiac MR Perfusion Images Using Geometric Invariants.**
*M. Solaiyappan and S.N. Gupta.*
Johns Hopkins University, Baltimore, MD, USA and GE Medical Systems, Milwaukee, WI, USA.

12:12 ***38.*** **Assessme nt of Regional Differences in Myocardial Blood Flow Using $T_2$-Weighted 3D BOLD Imaging.**
*K.B. Wright, F. Klocke, V.S. Deshpande, J. Zheng, K. Harris, R. Tang, S. Hedjbeli, O. Simonetti, J.P. Finn and D. Li.*
Northwestern University, Chicago, IL, USA.

12:24 ***39.*** **Dipyridamole-BOLD MRI: a New Method for Assessing Heart Function in Patients with Hypertensive Hypertrophy.**
*G.M. Beache, D.A. Herzka, W.S. Post, J.L. Boxerman, S.N. Gupta, A.Z. Faranesh, E.P. Shapiro, J.L. Weiss and M.N. Hill.*
Johns Hopkins University School of Medicine, Baltimore, MD, USA and GE Medical Systems, Milwaukee, WI, USA.

12:36 ***40.*** **Steady-State Detection of Ischemia with AngioMARK.**
*C.H. Lorenz, S. Flacke, J.M. Chia, M. Taniuchi, J.S. Allen, M. McLean, R.M. Setser, T. Chan and R. Weisskoff.*
Washington University School of Medicine, St. Louis, MO, USA and EPIX Medical, Inc., Cambridge, MA, USA.

12:48 ***41.*** **MRI Perfusion Measurements of Myocardial Angiogenesis Following Perivascular Delivery of VEGF.**
*M. Jerosch-Herold, O. Muehling, A. Zenovich, A. Mansoor, H. Huang, F. Zhao, A.E. Stillman and N. Wilke.*
University of Minnesota Medical School, Minneapolis, MN, USA.

# Interventional MR Imaging Techniques

Room C205
11:00 – 13:00

**Chairs: Josef Tacke**
**Kim Butts**

11:00 ***42.*** **Real-Time Projection MR Angiography with Intra-Arterial Injections of Gadolinium.**
*J.M. Serfaty, E. Atalar, J. Declerck, P. Karmarkar, H.H. Quick, K.A. Shunk, A.W. Heldman and X. Yang.*
Johns Hopkins University School of Medicine, Baltimore, MD, USA.

11:12 ***43.*** **On the Feasibility of Local Drug Delivery Using Thermo-Sensitive Liposomes and MR-Guided Focused Ultrasound.**
*J.A. de Zwart, R. Salomir, F. Vimeux, J. Klaveness and C.T.W. Moonen.*
Victor Segalen University, Bordeaux, France and Nycomed Imaging AS, Oslo, Norway.

11:24 ***44.*** **Study of Cell Viability in MR Imaged Focused Ultrasound Lesion *In Vivo* in Rabbit Brain.**
*L. Chen, D. Bouley, B.T. Harris and K. Butts.*
Stanford University, Stanford, CA, USA.

11:36 ***45.*** **MR Thermometry for Predicting Thermal Damage: Interstitial Laser Coagulation in an *In Vivo* Canine Prostate.**
*R.D. Peters, J. Trachtenberg, W. Kucharczyk and R.M. Henkelman.*
University of Toronto; Sunnybrook & Women's College Health Sciences Centre and The Toronto Hospital, Toronto, ON, Canada.

11:48 ***46.*** **Assessment of Thermal Tissue Ablation with MR Elastography.**
*T. Wu, J.P. Felmlee, J.F. Greenleaf, S.J. Riederer and R.L. Ehman.*
Mayo Clinic, Rochester, MN, USA.

12:00 ***47.*** **Temperature Mapping of Frozen Tissue Using Eddy Current Compensated Half Excitation RF Pulses.**
*J.P. Wansapura, B.L. Daniel and K. Butts.*
Stanford University, Stanford, CA, USA.

12:12 ***48.*** **The Effect of Perfusion on the Temperature Distribution During Hyperthermia: Study on the Perfused Pig Kidneys.**
*K.A. Il'yasov, B. Eissner and J. Hennig.*
University of Freiburg, Freiburg, Germany.

12:24 ***49.*** **Internally-Referenced Measurement of Prostate Temperature Using Metabolite Signals.**
*K. Kuroda, M. Jinzaki, N. McDannold, T. Nakai, T. Moriya, K. Hynynen and F.A. Jolesz.*
Tokai University, Hiratsuka, Japan; Brigham and Women's Hospital, Harvard Medical School, Boston, MA,USA and AIST, MITI, Tsukuba, Japan.

12:36 ***50.*** **Assessment of Turbo Spectroscopic Imaging for Targeting in Brain Biopsy.**
*A. Martin, H. Liu, D. Lovick, W. Hall and C. Truwit.*
University of Minnesota, Minneapolis, MN, USA and Philips Medical Systems, Best, Netherlands.

12:48 ***51.*** **Quantifying the Intraoperative Brain Deformation Using Interventional MR Imaging.**
*T. Hartkens, D.L.G. Hill, C.R. Maurer, A.J. Martin, W.A. Hall, D.J. Hawkes, D. Rueckert and C.L. Truwit.*
King's College and Guy's Hospital, London, UK; University of Minnesota, Minneapolis, MN, USA and Philips Medical System, Best, Netherlands.

# fMRI Acquisition Methods

Room C209
11:00 – 13:00

**Chairs: Eric C. Wong**
**Douglas C. Noll**

11:00 ***52.*** **Three-Dimensional Tailored RF Pulses for the Reduction of Susceptibility Artifacts in Gradient Echo Functional MRI.**
*V.A. Stenger, F.E. Boada and D.C. Noll.*
University of Pittsburgh, Pittsburgh, PA, USA and University of Michigan, Ann Arbor, MI, USA.

11:12 ***53.*** **A Method for Dynamic Measurement of Blood Volume with Compensation for $T_2$ Changes.**
*T.T. Liu, W-M. Luh, E.C. Wong, L.R. Frank and R.B. Buxton.*
University of California, San Diego, CA, USA.

11:24 ***54.*** **Displacement Encoded Imaging of Small Electric Current.**
*A.W. Song and A.M. Takahashi.*
Duke University Medical Center, Durham, NC, USA.

11:36 ***55.*** **Perfusion-weighted "Single-Trial" fMRI.**
*J.H. Duyn, C.X. Tan, J.W. van der Veen, P. van Gelderen, J.A. Frank, F.Q. Ye and M. Yongbi.*
National Institutes of Health, Bethesda, MD, USA.

11:48 ***56.*** **Prospective Acquisition Correction for Head Motion with Image-based Tracking for Real-Time fMRI.**
*S. Thesen, O. Heid, E. Mueller and L.R. Schad.*
Siemens Medical Systems, Erlangen, Germany and German Cancer Research Center (DKFZ), Heidelberg, Germany.

12:00 ***57.*** **Real-Time Prospective Correction of Stimulus Correlated Multiplanar Motion during fMRI.**
*H.A. Ward, R.C. Grimm, J.P. Felmlee, R.L. Ehman, S.J. Riederer and C.R. Jack, Jr.*
Mayo Clinic, Rochester, MN, USA.

12:12 ***58.*** **Event-Related fMRI with Pseudo-Randomized Inter-Stimulus Intervals (ISI). Optimization of the Distribution of the ISI.**
*O. David, J. Warnking and C. Segebarth.*
Université Joseph Fourier, Grenoble, France.

12:24 ***59.*** **Multi-Echo PRESTO: $T_2$* Mapping for 3D fMRI.**
*H. Hoogduin and N. Ramsey.*
University Medical Center, Utrecht, The Netherlands.

12:36 ***60.*** **High-Resolution Segmented EPI in a Motor Task fMRI Study at 1.5 Tesla.**
*F.G.C. Hoogenraad, P.J.W. Pouwels, M.B.M. Hofman, S.A.R.B. Rombouts, C. Lavini, M.O. Leach and E.M. Haacke.*
University Hospital Vrije Universiteit, Amsterdam, The Netherlands; The Royal Marsden NHS Trust, Sutton, Surrey, UK and The MRI Institute for Biomedical Research, St. Louis, MO, USA.

12:48 ***61.*** **The Effect of Inversion Time on Apparent $T_2$ in Double Echo FAIR (DEFAIR) Images: Experimental Results and Theoretical Model.**
*D.L. Thomas, F. Calamante, M.F. Lythgoe, D.G. Gadian and R.J. Ordidge.*
Institute of Child Health and University College London, London, UK.

## GOLD CORPORATE MEMBER LUNCHTIME SYMPOSIUM
## GE Medical Systems
## Cardiac MR and 3T – Technology in Clinical Practice

Room C112
13:00 – 14:00

## POSTER WALKING TOUR
## Angiogenesis

Monday, 3 April, 2000
Hall C
14:00 – 16:00

**Chairs:** **Kevin Brindle**
**Anwar R. Padhani**

**Please see page 112 for details**

## POSTER WALKING TOUR
## MR Spectroscopy of Degenerative and Inflammatory Brain Disease

Monday, 3 April, 2000
Hall C
14:00 – 16:00

**Chairs:** **Norbert Schuff**
**Hoby P. Hetherington**

**Please see page 113 for details**

# STRATEGIES FOR SUCCESSFUL CLINICAL RESEARCH
## FDA Approval, Grantsmanship, Funding Opportunities, and the Grants Process

Room A207
14:00 – 16:00

**Chairs: Linda Chang**
**Joseph Frascella**
**David A. Place**

**Educational Objectives**
Upon completion of this course, participants should be able to:

- Describe how to get information from the FDA and explain the FDA approval process;
- List strategies for the preparation of successful grant applications;
- Describe National Institutes of Health funding opportunities and strategies (types of grant mechanisms; contacts for information regarding research programs and offices; shortcuts through the bureaucracies, etc.).

14:00 **Introduction.**

14:05 **Grantsmanship Do's and Don'ts.**
*Judy Illes.*

14:35 **FDA Issues.**
*David A. Place.*

15:05 **The National Institutes of Health Grant Process: Funding Mechanisms, Peer Review, Contacts.**
*Linda Chang and Joseph Frascella.*

15:35 **Discussion.**

16:00 **Adjournment.**

# CLINICAL FOCUS SESSION
# Interventional MRI - Clinical Applications

Room A201
14:00 – 16:00

**Chairs: Thomas Kahn**
**Jonathan S. Lewin**

14:00 ***62.*** **Intra-Operative MR Imaging With a C-Arm System and Rotating, Tiltable Surgical Table: A Time-Use Study and Preliminary Clinical Results.**
*J.S. Lewin, A.K. Metzger, M. Wendt, J.L. Duerk, J.L. Sunshine, A. Oppelt and W.R. Selman.*
University Hospitals of Cleveland/Case Western Reserve University, Cleveland, OH, USA and Siemens Medical Engineering Group, Erlangen, Germany.

14:12 ***63.*** **Gross-Total Resection of Low-Grade Supratentorial Gliomas under Intraoperative MRI Guidance - A First Quantitative Analysis.**
*J.P. Schneider, T. Schulz, F. Schmidt, J. Dietrich, S. Kellermann, C. Trantakis and T. Kahn.*
University of Leipzig, Leipzig, Germany.

14:24 ***64.*** **Spread of Contrast Enhancement Observed in High Grade Gliomas in a Non-Operative Setting.**
*G.J. Rubino, J.P. Villablanca, C. Lycette, K. Farahani and J. Alger.*
UCLA Medical Center, Los Angeles, CA, USA.

14:36 ***65.*** **Comparison of Hospital Charges for Interventional MRI Guided Surgery vs. Standard Surgery.**
*C. Lycette, G.J. Rubino, B. Van de Weile, J.P. Villablanca and K. Farahani.*
UCLA Medical Center, Los Angeles, CA, USA.

14:48 ***66.*** **MRI-guided Biopsies of Petroclival Tumors.**
*T. Schulz, J.P. Schneider, F. Bootz, S. Keiner, B. Scheffler, H. Weidenbach, J. Dietrich, T. Schirmer, F. Schmidt and T. Kahn.*
University of Leipzig, Leipzig, Germany and General Electric Medical Systems.

15:00 ***67.*** **Fast Stereoscopic MRI for Clinical Procedures.**
*M.A. Guttman, F.H. Epstein and E.R. McVeigh.*
National Institutes of Health, Bethesda, MD, USA.

15:12 ***68.*** **Laser-Induced Thermotherapy of Focal Liver Lesions in an Open MR System at 0.2 T: First Clinical Results.**
*F.K. Wacker, K. Reither, J. Ritz, C. Isbert, C.T. Germer, A. Roggan and K-J. Wolf.*
Free University, Berlin, Germany.

15:24 ***69.*** **Fusion of MRI- and PET Data as Therapy Control after MRI-Controlled Laser-Induced Thermotherapy (LITT) of Liver Metastases from Colorectal Carcinoma.**
*N. Hosten, R. Kreissig, H. Amthauer, R. Puls and A-J. Lemke.*
Charité, Campus Virchow-Klinikum, PET-Centre Berlin, and Humboldt University, Berlin, Germany.

15:36 ***70.*** **MRI-Guided Percutaneous Cryotherapy of the Liver: First Clinical Experiences In A High Field System.**
*J. Tacke, R. Adam, P. Haage and R.W. Günther.*
University of Technology, Aachen, Germany.

15:48 ***71.*** **MR Guided Percutaneous Cryosurgery of Breast Carcinoma: Technique and Early Clinical Results.**
*J. Morin, G. Dionne, M. Dumont, B. Fouquet, M. Dufour, S. Cloutier and C. Moisan.*
Quebec City University Hospital, Quebec City, Quebec, Canada.

# CLINICAL FOCUS SESSION
## Pulmonary Imaging

Room C205
14:00 – 16:00

**Chairs: Matthjis Oudkerk, Keynote Speaker**
**Robert J. Herfkens**

14:00 **Keynote.**

14:15 ***72.*** **Time-Resolved Pulmonary MR Angiography and Perfusion Imaging with Ultrashort TR.**
*J. Carr, G. Laub, M. Saker, J. Zheng, S. Pereles, S. Tatieni and J.P. Finn.*
Northwestern University Medical School, Siemens Medical Systems and Bracco S.P.A., Chicago, IL, USA.

14:27 ***73.*** **Contrast Enhanced MR Angiography for the Diagnosis of Pulmonary Embolism - A Comparison with Conventional Pulmonary Angiography.**
*E.M.J. Brouwers, P. Wielopolski, E.J.R. van Beek, A. Berghout, A.H.H. Bongaerts and M. Oudkerk.*
Academic Hospital Rotterdam, Netherlands and University of Sheffield, Sheffield, UK.

14:39 ***74.*** **Quantification of Regional and Global Pulmonary Perfusion with Contrast Enhanced Double-VUSE MRA.**
*S.S. Halliburton, C.B. Paschal, J. Rothpletz and J.E. Loyd.*
Vanderbilt University School of Engineering and Vanderbilt University Medical Center, Nashville, TN, USA.

14:51 ***75.*** **MRI of the Chest at 0.2 T Using Breath-Hold 2D-TrueFisp: A Comparative Feasibility Study with Chest Radiography.**
*H-U. Kauczor, C.P. Heussel, T. Diergarten, A. Sandner, T. Voigtlaender, M. Heike, M. Deimling, R. Kuth, T. Rupprecht and M. Thelen.*
Med. Clinic I and II, Mainz, Germany and Siemens Medical Systems and University of Erlangen, Erlangen, Germany.

15:03 ***76.*** **Detection of Pulmonary Air Leaks Using Time-Resolved MRI of Laser-Polarized Helium-3 Gas.**
*D.A. Roberts, R.R. Rizi, D.A. Lipson, M. Aranda, L. Bearn, L. Rolf, J. Baumgardner, W.B. Gefter, J. Hansen-Flaschen, H.H. Hatabu, J.S. Leigh and M.D. Schnall.*
University of Pennsylvania Medical Center, Philadelphia, PA, USA.

15:15 ***77.*** **Solitary Pulmonary Nodule: Evaluation of Blood Flow Patterns with MR Perfusion Study.**
*Y. Ohno, K. Sugimura, D. Takenaka, T. Yoshikawa, A. Motoyama and S. Adachi.*
University of Kobe, Kobe, Hyogo, Japan.

15:27 ***78.*** **Dynamic MRI of Malignant Pleura Mesothelioma to Monitor Treatment Induced Changes in Microcirculation.**
*M.V. Knopp, F. Giesel, H. Bischoff, R. Lucht, H. Hawighorst, J. Radeleff, K. Kayser, H. Manegold and G. van Kaick.*
German Cancer Research Center and Chest Hospital Heidelberg-Rohrbach, Heidelberg, Germany and The Ohio State University, Columbus, OH, USA.

15:39 ***79.*** **Dynamic EPI of Human Lung Ventilation Using Hyperpolarized $^{3}$He: Results from Normal Subjects and Patients with Severe Emphysema.**
*D.S. Gierada, B. Saam, D.A. Yablonskiy, J.D. Cooper, S.S. Lefrak and M.S. Conradi.*
Washington University, St. Louis, MO, USA and University of Utah, Salt Lake City, UT, USA.

# Diffusion Tensor MRI of the Central Nervous Systems

Room A102
16:30 – 18:30

**Chairs: Dennis L. Parker**
**Roger J. Ordidge**

16:30 ***80.*** ***Young Investigator Awards Finalist:*** **Diffusion Anisotropy MRI for Quantitative Assessment of Recovery in Injured Rat Spinal Cord.**
*U. Nevo, E. Hauben, E. Yoles, E. Agranov, I.R. Cohen, S. Akselrod, M. Schwartz and M. Neeman.*
The Weizmann Institute of Science, Rehovot, Israel; Tel-Aviv University, Tel-Aviv, Israel and Beit Levinstein Hospital, Raanana, Israel.

16:50 ***81.*** **Diffusion Tensor Imaging of the Human Spinal Cord.**
*M. Ries, R.A. Jones, J.A. Brookes, V. Dousset and C.T. Moonen.*
Université Bordeaux 2 and Hospital Pellegrin, Bourdeaux, France.

17:02 ***82.*** **Mapping Fiber Orientation Spectra in Cerebral White Matter with Fourier-Transform Diffusion MRI.**
*V.J. Wedeen, T.G. Reese, D.S. Tuch, M.R. Weigel, J-G. Dou, R.M. Weisskoff and D. Chessler.*
Massachusetts General Hospital, Charlestown, MA, USA and Epix Medical, Cambridge, MA, USA.

17:14 ***83.*** **Three-Dimensional Reconstruction of *In Vivo* Human White Matter Tracts.**
*S. Mori, W.E. Kaufmann, G.D. Pearlson, B.J. Crain, M. Solaiyappan and P.C.M. van Zijl.*
Johns Hopkins University Medical School, Baltimore, MD, USA.

17:26 ***84.*** **Diffusion Tensor MR Imaging of Normal Brain Maturation in Infants and Children.**
*P. Mukherjee, J.H. Miller, J.S. Shimony, T.E. Conturo, B.C.P. Lee and R.C. McKinstry.*
Washington University School of Medicine, St. Louis, MO, USA.

17:38 ***85.*** **Tracing Fibre Tracts Using Fast Marching.**
*G.J.M. Parker.*
University College London, London, UK.

17:50 ***86.*** **A Geometric Analysis of Diffusion Tensor Measurements of the Human Brain.**
*A.L. Alexander, K. Hasan, G. Kindlmann, D.L. Parker and J.S. Tsuruda.*
University of Utah, Salt Lake City, UT, USA.

18:02 ***87.*** **Quantitation of Corticospinal Tract Damage in Amyotrophic Lateral Sclerosis Patients Using Diffusion Tensor Imaging.**
*A.M. Ulug, M. Rubin, C.G. Filippi and R.D. Zimmerman.*
Weill Medical College of Cornell University, New York, NY, USA.

18:14 ***88.*** **Self-Navigated Diffusion Weighted Radial TSE-Imaging.**
*M. Seifert, C. Hillenbrand, A. Haase and P.M. Jakob.*
Universität Würzburg, Würzburg, Germany.

# Body - Functional MRI and MRS

Room A108
16:30 – 18:30

**Chairs: Robert E. Lenkinski**
**Carolyn E. Mountford**

16:30 ***89.*** **Kinematic MR Cholangiopancreatographic Examination of Sphincteric Segment for Evaluation of Periampullary Pathology.**
*J-H. Kim, M-J. Kim, H.S. Yoo and J.T. Lee.*
Research Institute of Radiological Science, Yonsei University College of Medicine, Seoul, Republic of Korea.

16:42 ***90.*** **Echo-Planar Imaging Assessment of Antral Grinding of Model Solid Food: Antral Forces, Antral Motility, Gastric Emptying and Satiety.**
*L. Marciani, P. Manoj, A. Smith, P. Young, J. Wright, R.J. Moore, D.J. Tyler, A. Fillery-Travis, R.C. Spiller and P.A. Gowland.*
University of Nottingham, Nottingham, UK.; Institute of Food Research, Norwich, UK and Queen's Medical Centre, University Hospital, Nottingham, UK.

16:54 ***91.*** **MR Urography in Patients with Acute Flank Pain: Comparison of Gadolinium-Enhanced 3D FLASH After Low-Dose Diuretic with 2D Turbo Spin Echo Sequences.**
*M. Sudah, R. Vanninen, K. Partanen, P. Vainio, A. Heino and M. Ala-Opas.*
Kuopio University Hospital, Kuopio, Finland.

17:06 ***92.*** **Renal Structural and Functional Abnormalities after Acute Renal Vein Occulsion in Dogs Assessed by Dynamic Contrast Enhanced MR Imaging: Correlation with Histopathologic Findings.**
*K. Suga, N. Ogasawara, H. Okazaki, K. Sasai, K. Takano, S. Koike, K. Ito and N. Matsunaga.*
Yamaguchi University School of Medicine, Ube, Japan.

17:18 ***93.*** **ACE-Inhibitor-Enhanced Ultra-Low Dose Gd-DTPA MR Renography in Conjunction with Breath-Hold Gd-MRA.**
*V.S. Lee, H. Rusinek, G. Johnson and N.M. Rofsky.*
New York University, New York, NY, USA.

17:30 ***94.*** **Moderate Hypothermia Ameliorates Liver Energy Failure Following Intestinal Ischemia-Reperfusion: *In Vivo* $^{31}$P Magnetic Resonance Spectroscopy Study.**
*P. Vejchapipat, S.R. Williams, E. Proctor, L. Spitz and A. Pierro.*
University College London Medical School, London, UK and University of Manchester, Manchester, UK.

17:42 ***95.*** **Respiratory Triggered $^{1}$H Renal Spectroscopy *in Vivo* with Short Echo Time PRESS.**
*G.J. Metzger, L.S. Szczepaniak, P. Nurenberg and L. Mollevanger.*
Philips Medical Systems, Dallas, TX, USA; University of Texas Southwestern Medical Center, Dallas, TX, USA and Philips Medical Systems, Best, Netherlands.

17:54 ***96.*** **Proton MR Spectroscopic Imaging (MRSI) and Dynamic Gd-Enhanced MRI of the Human Prostate.**
*F.A. van Dorsten, M. van der Graaf, M. Engelbrecht, G.J.L.H. van Leenders, J.J.M.C.H. de la Rosette, H.J. Huisman, J.O. Barentsz and A. Heerschap.*
University Hospital Nijmegen, Nijmegen, the Netherlands.

18:06 ***97.*** **$^{1}$H HR-MAS Spectroscopic Analysis of Post-Surgical Prostate Tissue Targeted Using 3D MRI/MRSI.**
*M.G. Swanson, R.G. Males, D.B. Vigneron, J.K. James, I. Cha, P.J. Wood, S.J. Nelson, R.E. Hurd and J. Kurhanewicz.*
University of California, San Francisco, CA, USA; Bruker Instruments, Fremont, CA, USA and GE Medical Systems, Fremont, CA, USA.

18:18 ***98.*** **Preliminary Results of a Multi-Institutional Trial to Demonstrate Clinical Predictive Value of *In Vivo* Localized $^{31}$P MR Spectroscopy Data in Human Non-Hodgkin's Lymphoma.**
*F. Arias-Mendoza, T.R. Brown, A. Schwarz, M.O. Leach, K. Zakian, J.A. Koutcher, M. Stubbs, J.R. Griffiths, S.J. Nelson, A. Heerschap, J.D. Glickson, H.C. Charles and J.L. Evelhoch.*
Cooperative Group on MRS Application to Cancer.

# MR PHYSICS AND TECHNIQUES FOR CLINICIANS:

Room A201
16:30 – 18:30

**Chairs: Frank R. Korosec**
**Joseph C. McGowan**

**Educational Objectives**
Upon completion of this course, participants should be able to:

- Define and describe the fundamental principles of MR imaging, including spin magnetization, the Larmor relationship, relaxation phenomena, and the process of using the spin magnetization to produce an image;
- Explain imaging pulse sequences based upon spin and gradient echoes, including fast spin echo and echo planar techniques;
- Design MR imaging protocols for diagnostic applications considering image contrast, spatial resolution, acquisition time, signal-to-noise ratio, and artifacts;
- Describe the principles and capabilities of various advanced MR techniques including perfusion and diffusion, spectroscopy, interventional MRI, and cardiac MR imaging.

Materials to accompany today's lectures can be found at http://jcmsgi.rad.upenn.edu/jmcgowan/ismr/ismrm.html.

16:30 **Spin Gymnastics I.**
*Walter Kucharczyk and Donald B. Plewes.*

17:10 **Spin Gymnastics II.**
*Walter Kucharczyk and Donald B. Plewes.*

17:50 **Hardware.**
*Kristen Zakian.*

# Angiogenesis

Room A207
16:30 – 18:30

**Chairs: Martin O. Leach**
**Nicholas Van Bruggen**

16:30 ***99.*** **Assessment of Tumor Angiogenesis by Contrast-Enhanced MRI: A Novel MR Probe for *In Vivo* Correlation of Intravital and Magnetic Resonance Microscopy.**
*J. Griebel, M. Brandl, S.A. Pahernik, A. Goetz, G. Brix and M. Dellian.*
Federal Office for Radiation Protection and GSF Research Center, Neuherberg, Germany and University of Munich, Munich, Germany.

16:42 ***100.*** ***In vivo* NMR Imaging of Microvascularization in Normal Rat Brain and in Rat Brain Tumors.**
*C. Rémy, I. Troprès, M. Péoc'h, R. Farion and M. Décorps.*
Université Joseph Fourier, Grenoble, France.

16:54 ***101.*** **Vascular Characterization of Human Breast Cancer and Prostate Cancer Models.**
*Z.M. Bhujwalla, D. Artemov and M. Solaiyappan.*
The Johns Hopkins University School of Medicine, Baltimore, MD, USA.

17:06 ***102.*** **Radiation Induced Tumor Vascular Volume and Vascular Permeability Changes Measured by Contrast Enahnced MRI: A Longitudinal Study.**
*H. Yu, M-Y. Su, Z. Wang and O. Nalcioglu.*
University of California, Irvine, CA, USA.

17:18 ***103.*** **Vascular Permeability is Correlated with Susceptibility to Combretastatin $A_4$ Phosphate in Four Tumor Models.**
*D.A. Beauregard, S.A. Hill, D.J. Chaplin and K.M. Brindle.*
University of Cambridge, Cambridge, UK and Gray Laboratory Cancer Research Trust, Middlesex, UK.

17:30 ***104.*** **MR Imaging for Monitoring Altered Microvascular Permeability and Ascites Volume in Ovarian Cancer Following Treatment with Antibody to Vascular Endothelial Growth Factor.**
*A. Gossmann, T.H. Helbich, S. Mesiano, D.M. Shames, M.F. Wendland, T.P.L. Roberts, N. Ferrara, R. Jaffe and R.C. Brasch.*
University of California San Francisco, CA, USA; University of Cologne, Cologne, Germany and Genentech Inc., South San Francisco, CA, USA.

17:42 ***105.*** **MRI Quantitation of Sustained VEGF Induced Blood-Retinal Barrier Breakdown: A Rabbit Study.**
*N. Alikacem, T. Yoshizawa, C. Wilson and K. Nelson.*
University of Texas Southwestern Medical Center, Dallas, TX, USA; University of Texas, Arlington , TX, USA and Niigata University, Niigata, Japan.

17:54 ***106.*** **Evaluation of Ischemia-Driven Angiogenesis in a Rat Model of Peripheral Arterial Insufficiency: A BOLD MRI Study.**
*J.M. Greve, S.P. Williams, H. Steinmetz, S. Bunting, L. Bernstein and N. van Bruggen.*
Genentech Inc., South San Francisco, CA, USA.

18:06 ***107.*** **Ultrafast Quantitative 3D Mapping of Blood Volume and Endothelial Permeability in Brain Tumours.**
*K.L. Li, X.P. Zhu, J.C. Waterton and A. Jackson.*
University of Manchester, Manchester, UK and AstraZeneca, Macclesfield, Cheshire, UK.

18:18 ***108.*** **Changes In Tumour Vascular Permeability With Antiangiogenesis Therapy - Observations on Histogram Analysis.**
*A.R. Padhani, A. O'Donell, C. Hayes, I. Judson, P. Workman, A. Hannah, M.O. Leach and J.E. Husband.*
Institute of Cancer Research and The Royal Marsden NHS Trust, Sutton, Surrey, UK and Sugen Inc., San Francisco, CA, USA.

# Data Correction Methods

Room C106
16:30 – 18:30

**Chairs: Gareth J. Barker**
**Joseph V. Hajnal**

16:30 ***109.*** **Image-Based Evaluation of *a priori* $B_1$ Field Correction and its Effect on MRI Tissue Segmentation.**
*M. Alecci, Y. Zhang, J.M. Brady, P. Jezzard and S. Smith.*
Oxford University, and Robotic Research Group, Oxford, UK.

16:42 ***110.*** **Automated Breast Segmentation Technique for Evaluation of Serial Breast MR Imaging.**
*A. Knowles, C.E. Kearney, P. Gibbs, D.W. Purdie and L.W. Turnbull.*
Hull Royal Infirmary, Hull, UK.

16:54 ***111.*** **Optical Implementation of Spiral EPI Field Homogeneity Correction and The Decoupled Automated Rotation and Translation Algorithm (DFT-DART).**
*M.S. NessAiver.*
University of Maryland School of Medicine, Baltimore, MD, USA.

17:06 ***112.*** **Intensity Correction in Intravascular MRI Using Projection Images.**
*M. Solaiyappan, J. Lee and E. Atalar.*
Johns Hopkins University School of Medicine, Baltimore, MD, USA.

17:18 ***113.*** **A Multi-Scale Method for Automatic Correction of Intensity Nonuniformity in MRI Data.**
*C. Han and C. Yuan.*
University of Washington, Seattle, WA, USA.

17:30 ***114.*** **Effects and Corrections of Maxwell Terms on Spectral-Spatial Excitation Pulses.**
*C-M. Tsai, J.M. Pauly, S.M. Conolly and D.G. Nishimura.*
Stanford University, Stanford, CA, USA.

17:42 ***115.*** **Correction of Partial Volume Effect in Quantification of Multiple Sclerosis Lesions Using Multi-Spectral Magnetic Resonance Images.**
*Z. Ding, A.W. Anderson, T.L. Vollmer and J.C. Gore.*
Yale University Medical School of Medicine, New Haven, CT, USA.

17:54 ***116.*** **Off-Resonance Correction Integrated with Variable Density Spirals.**
*K.S. Nayak, C-M. Tsai and D.G. Nishimura.*
Stanford University, Stanford, CA, USA.

18:06 ***117.*** **A Rapid Method for Deblurring Spiral MR Images.**
*J.G. Pipe and E. Ahunbay.*
St. Joseph's Hospital, Phoenix, AZ, USA and Wayne State University, Detroit, MI, USA.

18:18 ***118.*** **Restoration of EEG Signals Distorted During Simultaneous MR Acquisitions.**
*J. Sijbers, I. Michiels, M. Verhoye, J. Van Audekerke, A. Van der Linden and D. Van Dyck.*
University of Antwerp, Antwerp, Belgium.

# Musculoskeletal MR Imaging

Room C205
16:30 – 18:30

**Chairs: Mark Schweitzer**
**Mikkel Østergaard**

16:30 ***119.*** **Quantitative Magnetic Resonance Imaging as Marker of Synovial Membrane Regeneration and Recurrence of Synovitis in Arthritic Knee Joints Treated with Arthroscopic Synove ctomy - A 1-Year Follow-Up Study.**
*B. Ejbjerg, M. Østergaard, M. Stoltenberg, P. Gideon, B. Volck, C.H. Jensen and I. Lorenzen.*
University of Copenhagen, Copenhagen, Denmark.

16:42 ***120.*** **Pharmacokinetic Analysis of Gd-DTPA Enhanced MRI in the Assessment of Methotrexate vs Leflunomide in RA of the Knee.**
*A. Radjenovic, J.P. Ridgway, P.J. O'Connor, R.J. Reece, W.W. Gibbon, J.F.M. Meaney, P. Emery and M.A. Smith.*
University of Leeds and Leeds General Infirmary, Leeds, UK.

16:54 ***121.*** **High Speed Tension Mapping in Muscle with MR Elastography.**
*O. Klein, R. Grimm, P.J. Rossman, M.A. Dresner, A. Manduca and R.L. Ehman.*
Mayo Clinic, Rochester, MN, USA.

17:06 ***122.*** **Time Resolved Observation of BOLD Effect in Muscle During Isometric Exercise.**
*J. Hennig, K. Scheffler and A. Schreiber.*
University Hospital, Freiburg, Germany.

17:18 ***123.*** **Quantitative MRI of Water, Fat and Transverse Relaxation Times Facilitates the Study of Degenerative Muscle Tissue.**
*D. Manners, G. Cea, P. Styles and D.J. Taylor.*
John Radcliffe Hospital, Headington, Oxford, UK and University of Oxford, Oxford, UK.

17:30 ***124.*** **Multicomponent $T_2$ of Resting and Exercised Muscle Following Creatine Supplementation.**
*G. Saab, G.D. Marsh, M. Casselman, C.L. Devine and R.T. Thompson.*
St. Joseph's Health Care Centre, London, Ontario, Canada.

17:42 ***125.*** **Correlation of Skeletal Muscle Sympathetic Nerve Activity With Visceral Adipose Tissue Measured by Localized Proton Spectroscopy.**
*L.S. Szczepaniak, Y. Mansour, D. Arbique, M. Tuncel and R.G. Victor.*
University of Texas Southwestern Medical Center, Dallas, TX, USA.

17:54 ***126.*** **Determination of Skeletal Muscle Perfusion Using Arterial Spin Labelling: Validation by Comparison with Venous Occlusion Plethysmography.**
*J.S. Raynaud, S. Duteil, F. Hennel, C. Wary, A. Leroy-Willig and P.G. Carlier.*
Pitié-Salpêtrière, Paris, France.

18:06 ***127.*** **A Semi-Automated System for Segmenting, Registering, Thresholding, and Analyzing High Resolution MRI of Trabecular Bone in the Distal Radius.**
*D.C. Newitt and S. Majumdar.*
University of California, San Francisco, CA, USA.

18:18 ***128.*** **Direct Measurement of Trabecular Bone Anisotropy from *in vivo* MR Images.**
*B.R. Gomberg, P.K. Saha, H.K. Song and F.W. Wehrli.*
University of Pennsylvania, Philadelphia, PA, USA.

# Cardiac MR Spectroscopy and Sodium MR Imaging

Room C209
16:30 –18:30

**Chairs: Markus von Kienlin**
**Craig R. Malloy**

16:30 ***129.*** **Quantitation of Sodium TQF NMR in a Neonatal Rabbit Heart.**
*V.D. Schepkin, I.O. Choy and D.Y. Obayashi.*
University of Illinois, Urbana, IL, USA; University of California, San Francisco, San Francisco, CA, USA and Finch University Health Science, Chicago, IL, USA.

16:42 ***130.*** **Noninvasive Quantification of Total Sodium Concentrations in Myocardial Infarction Using $^{23}$Na MRI.**
*C.D. Constantinides, D. Kraitchman, K. O'Brien, F. Boada, J. Gillen and P.A. Bottomley.*
Johns Hopkins University, Baltimore, MD, USA and University of Pittsburgh, Pittsburgh, PA, USA.

16:54 ***131.*** **Assessment of Activation Status of Mitochondrial $K_{ATP}$ Channels in Intact Rat Hearts Using $^{87}$Rb-NMR Spectroscopy.**
*O. Jilkina, B. Kuzio, Z. Luo and V.V. Kupriyanov.*
University of Manitoba, and National Research Council, Winnipeg, Manitoba, Canada.

17:06 ***132.*** **Hypotonic Shock Activates Potassium Efflux Through $K^+/H^+$ Exchanger in Isolated Rat Hearts: a $^{87}$Rb and $^{31}$P NMR Study.**
*V.V. Kupriyanov, O. Jilkina and Z. Luo.*
National Research Council and University of Manitoba, Winnipeg, Manitoba, Canada.

17:18 ***133.*** **Antioxidant Treatment Improves *in vivo* Cardiac and Skeletal Muscle Bioenergetics in Patients with Friedreich's Ataxia.**
*R. Lodi, A.H.V. Schapira, B. Rajagopalan, D.J. Taylor, P. Hart, J.G. Crilley, J.L. Bradley, A.M. Blamire, D. Manners, P. Styles and J.M. Cooper.*
University of Oxford, Oxford, UK; University of Bologna, Bologna, Italy and Royal Free and University College School of Medicine, London, UK.

17:30 ***134.*** **$^{31}$P $T_1$ Measurements of the Human Heart at 4.1 Tesla by Fast Low-Angle MRSI.**
*J.A. den Hollander, S.D. Buchthal and G.M. Pohost.*
University of Alabama, Birmingham, AL, USA.

17:42 ***135.*** **Coronary Venous Perfusion has Lower Perfusion Efficacy Relative to Arterial Perfusion Localized $^{31}$P MR Spectroscopy and Colored Microsphere Studies on Isolated Pig and Rat Hearts.**
*G. Tian, B. Xiang, G. Dai, J. Sun, L. Gregorash, W. Lindsay and R. Deslauriers.*
National Research Council and University of Manitoba, Winnipeg, Manitoba, Canada.

17:54 ***136.*** **Effect of GLUT4 Ablation on *In Vivo* Cardiac Energetics and Function in Senescent Mice.**
*V.P. Chacko, J.C. Chatham, M. Charron and R.G. Weiss.*
The Johns Hopkins University School of Medicine, Baltimore MD, USA and The Albert Einstein University, New York, NY, USA.

18:06 ***137.*** **Proton NMR Detection of Glutamate to Measure TCA Flux, $V_x$, and Oxygen Consumption in the Isolated Perfused Mouse Heart.**
*S.C. Burgess, E.E. Babcock, F.M.H. Jeffrey, A. Richman, C.R Malloy and A.D. Sherry.*
University of Texas, Southwestern Medical Center, Dallas TX, USA and University of Texas at Dallas, Richardson, TX, USA.

18:18 ***138.*** **$^1$H Echo-Planar Spectroscopic Imaging of the Human Heart *In Vivo*.**
*T. Wilhelm, C. Wacker, C. Aisenbrey, W. Bauer and P. Bachert.*
Deutsches Krebsforschungszentrum (DKFZ), Heidelberg, Germany and Universität Würzburg, Würzburg, Germany.

## BRONZE CORPORATE MEMBER SYMPOSIA
## Bracco
## Advances in Contrast Enhanced Cardiovascular MRI

Room A201
18:30 – 20:00

Provided by:

Northwest Imaging Forums
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## BRONZE CORPORATE MEMBER SYMPOSIA
## Schering AG
## Advanced Use of Contrast Agents in MRI

Room A207
18:30 – 20:00

## BRONZE CORPORATE MEMBER SYMPOSIA
## Toshiba Corporation
## An International Perspective on Patient-Focused MRI

Room C209
18:30 – 20:00

**Speakers: Mark Winkler**
**Walter Wohlgemuth**

## BRONZE CORPORATE MEMBER SYMPOSIA
## Macrconi Medical Systems (Formerly Picker International)

Room C112
18:30 – 20:00

## BRONZE CORPORATE MEMBER SYMPOSIA
## Bruker Medical, Inc.
## Development and Application of fMRI in the Non-Human Primate

Room C107
18:30 – 20:00

**Speaker: Nikos Logothetis**

# STUDY GROUP
# White Matter Diseases

Room A102
19:30 – 21:30

**Business and Scientific Meeting**

19:30 **Presentation of the Aims of the Study Group and Introduction of Governing Committee Members**
*Massimo J. Filippi*
Scientific Institute Ospedale San Raffaele, Milan, Italy

19:45 **MRI in MS: Present and Future Directions**
*Joseph C. McGowan*
University of Pennsylvania, Philadelphia, PA, USA

20:15 **MRI and White Matter Diseases: The Clinical Perspective**
*Jack Antel*
McGill University, Montreal, Quebec, Canada

20:45 **Organization of a Study Group Workshop**
*Vincent Dousset*
CHU Pellegrin, Bordeaux, France

21:15 **New Business**

# STUDY GROUP
# Cardiac MR and MR Flow & Motion Quantitation

Room A108
19:30 – 21:30

**Session I: Cardiac MR**

**Real Time Cardiac MR Imaging: A Closer Look**

**Chairs: Roderic Pettigrew**
**Albert de Roos**

19:30 **SENSE and SMASH: How They Work, How They Compare**
*Peter Bösiger*
University of Zürich & Swiss Federal Institute of Technology, Zürich, Switzerland

19:50 **True FISP: The Inside Story**
*Jeffrey M. Bundy and Orlando P. Simonetti*
Siemens Medical Systems, Chicago, IL, USA

20:10 **Discussion**

**Session II: MR Flow & Motion Quantitation**

**Chair: John N. Oshinski**

20:15 **Postprocessing of MR Flow Data**
*Rob J. van der Geest*
Leiden University Medical Center, Leiden, The Netherlands

20:35 **Discussion**

**Session III: Business Meeting**

20:40
- **Update on Multicenter Trials**
- **Potential Study Group Collaboration on Workshop Development**
- **New Business**

# STUDY GROUP
# Dynamic NMR Spectroscopy

Room C106
19:30 – 21:30

**Business Meeting**

**Scientific Meeting**

**Regulation of Respiration and ATP Synthesis in Heart and Muscle**

**ATP Synthesis in the Heart: Perspective on an Unsolved Problem**
*Kathryn F. LaNoue*
Hershey Medical Center, Hershey, PA, USA

**Domestication of Mitochondria for ATP Production in the Heart: Evaluation of the Rapid Kinetic Effects of ATP, Calcium, and Creatine**
*Robert S. Balaban*
National Institutes of Health, Bethesda, MD, USA

**Blood Flow and Oxygen Regulation of Oxidative Phosphorylation *In Vivo*: A Bold Approach to a Curious Problem**
*Kamil Ugurbil*
University of Minnesota, Minneapolis, MN, USA

**Regulation of Oxidative Phosphorylation in Skeletal Muscle is Simple: Is that True and Why?**
*Martin Kushmerick*
University of Washington, Seattle, WA, USA

**Muscle pH: Does it Muck Things Up?**
*Ronald A. Meyer*
Michigan State University, East Lansing, MI, USA

**Panel Discussion**

# STUDY GROUP:
# MR Imaging Efficacy & Effectiveness

Room C205
19:30 – 21:30

**Scientific Meeting**

**How to Evaluate the Cost-Effectivenss of MRI in the Management of Acute Stroke**

**Chair: TBA**

**Keynote Address: Health and Economics Outcome of Alternative Practice Patterns in the Management of Acute Stroke**
*David Matchar*
Duke Center for Clinical Health Policy Research, Durham, NC, USA

**Potential Roles of MRI in the Management of Acute Stroke**
*Scott W. Atlas*
Stanford University Medical Center, Stanford, CA, USA

**A Methodological Framework for Evaluating the Cost-Effectiveness of MRI in the Management of Acute Stroke**
*Sylvia K. Plevritis*
Stanford University, Stanford, CA, USA

**Panel Discussion**

**Business Meeting**

- **Introduction of new Governing Committee**
- **Nominations for 2001 Governing Committee**
- **Development of ISMRM Workshop on Imaging Efficacy and Effectiveness**
- **New Business**

# MORNING CATEGORICAL COURSE
## Cardiac MR Imaging

Room C205
07:00 – 08:00

**Chairs: Andre Duerinckx**
**Roderic I. Pettigrew**
**Cynthia B. Paschal**

**Educational Objectives**
Upon completion of this course, participants should be able to:

- Describe basic areas of routine and promising clinical use of MR in assessing cardiovascular disease;
- Describe basic areas of MR use which are both routine and promising in assessing cardiovascular disease;
- Explain the MR methodology and techniques used to assess acquired and congenital heart disease;
- Apply MR protocols for the evaluation of cardiac morphology, function, viability and blood flow;
- Describe approaches for cardiac data analysis and presentation.

*The final five minutes of each talk will be reserved for questions.*

07:00 **Basic Cardiac MR Techniques.**
*Cynthia B. Paschal.*

07:30 **Congenital Cardiac MR.**
*Lawrence M. Boxt.*

# MORNING CATEGORICAL COURSE
## fMRI in Neuro-Psychiatric Disease and Treatment: Special Issues in fMRI of the Diseased Brain

Room A201
07:00 – 08:00

**Chairs: John A. Detre**
**Peter Jezzard**

**Educational Objectives**
Upon completion of this course, participants should be able to:

- Identify the special issues facing clinicians and researchers who wish to apply functional MRI to patient populations;
- Describe fMRI studies that have been successfully accomplished in neurological and psychiatric disorders;
- List a number of issues that remain to be resolved before widespread use of fMRI in patient populations is feasible;
- Describe the role and potential of animal models in increasing the understanding of fMRI studies in disease;
- Explain the principles and theory of pharmacological (ph) MRI;
- Appraise the potential for phMRI in humans and predict the impact on disease treatment.

07:00 **Primer: Rapid Overview of fMRI in the Normal Brain.**
*Peter Jezzard.*

07:15 **fMRI in the Presence of Pathology and Disrupted Hemodynamics.**
*John A. Detre.*

07:30 **Practical and Analysis Implications of Clinical fMRI.**
*Keith R. Thulborn.*

07:45 **Discussion.**

# MORNING CATEGORICAL COURSE
## Abdominal Imaging

Room A207
07:00 – 08:00

**Chair: Donald G. Mitchell**

**Educational Objectives**
Upon completion of this course, participants should be able to:

- Implement modern MR applications for diagnosing focal and diffuse liver disease;
- Incorporate into their practices recent developments for MR imaging of the pancreas and biliary tract, including MR cholangiopancreatography;
- Use MRI to diagnose extrahepatic disease, such as that of the bowel and peritoneum, as well as vascular disease using state of the art MR angiographic techniques.

07:00 **Liver.**
*Donald G. Mitchell.*

07:50 **Questions.**

# MORNING CATEGORICAL COURSE
## The Nano-Meter Film: How MRS and MRI Can Probe Tissue Microstructure

Room C106
07:00 – 08:00

**Chairs: Chris Boesch**
**R. Mark Henkelman**

**Educational Objectives**
Upon completion of this course, participants should be able to:

- Describe methods in MRS and MRI that allow studies of tissue ultra-structure;
- Identify areas in which MR can contribute to the knowledge of tissue organization;
- Evaluate potential applications and limitations of MR methods to study compartmentation, order, and transport processes *in vivo;*
- Generate an overview of advanced methods in MRS and MRI that give information on the nanometer scale;
- Explain the influence of tissue structure upon MR parameters.

*The final five minutes of each talk will be set aside for questions.*

07:00 **Relaxation Times and Nano-Structures.**
*Peter S. Allen.*

07:30 **Multiquantum Filters and Order in Tissue.**
*Gil Navon.*

08:00 **Adjournment.**

# PLENARY LECTURES
## Coronary Artery Disease in the 21st Century

Ballroom
08:15 – 09:30

**Chairs: Cynthia B. Paschal**
**Roderic I. Pettigrew**

**Educational Objectives**
Upon completion of this session, participants should be able to:

- Describe the current and emerging diagnostic challenges in managing coronary artery disease.
- Recognize strengths and limitations of MR as a clinical tool in the assessment of coronary artery disease.
- Define new advances in MR technology that apply to the study of coronary artery disease.
- Recommend and explain the MR studies most appropriate to cardiologists as partners in patient care.

08:15 ***139.*** **MR Imaging and Atherosclerotic Disease.**
*Valentin Fuster.*
Mt. Sinai Medical Center, New York, NY, USA.

08:40 ***140.*** **Emerging Technical Advances in MR.**
*Albert Macovski.*
Stanford University, Stanford, CA, USA.

09:05 ***141.*** **The Current and Evolving Clinical Role of Cardiovascular MR in Coronary Artery Disease.**
*Dudley J. Pennell.*
Royal Brompton Hospital, London, UK.

# RF Coils and Imaging

Room A102
10:30 – 12:30

**Chairs: Lizann Bolinger**
**Gary Shen**

10:30 ***142.*** **Endourethral MRI.**
*H.H. Quick, H.K. Pannu, R. Genadry and E. Atalar.*
Johns Hopkins University, Baltimore, MD, USA.

10:42 ***143.*** **Transmission Field Profiles for Transceive Phased Array Coils.**
*G.R. Duensing, D.M. Peterson, B. Beck and J.R. Fitzsimmons.*
University of Florida Brain Institute, Gainesville, FL, USA.

10:54 ***144.*** ***In vivo*** **Evaluation of the Multi-Ring Surface Coil for Brain Micro-Imaging Using a Whole Body 3T System: Standard Imaging Sequences.**
*F. Mirrashed, I. Cheung and J.C. Sharp.*
National Research Council Canada, Winnipeg, Manitoba, Canada and University of Alberta, Edmonton, Alberta, Canada.

11:06 ***145.*** **A Detuneable TEM Transmit Coil for 4T fMRI and Spectroscopy.**
*G. Adriany, E. Yacoub, X. Hu, M. Garwood, H. Merkle, W. Chen, S-G. Kim, P. Andersen, K. Ugurbil and J.T. Vaughan.*
University of Minnnesota, Minneapolis, MN, USA.

11:18 ***146.*** **A Detunable Ellipitic Transmission Line Resonator for Body Imaging at 3T.**
*P.J. Ledden, L.L. Wald, J.T. Vaughan and D. Hinton.*
Nova Medical, Inc. Wakefield MA, USA; Massachusetts General Hospital, Charlestown, MA, USA and University of Minnesota, Minneapolis, MN, USA.

11:30 ***147.*** **7T vs. 4T: Preliminary $B_1$, SNR, SAR Comparison in the Human Head.**
*J.T. Vaughan, M. Garwood, C.M. Collins, L. DelaBarre, G. Adriany, P. Andersen, H. Merkle, M.B. Smith and K. Ugurbil.*
University of Minnesota, Minneapolis, MN, USA and Pennsylvania State University College of Medicine, Hershey, PA, USA.

11:42 ***148.*** **$B_1$ Field Homogeneity Comparison at 300 MHz: Calculation vs. Experiment.**
*C.M. Collins, M.B. Smith, J.T. Vaughan, M. Garwood and K. Ugurbil.*
The Pennsylvania State University College of Medicine, Hershey, PA, USA and University of Minnesota, Minneapolis, MN, USA.

11:54 ***149.*** **FDTD Numerical Comparison of Multi-Strut TEM Resonators.**
*T.S. Ibrahim, R. Lee, B.A. Baertlein and P.M.L. Robitaille.*
The Ohio State University, Columbus, OH, USA.

12:06 ***150.*** **WITHDRAWN**

12:18 ***151.*** **Role of $B_1$-Eigenfields of Dielectric Objects in High-Field MRI.**
*P. Röschmann.*
Philips Research Laboratories, Hamburg, Germany.

# Rapid Imaging I

Room A108
10:30 – 12:30

**Chairs: Norbert J. Pelc**
**Peter Boesiger**

10:30 ***152.*** **2D SENSE for Faster 3D Imaging.**
*M. Weiger, K.P. Pruessmann and P. Boesiger.*
University and ETH Zurich, Zurich, Switzerland.

10:42 ***153.*** **SENSE with Partial Fourier Homodyne Reconstruction.**
*K.F. King and L. Angelos.*
GE Medical Systems, Milwaukee, WI, USA.

10:54 ***154.*** **A Novel EPI Reconstruction Technique Using Multiple RF Coil Sensitivity Maps.**
*S. Kuhara, Y. Kassai, Y. Ishihara, M. Yui, Y. Hamamura and H. Sugimoto.*
Toshiba Medical Systems R&D Center and Toshiba Nasu Operations, Tochigi, Japan.

11:06 ***155.*** **Accelerated Image Reconstruction for Sensitivity Encoded Imaging with Arbitrary k-Space Trajectories.**
*S.A.R. Kannengießer, A.R. Brenner and T.G. Noll.*
Aachen University of Technology, Aachen, Germany.

11:18 ***156.*** **SMASH vs SENSE.**
*B. Madore and N.J. Pelc.*
Stanford University School of Medicine, Stanford, CA, USA.

11:30 ***157.*** **Increasing Temporal Resolution in Dynamic Gd Enhanced Breast Imaging Using SENSE.**
*D.J. Larkman, N.M. deSouza and J.V. Hajnal.*
Imperial College School of Medicine, Hammersmith Hospital, London, UK.

11:42 ***158.*** **Simultaneous Acquisition of Multiple FOV Images for Real Time Catheter Tracking.**
*P. Aksit, J.A. Derbyshire and E. Atalar.*
Johns Hopkins University School of Medicine, Baltimore, MD, USA and GE Medical Systems, Waukesha, WI, USA.

11:54 ***159.*** **Slab Scan Diffusion Imaging.**
*S.E. Maier and F.A. Jolesz.*
Brigham and Women's Hospital, Harvard Medical School, Boston, MA, USA.

12:06 ***160.*** **ZOnally-Magnified Oblique Multislice (ZOOM) EPI.**
*M.R. Symms, C.A. Wheeler-Kingshott, G.J.M. Parker and G.J. Barker.*
University College London, London, UK.

12:18 ***161.*** **Vastly Undersampled Isotropic Projection Imaging.**
*W.F. Block, A.V. Barger and C.A. Mistretta.*
University of Wisconsin, Madison, WI, USA.

# CLINICAL CATEGORICAL: Musculoskeletal MRI, Session I

Ballroom
10:30 – 12:30

**Chairs: Christopher F. Beaulieu**
**Lynne S. Steinbach**

**Educational Objectives**
Upon completion of this course, participants should be able to:

- Select appropriate MR pulse sequences for evaluation of articular cartilage abnormalities;
- Recognize MR imaging findings in articular cartilage injury and apply them to the interpretation of clinical studies;
- Describe areas of active clinical research in articular cartilage imaging and quantitative evaluation;
- Define the role of contrast media in analyzing internal derangements of joints, including both indirect and direct MR arthrography;
- Assess the value of high resolution, non-contrast MR imaging of joints;
- Identify clinical situations in which intravenous contrast medium may be useful in evaluation of the synovium.

10:30 **Pulse Sequence Design and Contrast Principles for Cartilage Imaging.**
*Garry E. Gold.*

10:55 **Interpretation of Articular Cartilage Abnormalities in Clinical MR.**
*David G. Disler.*

11:20 **Quantitative Cartilage Assessment, Part 1: Proteoglycan Concentration Using Intravenous Gadolinium.**
*Deborah Burstein.*

11:45 **Quantitative Cartilage Assessment, Part 2: Cartilage Volume/Thickness and Relaxation Times.**
*Sonja C. Faber.*

12:10 **Discussion.**

# CLINICAL CATEGORICAL:
# Brain Spectroscopy

Room A201
10:30 – 12:30

**Chair: Sarah J. Nelson**

**Educational Objectives**
Upon completion of this course, participants should be able to:

- Identify situations where MRS may be valuable in the assessment of neurological disease;
- Select the most appropriate MRS techniques for such applications;
- Identify metabolites in spectra from normal and diseased brain tissue;
- Recognize common spectral artifacts and distinguish them from regions of pathology.

*The final 5 minutes of each talk will be reserved for questions.*

10:30 **Single Voxel MRS of the Brain.**
*Brian Ross.*

11:00 **Diagnosis of Brain Tumors.**
*Scott D. Rand.*

11:30 **Evaluation of HIV-Related Disease.**
*Linda Chang.*

12:00 **MR Spectroscopic Imaging in Clinical Practice.**
*Peter B. Barker.*

# Perfusion: Arterial Spin Labeling

Room A207
10:30 – 12:30

**Chairs: Jeff H. Duyn**
**Alan C. McLaughlin**

10:30 ***162.*** ***In vivo* MR Perfusion Imaging of the Human Retina.**
*D.C. Alsop, J.A. Maldjian and J.A. Detre.*
University of Pennsylvania Medical Center, Philadelphia, PA, USA.

10:42 ***163.*** **Pulsed Arterial Spin Labeling (FAIR) RARE-Imaging of CBF With Integrated Superfast Inversion Recovery $T_1$ Measurement.**
*R. Gruetter and S-G. Kim.*
University of Minnesota, Minneapolis, MN, USA.

10:54 ***164.*** **Degradation of Efficiency of Steady State Arterial Inversion Due to Magnetization Transfer in the Blood: Further Evidence.**
*C.A. Branch, L. Hernandez and D. Lewis.*
The Nathan S. Kline Institute, Orangeburg, NY, USA and Albert Einstein College of Medicine, Bronx, NY, USA.

11:06 ***165.*** ***In-Vivo* $T_1$ Measurements in the Rat Brain Accounting for Inflow Effects.**
*E.L. Barbier, E. Grillon and M. Décorps.*
CHU Michallon, Grenoble, France.

11:18 ***166.*** **Two-Compartment Exchange Model for Pefusion Quantification Using Arterial Spin Tagging.**
*J. Zhou, D.A. Wilson and P.C.M. van Zijl.*
Johns Hopkins University Medical School, Baltimore, MD, USA.

11:30 ***167.*** **An Improvement to Perfusion Quantification - Accounting for Blood Water Exchange Time.**
*L.M. Parkes, E.A. Moore and P.S. Tofts.*
University College London, London, UK.

11:42 ***168.*** **Computer Model of Heterogeneous Arterial Trees: Simulation of Arterial Spin Labeling Sequences.**
*M. Günther and L.R. Schad.*
Deutsches Krebsforschungszentrum (DKFZ), Heidelberg, Germany.

11:54 ***169.*** **Perfusion Based Event-Related Functional MRI.**
*H-L. Liu and J-H. Gao.*
University of Texas Health Science Center, San Antonio, TX, USA.

12:06 ***170.*** **Dynamic Spin-Tagging Pulmonary Perfusion MRI During Pharmacologic Intervention and Acute Pulmonary Embolism in a Pig Model.**
*D.A. Roberts, R.R. Rizi, D.A. Lipson, M. Aranda, L. Bearn, L. Rolf, J. Baumgardner, W.B. Gefter, J. Hansen-Flaschen, H.H. Hatabu and M.D. Schnall.*
University of Pennsylvania Medical Center, Philadelphia, PA, USA.

12:18 ***171.*** **Absolute Quantification of Pulmonary Perfusion Rates Using Flow-Sensitive Alternating Inversion Recovery with an Extra Radiofrequency Pulse (FAIRER).**
*V.M. Mai, Q. Chen and R.R. Edelman.*
Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, USA.

# MR Spectroscopy of Brain: Animal Models

Room C106
10:30 – 12:30

**Chairs: Jerry D. Glickson**
**Claudia Franke**

10:30 ***172.*** **A Study of Brain Glycogen Recovery After Insulin-Induced Hypoglycemia in Rat Brain *in vivo*.**
*I-Y. Choi, E.R. Seaquist and R. Gruetter.*
University of Minnesota, Minneapolis, MN, USA.

10:42 ***173.*** **Distinction Between Cerebral Cryptococcomas, *Staphyloccocus aureus* Infections and Tumours in an Animal Model.**
*T. Dzendrowskyj, U. Himmelreich, R. Malik, S. Dowd, C. Mountford and T. Sorrell.*
University of Sydney, Sydney, Australia.

10:54 ***174.*** **Brains of Creatine Kinase Deficient Mice Lack Phosphocreatine and Exhibit an Increased NAA Level.**
*H.J.A. in't Zandt, C. Jost, F. Oerlemans, D.W.J. Klomp, B. Wieringa and A. Heerschap.*
University Hospital Nijmegen and Nijmegen University, Nijmegen, the Netherlands.

11:06 ***175.*** **The Rate of Forward Creatine Kinase Reaction Correlates with Adenosine Triphosphate Depletion During Delayed Cerebral Energy Failure.**
*M. Wylezinska, E.B. Cady, R. Ordidge, K. Brooks, Y. Sakata, J.S. Thornton, M. Clemence, Q. Nguyen, F. O'Brien, M. Noone, M. Sellwood and J.S. Wyatt.*
University College London Hospitals and University College London and University College London School of Medicine, London, UK.

11:18 ***176.*** **Stroke Outcome Following MCA Occlusion Can Be Predicted by, *in vivo*, 1-(2-trifluoromethylphenyl) imidazole (TRIM) Concentrations, as Measured by $^{19}$F MRS.**
*K.K. Haga, B. Sweatman, I. Ismail and S.C.R. Williams.*
Kings College, London, UK and Glaxo Wellcome, Ware, UK.

11:30 ***177.*** **2-Iminobiotin Improves Cerebral Energy Status and Electrical Brain Activity Following Hypoxia-Ischemia in Newborn Piglets.**
*C. Peeters, W. Veldhuis, I. Borst, K. Braun, R. de Graaf, K. Nicolay and F. Groenendaal.*
Wilhelmina Children's Hospital and Utrecht University, Utrecht, the Netherlands.

11:42 ***178.*** **Divalent Extracellular Cations Modulate the Diffusion of Water and NAA in Rat Cortical Brain Slices during Hypoxic Energy Failure.**
*J.M. Hakumäki, T-RM. Pirttilä and R.A. Kauppinen.*
University of Kuopio, Kuopio, Finland.

11:54 ***179.*** **Metabolic Abnormalities in Transgenic Huntington's Disease Mice: Effect of CAG Repeat Length.**
*B.G. Jenkins, O.A. Andreassen, E. Kuestermann, R.J. Ferrante and M.F. Beal.*
Massachusetts General Hospital, Charlestown, MA, USA.

12:06 ***180.*** **Absolute Quantitative Localized $^{1}$H MR Spectroscopy and MRI on the *In Vivo* Mouse Brain: Effect of Genetic Background.**
*H.J.A. in't Zandt, D.W.J. Klomp, F. Oerlemans, C.E.E.M. van der Zee, B. Wieringa and A. Heerschap.*
University Hospital Nijmegen and Nijmegen University, Nijmegen, the Netherlands.

12:18 ***181.*** **Cerebral Interstitial Oxygen Tension and Blood Flow Response to Hypoxia in Intact Rat Brain.**
*T.Q. Duong, J.D. Lipscomb, S.U. Oh, C. Iadecola and S-G. Kim.*
University of Minnesota, Minneapolis, MN, USA.

# Contrast-Enhanced 3D MR Angiography

Room C205
10:30 – 12:30

**Chairs: Jörg F. Debatin**
**Yi Wang**

10:30 ***182.*** **Intraindividual Comparison of Two Contrast Agents - Gd-DTPA and Gd-BOPTA - for Multiphasic MR Angiography.**
*M.V. Knopp, H. von Tengg-Kobligk, F. Floemer, F. Giesel, M. Bock and S.O. Schoeberg.*
German Cancer Research Center, Heidelberg, Germany and Ohio State University, Columbus, OH, USA.

10:42 ***183.*** **Whole Body 3D MRA in 72 Seconds: 5 Steps and a Single Injection.**
*S.G. Ruehm, M. Goyen, K-H. Truemmler, S. Bosk and J.F. Debatin.*
University Hospital, Essen, Germany and Siemens Medical Systems, Erlangen, Germany.

10:54 ***184.*** **Aorta and Lower Extremities Bolus Chasing MRA: Evaluation of Background Signal Reduction Techniques.**
*H. Gaucher, F. Lefèvre, B. Lehalle, C. Argaud and D. Régent.*
CHU Brabois, Nancy, France and GE Medical Systems, Buc, France.

11:06 ***185.*** **Delay and Duration of Contrast Medium in the Artery after Injection: To Synchronize Data Acquisition and Arterial Enhancement in Contrast MRA.**
*N. Yamada, T. Sakuma, M. Azabu, T. Nagai, R. Tanaka, M. Motooka, S. Imakita, S. Kuribayashi and M. Takamiya.*
National Cardiovascular Center, Osaka, Japan.

11:18 ***186.*** **3D MR Angiography of the Pulmonary Arteries In Under 4 Seconds.**
*M. Goyen, S.G. Ruehm, M.E. Ladd, J. Barkhausen, S. Bosk, K-H. Truemmler, G. Laub and J.F. Debatin.*
University Hospital, Essen, Germany and Siemens Medical Systems, Erlangen, Germany.

11:30 ***187.*** **Shortened Breath-Hold 3D Contrast-Enhanced MRA Using SENSE.**
*R.M. Hoogeveen, R. Conrad and J. Gieseke.*
Philips Medical Systems, Best, The Netherlands and Uni-Klinik, Bonn, Germany.

11:42 ***188.*** **High-Resolution Contrast-Enhanced MRA Using SENSE.**
*M. Weiger, K.P. Pruessmann, A. Kassner, G. Roditi, T. Lawton, A. Reid and P. Boesiger.*
University and ETH Zurich, Zurich, Switzerland; Philips Medical Systems, Hammersmith, London, UK, and Glasgow Royal Infirmary, Glasgow, UK.

11:54 ***189.*** **High Resolution CE-MRA Using Dual-Resolution Acquisition and Segmentation Based on Spatial Frequency-Dependent 2D Temporal Correlation.**
*Y. Mazaheri, T.J. Carroll, F.R. Korosec, W. Block, J. Du, T.M. Grist and C.A. Mistretta.*
University of Wisconsin-Madison, Madison, WI, USA.

12:06 ***190.*** **Motion of the Proximal Renal Artery.**
*D.W. Kaandorp, G.B.C. Vasbinder, M.W. de Haan, G.J. Kemerink and J.M.A. van Engelshoven.*
University Hospital Maastricht, Maastricht, The Netherlands.

12:18 ***191.*** **Is Contrast Enhanced MRA Cost Effective?**
*A.J.B. Watt, A. Reid and G. Roditi.*
Glasgow Royal Infirmary, Glasgow, UK.

# Real-Time/Ultra-Fast Cardiac Imaging

Room C209
10:30 – 12:30

**Chairs: Daniel K. Sodickson**
**Bob S. Hu**

10:30 ***192.*** **Real-Time Imaging of Left Ventricular Dimensions: Reliability and Reproducibility in Clinical Practice.**
*S. Plein, W. Smith, J.P. Ridgway, A. Kassner, D.J. Beacock, T. Bloomer, S. Williams and U.M. Sivananthan.*
The General Infirmary at Leeds, Leeds, UK and Philips Medical Systems, Hammersmith, London, UK.

10:42 ***193.*** **Real Time Interactive Spiral Imaging in a Reduced FOV for Cardiac Applications.**
*T. Schaeffter, P. Börnert, H. Eggers, K. Nehrke and S. Weiss.*
Philips Research Laboratories, Hamburg, Germany.

10:54 ***194.*** **Non-ECG Triggered Multi-Slice Real-Time Cardiac Dobutamine Stress Imaging.**
*M. Stuber, K.V. Kissinger, M.H. Chen, P.G. Danias and W.J. Manning.*
Beth Israel Deaconess Medical Center & Harvard Medical School, Boston, MA, USA and Philips Medical Systems, Best, Netherlands.

11:06 ***195.*** **Turnkey Imaging of Myocardial Strain Using Single Shot 3D EPI.**
*T.G. Reese, D. Feinberg, J-G. Dou and V.J. Wedeen.*
Massachusetts General Hospital, Boston, MA, USA and Washington University, St. Louis MO, USA.

11:18 ***196.*** **Ultra-Fast MRI Assessment of Bive ntricular Response to Physical Exercise.**
*A.A.W. Roest, P. Kunz, H.J. Lamb, W.A. Helbing, E.E. van der Wall and A. de Roos.*
Interuniversity Cardiology Institute of The Netherlands, Utrecht, The Netherlands and Leiden University Medical Center, Leiden, The Netherlands.

11:30 ***197.*** **The Effect of Ergometer Exercise on Flow in the Fontan Circulation Studied with Fast, Breathhold MR-Phase Contrast Techniques.**
*E.M. Pedersen, E. Stenbøg, T. Fründ, K. Houlind, O. Kromann, K. Sørensen and V. Hjortdal.*
Aarhus University Hospital, Aarhus, Denmark.

11:42 ***198.*** **Systolic and Diastolic Tagging Contrast for Single-Breathhold CSPAMM Myocardial Tagging.**
*M. Stuber, P.G. Danias and W.J. Manning.*
Beth Israel Deaconess Medical Center & Harvard Medical School, Boston, MA, USA and Philips Medical Systems, Best, Netherlands.

11:54 ***199.*** **Segmented TrueFisp - An Improved Technique for Cine MR Angiography.**
*J. Carr, O. Simonetti, R. Kroeker, J. Bundy, S. Pereles and J.P. Finn.*
Northwestern University Medical School and Siemens Medical Systems, Chicago, IL, USA.

12:06 ***200.*** **Automatic, Observer Independent Acquisition Planning of Cardiac MR Short-Axis Views.**
*B.P.F. Lelieveldt, R.J. van der Geest, H.J. Lamb, H.W.M. Kayser and J.H.C. Reiber.*
Leiden University Medical Center, Leiden, the Netherlands.

12:18 ***201.*** **Arrhythmia Rejection Using a VCG-Based Triggering Algorithm.**
*J.M. Chia, S.E. Fischer, S.A. Wickline and C.H. Lorenz.*
Washington University Medical Center, St. Louis, MO, USA and Philips Medical Systems, Best, The Netherlands.

## GOLD CORPORATE MEMBER LUNCHTIME SYMPOSIUM
## Nycomed Amersham

Room C112
12:30 – 13:30

## POSTER WALKING TOUR
## RF Coils

Tuesday, 4 April, 2000
Hall C
13:30 – 15:30

**Chairs: Richard W. Briggs**
**Joseph Murphy-Boesch**

**Please see page 114 for details.**

## POSTER WALKING TOUR
## Flow Quantification: Methods and Applications

Tuesday, 4 April, 2000
Hall C
13:30 – 15:30

**Chairs: Thomas K.F. Foo**
**David N. Firmin**

**Please see page 116 for details**

# CLINICAL FOCUS SESSION
## Liver Contrast Agents

Room A201
13:30 – 15:30

**Chairs: Philip J. Robinson, Keynote Speaker**
**Janice Ward**

13:30 **Keynote.**

13:45 ***202.*** **Multicenter Phase III Trial of Gadodiamide and Gadopentetate-Dimeglumine in MRI Versus Dual Phase Spiral-CT in the Diagnosis of Liver Lesions.**
*H-U. Kauczor, C.P. Heussel, L. Marti-Bonmati, C. L'Hermine, G. Schmutz, P. Chevallier, S. Olliff, P.A. Kane, G. Jung, T. Kittner, C. Matos, B. van Beers, R. Loose, M. Lenz, K. Meurer and M. Thelen.*
European Multicenter Group, Mainz, Germany.

13:57 ***203.*** **Volumetric Interpolated Isotropic 3D MR Imaging Versus Digital Subtraction Angiography in the Evaluation of Hepatic Arterial Anatomy.**
*M.T. Lavelle, V.S. Lee, G.A. Krinsky, J.C. Weinreb and N.M. Rofsky.*
New York University, New York, NY, USA.

14:09 ***204.*** **Simultaneous Acquisition of In-Phase and Opposed Phase Dynamic MR Imaging for Assessment of Focal Lesions in Cirrhotic Liver.**
*J-S. Yu, K.W. Kim, J-G. Park, E-K. Jeong and D. Chien.*
Yonsei University College of Medicine, Seoul, South Korea and Siemens AG, Erlangen, Germany.

14:21 ***205.*** **MRI in Focal Hepatic Disease: A Comparison of Gd-DTPA and Ferumoxides-enhanced MRI in over 900 patients.**
*T. Helmberger, N. Holzknecht, M. Gregor, B. Knuth, R. Stangl, S. Banac, B. Scher, J. Scheidler and M. Reiser.*
Ludwig-Maxmilians-University, Munich, Germany.

14:33 ***206.*** **Diagnostic Efficacy of Contrast-Enhanced Spiral CT, Unenhanced and Gd-DTPA and Ferumoxides-enhanced MRI in the same Patient Population With Focal Liver Disease.**
*N. Holzknecht, T. Helmberger, M. Gregor, B. Knuth, R. Stangl, S. Banac, B. Scher, J. Scheidler and M. Reiser.*
Ludwig-Maximilians-University, Munich, Germany.

14:45 ***207.*** **The Impact of Reduced Dose SPIO on the Detection of Colorectal Liver Metastases: A Quantitative and Qualitative Analysis.**
*D.J. Scott, J. Ward, J.A. Guthrie, D. Wilson and P.J. Robinson.*
St James's University Hospital, Leeds, UK.

14:57 ***208.*** **Superparamagnetic Iron Oxide-Enhanced MR Imaging for the Detection and Characterization of Hepatic Tumors: Do We Really Need a Precontrast Study?**
*J.M. Lee, H.S. Kwak and C-S. Kim.*
Chonbuk National University Hospital, Chonbuk, Korea.

15:09 ***209.*** **Better Liver Lesion Diagnosis with Mangafodipir Trisodium (MnDPDP)-Enhanced MR Liver Imaging: A Multicenter Study Comparing MR and Biphasic Spiral CT.**
*M. Oudkerk, P. van Dijk, M. König, J. Grimm, B.O. de Beeck, J. Fernandez-Cuadrado, M. Roddie, B. Song and C.G. Torres.*
University Hospital Rotterdam, Rotterdam, The Netherlands; Nycomed Amersham, Oslo, Norway; Ruhr-University Clinic, Bochum, Germany; Christian-Albrechts University, Kiel, Germany; Free University Hospital (VUB), Brussels, Belgium; Hospital La Paz, Madrid,Spain and Charing Cross Hospital, London, UK.

# CLINICAL FOCUS SESSION
# Ischemic Heart Disease: Clinical Use of MR

Room C205
13:30 – 15:30

**Chairs: Albert de Roos, Keynote Speaker**
**Pamela K. Woodard**

13:30 **Keynote.**

13:45 ***210.*** **MRI Evaluation of Chest Pain Compatible with Myocardial Ischemia.**
*R.Y. Kwong, A.E. Schussheim, J. London, J. Davis, R.S. Balaban and A.E. Arai.*
National Institutes of Health, Bethesda, MD, USA.

13:57 ***211.*** **Dobutamine Tagged MRI Compared to Dobutamine Echocardiography in the Assessment of Functional Recovery After Myocardial Infarction.**
*C.M. Kramer, M.J. Malkowski, S. Mankad, T.M. Theobald, D.L. Pakstis and W.J. Rogers Jr.*
University of Virginia, Charlottesville, VA, USA and Allegheny General Hospital, Pittsburgh, PA, USA.

14:09 ***212.*** **Comparison of Cine- and Tagged-MRI for Qualitative and Quantitative Assessment of Anti-Ischemic Drug Effect in Patients with Coronary Artery Disease.**
*P. Croisille, M.E. Yerlioglu, M. Janier, M. Ovize and D. Revel.*
Hôpital Cardiovasculaire L.Pradel, Lyon, France.

14:21 ***213.*** **2D and 3D Segmented TurboFLASH for the Visualization of Myocardial Injury.**
*O. Simonetti, R.J. Kim, D.S. Fieno, H. Hillenbrand, E. Wu, J.M. Bundy, J.P. Finn and R.M. Judd.*
Siemens Medical Systems and Northwestern University Medical School, Chicago, IL, USA.

14:33 ***214.*** **Left Ventricular Phase Contrast Velocity Mapping in 34 Patients with Ischaemic Heart Disease.**
*B. Schneider, M. Markl, C. Geiges, J. Winterer, J. Hennig and M. Langer.*
University of Freiburg, Freiburg, Germany.

14:45 ***215.*** **High Resolution $T_2$-Weighted Evaluation of Acute Myocardial Ischaemia Using the Intravascular Contrast Agent NC100150 Injection.**
*T. Bjerner, L.O. Johansson, A. Bjørnerud, G. Wikström, H. Ahlström and A. Hemmingsson.*
Uppsala University Hospital, Uppsala, Sweden and Nycomed Imaging A/S, Oslo, Norway.

14:57 ***216.*** **Examining Stunned Myocardium with Gd-DTPA Enhanced MRI.**
*R.E. Thornhill, F.S. Prato, R.S. Pereira, G. Wisenberg and J. Sykes.*
Joseph's Health Centre and University of Western Ontario, London, Ontario, Canada.

15:09 ***217.*** **Simultaneous Detection and Functional Assessment of Reperfused Acute Myocardial Infarction with Spin-Lock Preparation and Gd-DTPA Enhancement.**
*R. Muthupillai, W.T. Dixon, J.M. Wilson, M. Pereyra, R.I. Pettigrew and S.D. Flamm.*
Texas Heart Institute, Houston, TX, USA and Philips Medical Systems, Shelton, CT, USA.

# MR Imaging of Articular Cartilage

Room A102
16:00 – 18:00

**Chairs: R. Mark Henkleman**
**Gabrielle Bergman**

16:00 ***218.*** **Watershed Segmentation of High Resolution Articular Cartilage Images for Assessment of OsteoArthritis.**
*S. Ghosh, O. Beuf, D.C. Newitt, M. Ries, N. Lane and S. Majumdar.*
University of California, San Francisco, CA, USA and BioEngineering Graduate Group, UCSF-UC Berkeley, CA, USA.

16:12 ***219.*** **No Apparent Progressive Change to Knee Cartilage Volumes Over One Year in Rheumatoid and Osteoarthritis.**
*S.J. Gandy, A.D. Brett, P.A. Dieppe, M.C. Keen, R.A. Maciewicz, C.J. Taylor, J.C. Waterton and I. Watt.*
United Bristol Healthcare Trust, Bristol, UK; University of Manchester, Manchester, UK; University of Bristol, Bristol, UK and AstraZeneca, Macclesfield, UK.

16:24 ***220.*** **Segmentation of Osteoarthritic Femoral Cartilage Using Live Wire.**
*D. Steines, C. Cheng, A. Wong, J. Tsai, S. Napel and P. Lang.*
Stanford University, Stanford, CA, USA.

16:36 ***221.*** **$T_2$ Reveals Spatial Collagen Architecture in Articular Cartilage: A Comparative Quantitative MRI and Polarized Light Microscopic Study.**
*M.T. Nieminen, J. Rieppo, J. Töyräs, J.M. Hakumäki, M.J. Silvennoinen, M.M. Hyttinen, H.J. Helminen and J.S. Jurvelin.*
Kuopio University Hospital and University of Kuopio, Kuopio, Finland.

16:48 ***222.*** **Spatial Variation in Cartilage $T_2$ of the Knee Joint.**
*H.E. Smith, T.J. Mosher, B.G. Collins, C.M. Collins, Q.X. Yang, B.J. Dardzinski, V.J. Schmithorst and M.B. Smith.*
The Penn State University College of Medicine, Hershey PA, USA; Children's Hospital Medical Center, Cincinnati, OH, USA and University of Cincinnati College of Medicine, Cincinnati, OH, USA.

17:00 ***223.*** **Spatial Variation of Cartilage $T_2$ in the Immature Pediatric Knee.**
*B.J. Dardzinski, T. Laor, V.J. Schmithorst and L.A. Klosterman.*
Children's Hospital Medical Center, Cincinnati, OH, USA and University of Cincinnati College of Medicine, Cincinnati, OH, USA.

17:12 ***224.*** **The Dynamics and Equilibria of Cartilage Gd-DTPA$^{-2}$ Uptake.**
*J.H. Kaufman, U. Duvvuri, S.B. Kudchodkar, E.A. Noyszewski, R.R. Regatte, R. Reddy and J.S. Leigh.*
University of Pennsylvania, School of Medicine, Philadelphia, PA, USA.

17:24 ***225.*** **The Role of $T_2$ and Gd-DTPA Enhanced $T_1$ Relaxation in Mapping Degraded Articular Cartilage.**
*A.M. Herneth, V. Mlynarik, M. Huber, A. Ba-Ssalamah, H. Imhof and S. Trattnig.*
University of Vienna, Vienna, Austria.

17:36 ***226.*** ***In-vitro*** **Assessment of Cationic and Anionic Contrasting Agents in Early-OA Proteoglycan Depletion of Articular Cartilage.**
*P.J. Lattanzio, A.Z. Damyanovich, K.W. Marshall and H. Peemoeller.*
University of Toronto, Toronto, Ontario, Canada.

17:48 ***227.*** **Proteoglycan Distribution Across Articular Cartilage as Determined by $^{23}$Na MRI.**
*E.M. Shapiro, A. Borthakur, J.S. Leigh and R. Reddy.*
University of Pennsylvania, Philadelphia, PA, USA.

# MR Imaging of Brain: Multiple Sclerosis

Room A108
16:00 – 18:00

**Chairs: Scott W. Atlas**
**Kenneth R. Maravilla**

16:00 ***228.*** ***Young Investigator Awards Finalist:*** **Magnetization Transfer and Multi-Component $T_2$ Measurements with Histopathologic Correlation in an Experimental Model of Multiple Sclerosis.**
*P.J. Gareau, B.K. Rutt, S.J. Karlik and J.R. Mitchell.*
John P. Robarts Research Institute and London Health Sciences Center, London, Ontario, Canada.

16:20 ***229.*** **Statistical Analysis of MTR Histograms in Multiple Sclerosis.**
*J. Dehmeshki, D.H. Miller and P.S. Tofts.*
University College London, London, UK.

16:32 ***230.*** **Brain and Cord Magnetization Transfer Imaging Histograms in Multiple Sclerosis Patients.**
*M. Rovaris, M. Bozzali, G. Santuccio, M.P. Sormani, G. Comi and M. Filippi.*
H. San Raffaele, Milan, Italy.

16:44 ***231.*** **Multiple Sclerosis Functional Composite Related to MRI Parameters.**
*N.F. Kalkers, V. de Groot, R.H.C. Lazeron, M.A.A. van Walderveen, J.J. Bot, B.M.J. Uitdehaag, C.H. Polman and F. Barkhof.*
University Hospital 'Vrije Universiteit', Amsterdam, The Netherlands.

16:56 ***232.*** **Magnetization Transfer Ratio and Mean Diffusivity of Normal-Appearing White and Gray Matter from Patients with MS.**
*M. Cercignani, M. Bozzali, G. Iannucci, G. Comi and M. Filippi.*
University of Milan, Milan, Italy.

17:08 ***233.*** **Interferon b-1b and Intravenous Methylprednisolone Enhance Lesion Recovery In Relapsing Remitting Multiple Sclerosis (RRMS) Patients.**
*N. Richert, J. Ostuni, C. Bash, T. Leist, H. McFarland and J.A. Frank.*
National Institutes of Health, Bethesda, MD, USA.

17:20 ***234.*** **Interferon-b-1b Reduces Development of Black Holes in Secondary Progressive MS.**
*F. Barkhof, J.H.T.M. van Waesberghe, D. Hahn, M. Filippi, D.H. Miller, T. Yousry, L. Kappos and C.H. Polman.*
Vrije Universiteit Academic Hospital, Amsterdam, The Netherlands; San Raffaele Hospital, Milan, Italy; Klinikum Grosshadern, Munich, Germany; Institute of Neurology, London, UK; Ludwig Maximillan Hospital, Wurzburg, Germany and Kantonsspital, Basel, Switzerland.

17:32 ***235.*** **Quantitative $T_1$ Mapping in Multiple Sclerosis Pre and Post Gd CR Administration.**
*W.D. Rooney, F. Telang, L. Krupp, P. Coyle and C.S. Springer.*
Brookhaven National Laboratory, Upton, NY, USA and State University of New York, Stony Brook NY, USA.

17:44 ***236.*** **The Effect of Gadolinium Enhancing Lesions on Whole Brain Atrophy in Relapsing-Remitting Multiple Sclerosis.**
*A.M. Saindane, Y. Ge, J.K. Udupa and R.I. Grossman.*
University of Pennsylvania Medical Center, Philadelphia, PA, USA.

# MR PHYSICS AND TECHNIQUES FOR CLINICIANS:

Room A201
16:00 – 18:00

**Chairs: Frank R. Korosec**
**Joseph C. McGowan**

**Educational Objectives**
Upon completion of this course, participants should be able to:

- Define and describe the fundamental principles of MR imaging, including spin magnetization, the Larmor relationship, relaxation phenomena, and the process of using the spin magnetization to produce an image;
- Explain imaging pulse sequences based upon spin and gradient echoes, including fast spin echo and echo planar techniques;
- Design MR imaging protocols for diagnostic applications considering image contrast, spatial resolution, acquisition time, signal-to-noise ratio, and artifacts;
- Describe the principles and capabilities of various advanced MR techniques including perfusion and diffusion, spectroscopy, interventional MRI, and cardiac MR imaging.

Materials to accompany today's lectures can be found at http://jcmsgi.rad.upenn.edu/jmcgowan/ismr/ismrm.html.

16:00 **Spin Echo Imaging, Including Contrast Enhancement.**
*Paul Tofts.*

16:40 **Gradient Echo Imaging.**
*Frank R. Korosec.*

17:20 **Fast Spin Echo Imaging.**
*Joseph C. McGowan.*

# fMRI Analysis

Room A207
16:00 – 18:00

**Chairs: Anders M. Dale**
**Christoph M. Segebarth**

16:00 ***237.*** **A CBF-Based Event-Related Brain Activation Paradigm: Characterization of Impulse-Response Function and Comparison to BOLD.**
*Y. Yang, W. Engelien, H. Pan, S. Xu, D.A. Silbersweig and E. Stern.*
Cornell University Medical College, New York, NY, USA and Memorial Sloan-Kettering Cancer Center, New York, NY, USA.

16:12 ***238.*** **Temporal Clustering Analysis for Tracing the Maximal fMRI Response in Human Brain.**
*Y. Liu, P.T. Fox, H-L. Liu, J. Mao, M. Matsuda and J.H. Gao.*
University of Texas Health Science Center, San Antonio, TX, USA and University of Florida, Gainesville, FL, USA.

16:24 ***239.*** **Comparison of Temporal Response in Perfusion and BOLD Based Event-Related Functional MRI.**
*H-L. Liu, Y. Pu, L.D. Nickerson, Y. Liu, P.T. Fox and J-H. Gao.*
University of Texas Health Science Center, San Antonio, TX, USA.

16:36 ***240.*** **Optimum Voxel Size in fMRI.**
*J.S. Hyde, B.B. Biswal and A. Jesmanowicz.*
Medical College of Wisconsin, Milwaukee, WI, USA.

16:48 ***241.*** **Functional Connectivity After Removal of Task Related Activation Using Independent Component Analysis.**
*K. Arfanakis, D. Cordes, V.M. Haughton and M.E. Meyerand.*
University of Wisconsin, Madison, WI, USA.

17:00 ***242.*** **Whole-Brain fMRI Activation from a Finger Tapping Task Examined with Independent Component Analysis.**
*C.H. Moritz, D. Cordes, M.E. Meyerand and V.M. Haughton.*
University of Wisconsin, Madison, WI, USA.

17:12 ***243.*** **Sources of Error in the Estimation of Fractional Changes in CBF with Activation Using FAIR, QUIPSS II, and Continuous ASL.**
*W-M. Luh, E.C. Wong, L.R. Frank and R.B Buxton.*
University of California, San Diego, CA, USA.

17:24 ***244.*** **Delineation of Multiple Visual Areas in Humans By Phase-Encoded Retinal Stimulation. Use of a Fast Cortical Flattening Algorithm.**
*J. Warnking, A. Guérin-Dugué, A. Chéhikian, S. Olympieff, M. Dojat and C. Segebarth.*
Université Joseph Fourier and Institut National Polytechnique de Grenoble, Grenoble, France.

17:36 ***245.*** **Comparing Silent and Overt Speech Using fMRI: Head Motion, Articulatory Motion, and Cortical Activation.**
*J. Huang, T.H. Carr and Y. Cao.*
Michigan State University, East Lansing, MI, USA.

17:48 ***246.*** **Real-Time Detrending of Physiological Noise from fMRI Data.**
*L.P. Panych, S-S. Yoo and G.P. Zientara.*
Brigham and Women's Hospital, Boston MA, USA and Massachusetts Institute of Technology, Cambridge MA, USA.

# Tumor Animal Models: MR Imaging and MR Spectroscopy

Room C106
16:00 – 18:00

**Chairs: Stephen R. Williams**
**Natarajan Raghunand**

16:00 ***247.*** **High Resolution *In Vivo* Imaging of Transgene Expression.**
*R. Bhorade, A. Moore, H. Benveniste and R. Weissleder.*
Massachusetts General Hospital, Harvard Medical School, Boston, MA, USA and Duke University Medical Center, Durham, NC, USA.

16:12 ***248.*** **Prolonged $T_1\rho$ Relaxation Time Shows Early Tissue Response in Apoptotic Cell Death Induced by Gene Therapy.**
*J.M. Hakumäki, O.H.J. Gröhn, K. Tyynelä, S. Ylä-Herttuala and R.A. Kauppinen.*
University of Kuopio and Kuopio University Hospital, Kuopio, Finland.

16:24 ***249.*** ***In Vivo* $^{19}$F NMR Measurements of Enhanced Conversion of 5FU to Fluoronucleotides After UPRT Gene Transduction.**
*J.A. Koutcher, C. Matei, M. Dubrovin, K. Zakian, M. Sadelain and J. Tjuvajev.*
Memorial Sloan-Kettering Cancer Center, New York, NY, USA.

16:36 ***250.*** **Gd-Encapsulating Anti-HER2 Immunoliposomes for MR Monitoring of Targeted Drug Delivery.**
*L.J. Wilmes, R. Shalaby, K. Hong, M.F. Wendland, C. Klifa, J. Park, M. Saeed and N.M. Hylton.*
University of California, San Francisco, CA, USA.

16:48 ***251.*** **Monitoring the Effects of Chemotherapy by $^{31}$P and TQF$^{23}$Na NMR.**
*P.M. Winter, H. Poptani and N. Bansal.*
University of Pennsylvania, Philadelphia, PA, USA.

17:00 ***252.*** **Non-Metastatic and Metastatic Rodent Prostate Tumors Are Distinguished Using High Spectral and Spatial Resolution MRI and an Iron Oxide Contrast Agent.**
*X. Fan, J.N. River, M. Zamora, H.A. Al-Hallaq, C. Rinker-Schaeffer, K. Quanstrom and G.S. Karczmar.*
University of Chicago, Chicago, IL, USA.

17:12 ***253.*** **Hierarchical Contribution of Hepatic Intracellular Alkalinization Sytems during Chemical Carcinogenesis.**
*M.L. García-Martín, M.A. García-Espinosa and S. Cerdán.*
Instituto de Investigaciones Biomédes "Alberto Sols" CSIC-UAM, Madrid, Spain.

17:24 ***254.*** **Measurements of Tumor Oxygen Tension by Dynamic Contrast Enhanced MRI.**
*Z. Wang, M-Y. Su and O. Nalcioglu.*
University of California, Irvine, CA, USA.

17:36 ***255.*** ***In Vivo* Oxygen Tension Mapping of RIF-1 Tumors via Fluorine-19 NMR During 5-Fluorouracil Chemotherapeutic Intervention.**
*M.R. Meiler, C.H. Sotak and K.G. Helmer.*
Worcester Polytechnic Institute, Worcester, MA, USA and University of Massachusetts Medical School, Worcester, MA, USA.

17:48 ***256.*** **Spatial Matching of Metabolic Ratios, as Probed by $^{1}$H-CSI, with Hypoxia in 9L-Gliomas.**
*B.P.J. van der Sanden, T.H. Rozijn, P.F.J.W. Rijken, H.P.W. Peters, A. Heerschap, A.J. van der Kogel and W.M.M.J. Bovée.*
Academic Hospital, Nijmegen, the Netherlands and Delft University of Technology, Delft, the Netherlands.

# Coronary Artery Imaging

Room C205
16:00 – 18:00

**Chairs: Andre Duerinckx**
**Zahi Adel Fayad**

16:00 ***257.*** **High Resolution *In Vivo* Imaging of Atherosclerotic Plaques with a New Intravascular Coil.**
*M. Shinnar, S.G. Worthley, G. Helft, L.A. Minkoff, Z.A. Fayad, J.J. Badimon and V. Fuster.*
Mount Sinai Medical Center, New York, NY, USA and Magna Lab, New York, NY, USA.

16:12 ***258.*** **Noninvasive *In vivo* Human Coronary Artery Lumen and Wall Imaging Using Black Blood MR.**
*Z.A. Fayad, V. Fuster, J.T. Fallon, S.G. Worthley, G. Helft, J.G. Aguinaldo, J.J. Badimon and S. Sharma.*
Mount Sinai School of Medicine, New York, NY, USA.

16:24 ***259.*** ***In Vivo* Imaging of Coronary Artery Wall in Humans Using Navigator and Free-Breathing.**
*R.M. Botnar, M. Stuber, K.V. Kissinger and W.J. Manning.*
Beth Israel Deaconess Medical Center & Harvard Medical School, Boston, MA, USA and Philips Medical System, Best, the Netherlands.

16:36 ***260.*** **Coronary Vessel Wall MR Imaging: Initial Experience.**
*J. Zheng, D. Li, J.P. Finn, O. Simonetti and F.M. Cavagna.*
Bracco, S.p.A. Milan, Italy; Northwestern University and Siemens Medical Systems, Chicago, IL, USA.

16:48 ***261.*** **Fast Spin-Echo Black-Blood Coronary MRA.**
*M. Stuber, R.M. Botnar, K.V. Kissinger and W.J. Manning.*
Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, MA, USA and Philips Medical Systems, Best, the Netherlands.

17:00 ***262.*** **3D Coronary Artery Imaging with Multiple Breath-Holds and Real-Time Adaptive Positive Correction.**
*S.M. Shea, R. Kroeker, V. Deshpande, G. Laub, J. Zheng, J.P. Finn and D. Li.*
Northwestern University, Siemens Medical Systems, and Bracco Diagnostics, Chicago, IL, USA.

17:12 ***263.*** **Improved MRI Assessment of Coronary Artery Flow: Prospective Real-Time Correction for Through-Plane Motion.**
*P. Kunz, H.J. Lamb, S. Kozerke, P. Boesiger, J. Doornbos and A. de Roos.*
Leiden University Medical Center, Leiden, The Netherlands and University and ETH, Zurich, Switzerland.

17:24 ***264.*** **Automated Mapping of Vessel Trajectories for Improved Tracking in Coronary MR Angiography.**
*M. Saranathan, C.J. Hardy and T.K.F. Foo.*
General Electric Medical System, Waukesha, WI, USA and General Electric Corporate Research and Development, Schenectady, NY, USA.

17:36 ***265.*** **Improvement of MR Coronary Angiography in Patients Using the New Blood Pool Contrast Agent Clariscan™.**
*M.B.M. Hofman, W.L.F. Bedaux, P.A. Wielopolski, A. Lehning, M. Oudkerk, P.J. de Feyter, C.A. Visser and A.C. van Rossum.*
University Hospital Vrije Universiteit, Amsterdam, The Netherlands and University Hospital, Rotterdam, The Netherlands and Nycomed Amersham Imaging, Munich, Germany.

17:48 ***266.*** **High Resolution Breath-Hold Volume Targeted 3D Magnetic Resonance Coronary Angiography Using Multi-shot Segmented EPI in a Dedicated Cardiac Scanner.**
*PA. Wielopolski, F. Schmitt, R.J. van Geuns, P.J. de Feyter and M. Oudkerk.*
University Hospital, Rotterdam, The Netherlands and Siemens Medical Systems, Erlangen, Germany.

# New Sequences and Reconstruction Methods

Room C209
16:00 – 18:00

**Chairs: Richard L. Ehman**
**R. Scott Hinks**

16:00 ***267.*** **A Double Quantum fMRI Study of Motor Activation Using a Single-Shot Spiral Data Acquisition at 4T.**
*T.Q. Li, S. Ann, L. Bouchard, R.R. Rizi, M.D. Schnall, J. Cohen and W.S. Warren.*
Princeton University, Princeton, NJ, USA and University of Pennsylvania Medical Center, Philadelphia, PA, USA.

16:12 ***268.*** **Mapping the Absolute Value of $M_0$ Using Dipolar Field Effects.**
*S. Gutteridge, C. Ramanathan and R. Bowtell.*
University of Nottingham, Notthingham, UK.

16:24 ***269.*** **Reconstruction of Projections Using an Opto-Electronic Processor.**
*L. Dougherty, H.K. Song, J. LaFuse and T. Turpin.*
Hospital of the University of Pennsylvania, Philadelphia, PA, USA and Essex Corporation, Columbia, MD, USA.

16:36 ***270.*** **Dynamic Imaging with Multiple Resolutions Along Phase-Encode and Slice-Select Dimensions.**
*L.P. Panych, L. Zhao, S-S. Yoo and R.V. Mulkern.*
Brigham and Women's Hospital and Children's Hospital, Boston MA, USA and Massachusetts Institute of Technology, Cambridge MA, USA.

16:48 ***271.*** **Tradeoff of SNR and Time by Conjugation in Multiband Encoding.**
*C.H. Cunningham and M.L. Wood.*
Sunnybrook and Women's Health Sciences Centre and University of Toronto, Toronto, Ontario, Canada.

17:00 ***272.*** **A Generalized Basis Approach to Spatial Encoding with Coil Arrays: SMASH-SENSE Hybrids and Improved Parallel MRI at High Accelerations.**
*D.K. Sodickson.*
Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, MA, USA.

17:12 ***273.*** **Partially Parallel Imaging with Localized Sensitivities (PILS).**
*M.A. Griswold, P.M. Jakob, M. Nittka, J.W. Goldfarb and A. Haase.*
University of Würzburg, Würzburg, Germany and University Hospital Nijmegen, Nijmegen Netherlands.

17:24 ***274.*** **Variable Density AUTO-SMASH Imaging.**
*R. Heidemann, M. Griswold, A. Haase and P.M. Jakob.*
Universität Würzburg, Würzburg, Germany.

17:36 ***275.*** **Optimisation of SMASH Image Reconstructions for Robust *In Vivo* Imaging.**
*C.A. McKenzie and D.K. Sodickson.*
Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, MA, USA.

17:48 ***276.*** **A Gridding Approach for Sensitivity Encoding with Arbitrary Trajectories.**
*K.P. Pruessmann, M. Weiger, P. Boernert and P. Boesiger.*
University and ETH Zurich, Zurich, Switzerland and Philips Research, Hamburg, Germany.

## CORPORATE FORUM:
## Disease Management: Implications for Industry

Room A207
18:15 – 19:45

**Chair: Jeffrey C. Weinreb**

# STUDY GROUP:
# MR in Drug Research

Room A102
19:30 – 21:30

**Business Meeting**

**Agenda TBA**

**Scientific Meeting**

**Speakers TBA**

- **Overview: Goals of the Study Group**
- **The FDA Perspective**
- **The Industry Perspective**
- **The Investigator Perspective**
- **Discussion**

# STUDY GROUP:
# High Field Systems & Applications

Room A108
19:30 – 21:30

**Business Meeting**

- **Welcome**
  *Douglas A.C. Kelley, Chair*
  Massachusetts General Hospital, Boston, MA, USA
- **Nominations for the Executive Committee**
  *Gary H. Glover, Secretary*
  Stanford University, Stanford, CA, USA

**Scientific Meeting**

- **Regulatory Status of High Field Systems**
  *Daniel J. Schaeffer*
  GE Medical Systems, Milwaukee, WI, USA
- **Discussion:** Future Directions for High Field Systems and Applications
  Moderator: *Kamil Ugurbil***,** University of Minnesota, Minneapolis, MN, USA
  - Magnet Technology for High Field Systems
    *John Bird*
    Magnex Scientific, Ltd., England, UK
  - Gradient Technology for High Field Systems
    *Franz Schmitt*
    Siemens Medical Systems, Erlangen, Germany
  - RF Technology for High Field Systems
    *Jeffrey R. Fitzsimmons*
    University of Florida, Gainesville, FL, USA
  - Clinical Applications of High Field Systems
    *Matt A. Bernstein*
    Mayo Clinic, Rochester, MN, USA
  - Animal Research Using High Field Systems
    *Stephen J. Blackband*
    University of Florida, Gainesville, FL, USA
  - Human Research Using High Field Systems
    *Rolf Gruetter*
    *University of Minnesota, Minneapolis, MN, USA*
- **Discussion**

# STUDY GROUP:
# Diffusion & Perfusion MR

Room A201
19:30 – 21:30

**Business Meeting**

**Welcome**

**Chair: Mathias Hoehn**

**Report on the Progress of the Study Group (membership, etc.)**
*Michael E. Moseley*
Secretary

**Call for Nominations for 2001 Governing Committee Ballot**
*Mathias Hoehn*
Chair

**New Business**

**Scientific Meeting**

**Chair: David G. Norris, Program Director**

**Anatomical Connectivity Studies: A New Application for DTI?**
*Susumu M. Mori*
Johns Hopkins School of Medicine, Baltimore, MD, USA

**Clinical Utility/Update of Modern Tagging Procedures**
*Eric C. Wong*
UCSD Thornton Hospital, La Jolla, CA, USA

**DWI/PWI for Clinical Stroke Trials: Progress Update**
*Steven Warach*
National Institutes of Health, Bethesda, MD, USA

# STUDY GROUP:
# Musculoskeletal MR

Room C106
19:30 – 21:30

**Business Meeting**

- **Reading of Charter**
- **Introduction of Officers**
- **Nominations for 2001 Officers**
- **Discussion of General Purpose of the Study Group**

**Scientific Meeting**

**Controversies in Cartilage Imaging**

**Is There Any Optimal Cartilage Pulse Sequence?**
*Thomas R. McCauley*
Yale University School of Medicine, New Haven, CT, USA

**Is There Any Clinical Applicability or Clinical Research Applicability to New Pulse Sequences? How Much Clinical Utility?**
*Sharmila Majumdar*
University of California, San Francisco, CA, USA

**Utilizing Radiology, Particularly MR Imaging in Clinical Trials.**
*Philipp Lang*
Stanford University, Stanford, CA, USA

**Potential Uses of MR Imaging in Research Studies on Surgical Approaches to Cartilage Loss and Defects**
*Carl S. Winalski*
Brigham and Women's Hospital, Boston, MA, USA

**Evaluation of Early Cartilage Loss with Intravenous Gadolium**
*Adil Bashir*
Beth Israel Deaconess Medical Center, Boston, MA, USA

**Counterpoint: Your Evaluation of Early Cartilage Loss with Intraarticular Gadolinium.**
*Jürg Hodler*
University of Zürich, Zürich, Switzerland

**Virtual Arthroscopy**
*Christopher F. Beaulieu*
Stanford University Medical Center, Stanford, CA, USA

# MORNING CATEGORICAL COURSE
# Cardiac MR Imaging

Room C205
07:00 – 08:00

**Chairs: Andre Duerinckx**
**Cynthia B. Paschal**
**Roderic I. Pettigrew**

**Educational Objectives**
Upon completion of this course, participants should be able to:

- Describe basic areas of routine and promising clinical use of MR in assessing cardiovascular disease;
- Describe basic areas of MR use which are both routine and promising in assessing cardiovascular disease;
- Explain the MR methodology and techniques used to assess acquired and congenital heart disease;
- Apply MR protocols for the evaluation of cardiac morphology, function, viability and blood flow;
- Describe approaches for cardiac data analysis and presentation.

*The final five minutes of each talk will be reserved for questions.*

07:00 **Cardiac Flow Measurement Methods.**
*David N. Firmin.*

07:30 **Adult Cardiac MR.**
*Pamela K. Woodard.*

# MORNING CATEGORICAL COURSE
# fMRI in Neuro-Psychiatric Disease and Treatment: fMRI of Focal Neurological Disorders

Room A201
07:00 – 08:00

**Chairs: Linda Chang**
**John A. Detre**

**Educational Objectives**
Upon completion of this course, participants should be able to:

- Identify the special issues facing clinicians and researchers who wish to apply functional MRI to patient populations;
- Describe fMRI studies that have been successfully accomplished in neurological and psychiatric disorders;
- List a number of issues that remain to be resolved before widespread use of fMRI in patient populations is feasible;
- Describe the role and potential of animal models in increasing the understanding of fMRI studies in disease;
- Explain the principles and theory of pharmacological (ph) MRI;
- Appraise the potential for phMRI in humans and predict the impact on disease treatment.

07:00 **Stroke.**
*Steven C. Cramer.*

07:15 **Pre-Surgical Planning in Tumor Surgery.**
*Victor M. Haughton.*

07:30 **Epilepsy.**
*Mark R. Symms.*

07:45 **Discussion.**

# MORNING CATEGORICAL COURSE
## Abdominal Imaging

Room A207
07:00 – 08:00

**Chair: Donald G. Mitchell**

**Educational Objectives**
Upon completion of this course, participants should be able to:

- Implement modern MR applications for diagnosing focal and diffuse liver disease;
- Incorporate into their practices recent developments for MR imaging of the pancreas and biliary tract, including MR cholangiopancreatography;
- Use MRI to diagnose extrahepatic disease, such as that of the bowel and peritoneum, as well as vascular disease using state of the art MR angiographic techniques.

07:00 **MRCP Pancreas.**
*Myeong-Jin Kim.*

07:50 **Questions.**

# MORNING CATEGORICAL COURSE
## The Nano-Meter Film: How MRS and MRI Can Probe Tissue Microstructure

Room C106
07:00 – 08:00

**Chairs: Chris Boesch**
**R. Mark Henkelman**

**Educational Objectives**
Upon completion of this course, participants should be able to:

- Describe methods in MRS and MRI that allow studies of tissue ultra-structure;
- Identify areas in which MR can contribute to the knowledge of tissue organization;
- Evaluate potential applications and limitations of MR methods to study compartmentation, order, and transport processes *in vivo;*
- Generate an overview of advanced methods in MRS and MRI that give information on the nanometer scale;
- Explain the influence of tissue structure upon MR parameters.

*The final five minutes of each talk will be set aside for questions.*

07:00 **Magnetization Transfer MRI.**
*R. Mark Henkelman.*

07:30 **Magnetization Transfer MRS.**
*Dieter Leibfritz and Wolfgang Dreher.*

08:00 **Adjournment.**

# PLENARY LECTURES
## Genetic Diseases: Diagnosis and Treatment

Ballroom
08:15 – 09:30

**Chairs: Linda Chang**
**Arend Heerschap**

**Educational Objectives**
Upon completion of this session, participants should be able to:

- Describe the role of imaging methods in general in the diagnosis and treatment evaluation of genetic diseases.
- Identify MRI and MRS parameters of particular usefulness to characterize inherited metabolic brain diseases.
- Describe some cases of these diseases where unambiguous diagnosis is possible on the basis of MRI and/or MRS approaches.
- Explain how the study of transgenic animals with missing or modified proteins may help understand the nature of genetic diseases.
- Describe what the potentials of MR are to characterize the phenotype of these animals.

08:15 ***277.*** **Interfaces of Genetic Diagnosis and Treatment with Imaging Methods.**
*Arthur S. Beaudet.*
Baylor College of Medicine, Houston, TX, USA.

08:40 ***278.*** **MRI and MRS of Genetic Brain Diseases.**
*Marjo S. van der Knaap.*
Free University Hospital, Amsterdam, The Netherlands.

09:05 ***279.*** **The Role of Magnetic Resonance in Transgenic Animal Models.**
*Alan Koretsky.*
National Institutes of Health, Bethesda, MD, USA.

# Perfusion/Diffusion Studies of Cerebral Ischemia: Animal Models

Room A102
10:30 – 12:30

**Chairs: Mathias Hoehn**
**Peter van Zijl**

10:30 ***280.*** **Mismatch Between Infarct Size and Functional Deficit in Rat Middle Cerebral Artery Occlusion Model of Stroke: Cytoprotective Treatment Does Not Preserve Brain Function.**
*T. Reese, R. Pórszász, D. Baumann, D. Bochelen, A. Sauter and M. Rudin.*
Novartis Pharma AG, Basel, Switzerland.

10:42 ***281.*** **Early Detection of Irreversible Cerebral Ischemia Using Dispersion of MRI Relaxation Time $T_1 r$ .**
*O.H.J. Gröhn, M.I. Kettunen, H.I. Mäkelä, J.A. Lukkarinen and R.A. Kauppinen.*
University of Kuopio, Kuopio, Finland.

10:54 ***282.*** **Functional MRI of Reorganization in Rat Brain After Stroke.**
*R.M. Dijkhuizen, J.M. Ren, J.B. Mandeville, J.J.A. Marota, O. Wu, B.R. Rosen and S.P. Finklestein.*
Massachusetts General Hospital, Harvard Medical School, Charlestown, MA, USA and Massachusetts General Hospital, Harvard Medical School, Boston, MA, USA.

11:06 ***283.*** **Blood-Brain Barrier Permeability to Gadolinium and Horseradish Peroxidase after Spontaneous Reperfusion in the Starch Microsphere Model of Ischemia.**
*N.G. Harris, V. Gauden, P.A. Fraser, S.R. Williams and G.J.M. Parker.*
University of Cambridge, Cambridge, UK;Kings College London, London, UK; University of Manchester, Manchester UK and Institute of Neurology, London, UK.

11:18 ***284.*** **Risk of Hemorrhagic Transformation After Thrombolytic Therapy of Clot Embolism: An MRI Investigation In the Rat.**
*C. Franke, G. Brinker, F. Pillekamp, U. Uhlenküken, K-A. Hossmann and M. Hoehn.*
Max-Planck-Institute for Neurological Research, Cologne, Germany.

11:30 ***285.*** **Diffusion-Perfusion MRI and X-Ray Angiography of rt-PA Treatment in Rats: Dependence of Stroke Volume on Recanalisation.**
*C. Beaulieu, E. Busch, A. de Crespigny, F. Wiegand and M. Moseley.*
Stanford University, Stanford, CA, USA; University of Alberta, Edmonton, Alberta, Canada and Neurologische Universitaetsklinik, Essen, Germany.

11:42 ***286.*** **Mild Hypothermia Attenuates C-fos and Hsp70 mRNA Expression and Transient Water ADC Reduction during Permanent Focal Ischemia in Rats.**
*A. Mancuso, N. Derugin, K. Hara, F.R. Sharp and P.R. Weinstein.*
University of California and Department of Veterans Affairs Medical Center, San Francisco, CA, USA.

11:54 ***287.*** **Effect of Erythropoietin Overexpression to Cerebral Blood Flow and Focal Ischemic Brain Lesion as Measured by MRI.**
*P.R. Allegrini, D. Ekatodramis, M. Gassmann and C. Wiessner.*
Novartis Pharma Ltd, Basel, Switzerland and University of Zürich-Irchel, Zürich, Switzerland.

12:06 ***288.*** **Region-Specific Increases in Cerebral Blood Flow in Response to Systemic Hypotension Induced via a Ganglionic Blocking Agent: Time Course Study Using Arterial Spin Labelling.**
*M.F. Lythgoe, D.L. Thomas, I. Dean, W.S. Peart, R.J. Ordidge and D.G. Gadian.*
University College London Medical School and University College London, London, UK.

12:18 ***289.*** **$^{23}$Na MRI for the Detection of Dead Tissue Following Temporary Focal Cerebral Ischemia.**
*S-P. Lin, S-K. Song, J.J.H. Ackerman and J.J. Neil.*
Washington University, St. Louis, MO, USA.

# MRS and MRI of Brain Degeneration and Disorders

Room A108
10:30 – 12:30

**Chairs: Dorothee P. Auer**
**Brian D. Ross**

10:30 ***290.*** **Volumes of Entorhinal Cortex and Hippocampus in Mild Cognitive Impairment and Alzheimer's Disease.**
*A.T. Du, N. Schuff, D. Amend, Y.Y. Hsu, M.P. Laakso, K. Yaffe and M.W. Weiner.*
DVA Medical Center, University of California, San Francisco, CA, USA; Chang Gung Memorial Hospital, Taiwan and University of Kuopio, Kuopio, Finland.

10:42 ***291.*** **Entorhinal Cortex Volume Asymmetry May Signal Higher Risk for Alzheimer's Disease.**
*F.M. Lalonde, M. Myslobodsky, C. Small, F. Gwadry and T. Sunderland.*
National Institutes of Health, Bethesda, MD, USA.

10:54 ***292.*** **Differentiating Alzheimer's Diseases Using Artificial Neural Network Analysis of *In Vivo* Proton Spectroscopy.**
*B.S. Qiu, W.M. An, Q. Tong, Y.G. Gao, Y.Q. Cai, L.Q. Cheng, X. Ma and J-M. Zhu.*
PLA General Hospital, Beijing, China; GE Medical Systems, Beijing, China and GE Medical Systems, Milwaukee, WI, USA.

11:06 ***293.*** **Longitudinal Decline of NA in Alzheimer's Disease.**
*E. Adalsteinsson, E.V. Sullivan, N. Kleinhans, D.M. Spielman and A. Pfefferbaum.*
Stanford University, Stanford, CA, USA and SRI International, Menlo Park, CA, USA.

11:18 ***294.*** **Hippocampal NAA Differences Despite Similar Atrophy Between Subcortical Ischemic Vascular Dementia and Alzheimer's Disease.**
*N. Schuff, A.T. Du, T. Greenfield, D. Amend, D. Norman, H. Chui and M.W. Weiner.*
DVA Medical Center and University of California, San Francisco CA, USA and University of Southern California, Los Angeles, CA, USA.

11:30 ***295.*** **Vascular Dementia: Non-Invasive Assay of Pathologic Neurochemistry and Improved Diagnosis Using Proton NMR Spectroscopy ($^{1}$H MRS).**
*S. Herminghaus, C. Gorriz, U. Pilatus, H. Lanfermann, L. Frölich and F.E. Zanella.*
University of Frankfurt/Main, Frankfurt, Germany.

11:42 ***296.*** **Cognitive Dysfunction Lateralizes with NAA in Multiple Sclerosis.**
*J.W. Pan, L.B. Krupp, L. Elkins and P.K. Coyle.*
Brookhaven National Laboratory, Upton, NY, USA and State University of New York, Stony Brook, NY, USA.

11:54 ***297.*** **Disease Duration Influences the Relationship Between Brain Axonal Injury, Spinal Cord Atrophy and Disability in Multiple Sclerosis.**
*S. Narayanan, N. De Stefano, S. Francis, M.C. Tartaglia, R. Arnaoutelis and D.L. Arnold.*
Montreal Neurological Institute, Montreal, Quebec, Canada and University of Siena, Siena, Italy.

12:06 ***298.*** **$^{13}$C MRS Further Specifies Biochemical Abnormalities Detected by $^{1}$H MRS in Human Brain.**
*S. Blüml, A. Moreno, J-H. Hwang and B.D. Ross.*
Huntington Medical Research Institutes, Pasadena, CA, USA and Rudi Schulte Research Institutes, Santa Barbara, CA, USA.

12:18 ***299.*** **Recommendations for Brain Phenylalanine Levels in Adult Individuals with Phenylketonuria.**
*R.A. Moats, A. Stern, R. Koch and M.D. Nelson, Jr.*
Childrens Hospital Los Angeles, Los Angeles, CA, USA.

# CLINICAL CATEGORICAL: Musculoskeletal MRI, Session II

Ballroom
10:30 – 12:30

**Chairs: Christopher F. Beaulieu**
**Lynne S. Steinbach**

**Educational Objectives**
Upon completion of this course, participants should be able to:

- Select appropriate MR pulse sequences for evaluation of articular cartilage abnormalities;
- Recognize MR imaging findings in articular cartilage injury and apply them to the interpretation of clinical studies;
- Describe areas of active clinical research in articular cartilage imaging and quantitative evaluation;
- Define the role of contrast media in analyzing internal derangements of joints, including both indirect and direct MR arthrography;
- Assess the value of high resolution, non-contrast MR imaging of joints;
- Identify clinical situations in which intravenous contrast medium may be useful in evaluation of the synovium.

10:30 **Intra-Articular MR Arthrography.**
*William E. Palmer.*

10:55 **Indirect MR Arthrography with Intravenous Gadolinium.**
*Mark Schweitzer.*

11:20 **Assessment of Synovial Inflammation with Intravenous Gadolinium.**
*Mikkel Østergaard.*

11:45 **High Resolution, Non-Contrast MR Imaging.**
*Hollis G. Potter.*

12:10 **Discussion.**

# CLINICAL CATEGORICAL:
# MR Contrast Media

Room A201
10:30 – 12:30

**Chair: Val M. Runge**

**Educational Objectives**
Upon completion of this course, participants should be able to:

- List the different contrast media currently approved for MR;
- Describe the safety profile for each agent;
- List common known adverse reactions;
- Explain the clinical indications for each agent;
- Select appropriate imaging techniques;
- List the current areas of application of contrast enhanced MRA;
- Recommend new applications to referring clinicians;
- Identify the principal areas of application of MR contrast media in clinical practice.

10:30 **Approved Agents, Safety, and Efficacy.**
*Val M. Runge.*

10:55 **Review of CNS Indications.**
*Val M. Runge.*

11:20 **Contrast-enhanced MRA.**
*Michael V. Knopp.*

11:45 **Review of Body Indications.**
*Michael V. Knopp.*

# Rapid Imaging II

Room A207
10:30 – 12:30

**Chairs: Axel Haase**
**Dwight G. Nishimura**

10:30 ***300.*** ***Young Investigator Awards Finalist:*** **Interactive Fast Spin Echo Imaging.**
*R.F. Busse, S.J. Riederer, J.G. Fletcher, A.E. Bharucha and K.R. Brandt.*
Mayo Clinic, Rochester, MN, USA.

10:50 ***301.*** **Analysis and Reduction of the Transient Response in SSFP Imaging.**
*D.G. Nishimura and S. Vasanawala.*
Stanford University, Stanford, CA, USA.

11:02 ***302.*** **RARE/EPI MR-CAT SCAN.**
*C. Hillenbrand, D. Hahn, A. Haase and P.M. Jakob.*
Universität Würzburg, Würzburg, Germany.

11:14 ***303.*** **Reversed Spiral Imaging for Increased $T_2$* Contrast.**
*P. Börnert, B. Aldefeld and H. Eggers.*
Philips Research Laboratories, Hamburg, Germany.

11:26 ***304.*** **Design of Archimedean and Logarithmic Spiral K-Space Trajectories.**
*H.E. Cline, X. Zong and N. Gai.*
GE Corporate Research and Development, Schennectady, NY, USA and GE Medical Systems, Milwaukee, WI, USA.

11:38 ***305.*** **An Optimized Distortion Correction Technique for Echo Planar Imaging.**
*N-K. Chen and A.M. Wyrwicz.*
Northwestern University, Evanston, IL, USA.

11:50 ***306.*** **Reduction of Susceptibility Artifacts in MRI Using Narrowband Excitation.**
*J.H. Duyn and P. van Gelderen.*
National Institutes of Health, Bethesda, MD, USA.

12:02 ***307.*** **Doubly Refocused Split-Echo UFLARE: Single Shot Imaging in the Presence of Susceptibility Gradients.**
*G.J. Barker.*
University College London, London, UK.

12:14 ***308.*** **Evaluating Left Ventricular Function Using Real-Time TrueFISP: A Comparison with Conventional MR Techniques.**
*W. Fang, F.S. Pereles, J. Bundy, R. Kim, E. Wu, O. Simonetti and P. Finn.*
Northwestern University and Siemens Medical Systems, Chicago IL, USA.

12:26 ***309.*** **Breath Hold 3D Perfusion and Permeability Mapping in the Abdomen Using a Novel Ultrafast First-Pass Leakage-Profile Model.**
*X.P. Zhu, K.L. Li, J.M. Hawnaur, J.C. Waterton, Y. Watson, P. Taylor and A. Jackson.*
University of Manchester, Manchester, UK and AstraZeneca, Macclesfield, Cheshire, UK.

# Myocardial Viability: Basic Science

Room C106
10:30 – 12:30

**Chairs: Robert M. Judd**
**Maythem Saeed**

10:30 ***310.*** **Simultaneously Monitoring Gd-DTPA-Induced $T_1$ and $T_2$* Signal Intensities Helps Assess Myocardial Viability.**
*J. Mark, G. Dai, B. Xiang, J. Sun, J. Shen, N. Lazarow, W.G. Lindsay, R. Deslauriers and G. Tian.*
National Research Council, Winnipeg, Manitoba, Canada; Dayton VA Medical Center, Dayton, OH, USA and University of Manitoba, Winnipeg, Manitoba Canada.

10:42 ***311.*** **Determining Myocardial Viability in a Chronic Occlusion Canine Model Using MRI with a Constant Infusion of Gd-DTPA.**
*K.S. Lekx, R.S. Pereira, F.S. Prato, J. Sykes and G. Wisenberg.*
Lawson Research Institute and St. Joseph's Health Centre, London, Ontario, Canada.

10:54 ***312.*** **The Gd-DTPA Partition Coefficient is Elevated in Chronical Infarction in Humans.**
*S. Flacke, S.E. Fischer and C.H. Lorenz.*
Barnes-Jewish Hospital at Washington University Medical Center, St. Louis, MO, USA and Philips Medical Systems, Best, The Netherlands.

11:06 ***313.*** **Dobutamine-stress MRI of the Heart in Cardiac-Specific VEGF Knock-Out Mice.**
*S-P. Williams, H. Gerber, H. Steinmetz, J. Hoeffel, F. Giordano, P. Ruiz-Lozano, K. Chien, N. Ferrara, S. Bunting and N. van Bruggen.*
Genentech, Inc., South San Francisco, CA, USA and University of California at San Diego, La Jolla, CA, USA.

11:18 ***314.*** **Intraventricular Dispersion and Temporal Delay of Early Left Ventricular Filling After Acute Myocardial Infarction. Assessment by Magnetic Resonance Velocity Mapping.**
*K. Houlind, P. Schroeder, H. Stødkilde-Jørgensen, P.K. Paulsen, H. Egeblad and E.M. Pedersen.*
Aarhus University Hospital, Aarhus, Denmark.

11:30 ***315.*** **MRI Assessment of Myocardial Blood Volume Changes During Hypoxia and Adenosine Challenge Using Steady-State Contrast Agent MION.**
*B.P. Poncelet, T.G. Reese, J.B. Mandeville, J. Titus, C.J. Choi, R. Millea, P. Ledden, R. Weissleder, B.R. Rosen, T.J. Brady, H.L. Kantor and R.M. Weisskoff.*
Massachusetts General Hospital, Charlestown, MA, USA and CIMIT, Boston, MA, USA.

11:42 ***316.*** **Manganese MRI Enhancement of the Mouse Heart During Dobutamine Inotropy.**
*T.C.-C. Hu, R.G. Pautler, G.A. MacGowan and A.P. Koretsky.*
Carnegie Mellon University, Pittsburgh, PA, USA; University of Pittsburgh Medical School, Pittsburgh, PA, USA and National Institutes of Health, Bethesda, MD, USA.

11:54 ***317.*** **Simultaneous Assessment of Myocardial Function and Tissue Characterization in a Canine Infarct Model Using MTC.**
*C.R. Weiss, A.H. Aletras, J.F. London, J.L. Taylor, R. Wassmuth, R.S. Balaban and A.E. Arai.*
National Institutes of Health, Bethesda, MD, USA.

12:06 ***318.*** **Longitudinal Evaluation of LV Remodeling with MRI After Myocardial Infarction in the Rat: Quantification of Efficacy of ACE-Inhibition.**
*C.H. Lorenz, K.J. Lunn, J.S. Allen, R.M. Setser, D.L. Davis, M.J. Scott and S.A. Wickline.*
Barnes-Jewish Hospital, Washington University School of Medicine, St. Louis, MO, USA.

12:18 ***319.*** **$T_1$ Reduced Properties of Methaemoglobin: Application to Direct MR Thrombus Imaging.**
*A.R. Moody, P. Morgan, D. Fraser and B.J. Hunt.*
Nottingham University, Nottingham, UK.

# fMRI: Clinical Disorders

Room C205
10:30 – 12:30

**Chairs: Keith R. Thulborn**
**Steven C. Cramer**

10:30 ***320.*** **Comparison of the Sensitivity Between Functional Connectivity Method and Structural Volume Measurements in Alzheimer's Disease.**
*Z. Li, G. Wu, X. Zhao, P. Antuono, J. Jones and S. Li.*
Medical College of Wisconsin, Milwaukee, WI, USA.

10:42 ***321.*** **Quantitative fMRI of the Visual Cortex as a Function of Luminance Contrast: Initial Findings in Normals and Multiple Sclerosis Patients.**
*S.H. Faro, F.B. Mohamed, J.I. Tracy, R. Elfont, F. Lublin, A. Pinus, R. Koenigsberg and F. Tsai.*
MCP Hahnemann University, Philadelphia, PA, USA.

10:54 ***322.*** **Brain Activation During a Motor Task in Amyotrophic Lateral Sclerosis.**
*J.C. Gatenby, W.D. Rooney, D. Gelinas, R.G. Miller and M.W. Weiner.*
Yale University School of Medicine, New Haven, CT, USA; Brookhaven National Laboratory, Upton, NY, USA and University of California, San Francisco, CA, USA.

11:06 ***323.*** **fMRI Mapping of Language Processing: Comparison with Wada Testing and Cortical Stimulation.**
*R.T. Constable, A.C. Carpentier, K.R. Pugh, C. Studholme, O. Skrinjar and D.D. Spencer.*
Yale University School of Medicine, New Haven, CT, USA.

11:18 ***324.*** **Reorganisation of Sensorimotor Function in Children Following Vascular Damage to the Middle Cerebral Artery Territory: An fMRI and Somatosensory Evoked Potential Study.**
*V. Holloway, D.G. Gadian, F. Vargha-Khadem, D.A. Porter, S.G. Boyd and A. Connelly.*
University College London Medical School and Great Ormond Street Hospital for Children, London, UK.

11:30 ***325.*** **Involuntary Responses to Auditory Rhythms with Single Event fMRI: A Clinical Tool for Assessing Memory and Attention Pathways.**
*D.K. Shibata, J. Zhong, E. Kwok, D.A. Shrier, H.Z. Wang and Y. Numaguchi.*
University of Rochester, Rochester, NY, USA.

11:42 ***326.*** **Functional MR Pilot Study of Speech and Language Related to Stuttering.**
*E. Achten, J. Van Borsel, P. Santens, P. Lahorte and T. Voet.*
University Hospital, Gent, Belgium.

11:54 ***327.*** **Acupuncture-Stimulated Auditory-Cortical Activation Observed by fMRI - A Case of Acupoint SJ5 Stimulation.**
*Z.H. Cho, I.K. Hong, C.K. Kang, J.S. Kim, C.S. Na, K.J. Park, K.W. Jeong and E.K. Wong.*
University of California, Irvine, CA, USA; Kwangju Institute of Science and Technology (KJIST), Kwangju, Korea; Dongshin University, Naju, Korea and Chun Nam University, Kwangju, Korea.

12:06 ***328.*** **Functional MRI of Lipreading in Normal Hearing and Deaf Subjects.**
*L.E. Bernstein, M. Singh, E.T. Auer, J. Moore, C. Ponton, J. Jeong, W. Sungkarat, A. Dimoka and M. Don.*
House Ear Institute and University of Southern California, Los Angeles, CA, USA.

12:18 ***329.*** **fMRI of Cigarette Smoking: A Method and Preliminary Results.**
*M.S. Cohen, T. Allison, D.C. Madsen, M.E. Jarvik, R. Olmstead and E.D. London.*
University of California, Los Angeles, CA, USA.

# MR Systems and Gradients

Room C209
10:30 – 12:30

**Chairs: Steven M. Conolly**
**Labros Petropoulos**

10:30 ***330.*** **Complete Design Equation for Gradient Coil Design Using Loop-Current Elements.**
*C.H. Oh, D.R. Lee, Y.J. Yang, H.J. Choi, Y.C. Ryu, J.H. Hyun and K.K. Park.*
Korea University, Seoul, Korea.

10:42 ***331.*** **Ultra-Short Gradient Coil Design.**
*B. Zhang, B. Chronik and B. Rutt.*
University of Western Ontario and The John P. Robarts Research Institute, London, Ontario, Canada.

10:54 ***332.*** **Gradient System with Continuously Variable Field Characteristics.**
*R. Kimmlingen, M. Gebhardt, M. Schaaf, F. Schmitt and A. Haase.*
Siemens Medizintechnik, Erlangen, Germany and Universität Würzburg, Würzburg, Germany.

11:06 ***333.*** **Phased Array Planar Gradient Sets for MRI Systems with Vertical Directed Fields.**
*L.S. Petropoulos.*
Picker Medical Systems, Cleveland, OH, USA.

11:18 ***334.*** **Phased Array Planar Gradient Sets for Horizontal Field MRI Systems.**
*L.S. Petropoulos.*
Picker Medical Systems, Cleveland, OH, USA.

11:30 ***335.*** **Savoring the SUSHI Method: A Gradient Coil Shielding Menu.**
*J. Willig, S. Shvartsman, R. Brown and T. Eagan.*
Case Western Reserve University, Cleveland, OH, USA.

11:42 ***336.*** **Correction for Gradient Amplifier Hysteresis Artifacts in Spiral Scans.**
*K.F. King, N. Gai, A. Ganin and G.H. Glover.*
GE Medical Systems, Milwaukee, WI, USA and Stanford University School of Medicine, Stanford, CA, USA.

11:54 ***337.*** **Effect of Trapezoid Gradient Flat-top Width on Acoustic Noise and Magnetic Field Oscillations in MR Imagers.**
*Y. Wu, C. Bowen, C.K. Mechefske and B.K. Rutt.*
The University of Western Ontario and John P. Robarts Research Institute, London, Ontario, Canada.

12:06 ***338.*** **Signal-to-Noise Ratio Gain in Prepolarized MRI.**
*P.N. Morgan, S. Nandi, H. Nam and D. Spence.*
Texas A&M University, College Station, TX, USA.

12:18 ***339.*** **Development of Vertical 3 Tesla MR Scanner for fMRI Studies on Human Subjects.**
*T. Tsukamoto, N. Tasaka, A. Nabetani, H. Sato, L. ter Beek and T. Nakada.*
GE Yokogawa Medical Systems, Hino, Tokyo, Japan and University of Niigata, Niigata, Japan.

# GOLD CORPORATE MEMBER LUNCHTIME SYMPOSIUM
## Philips Medical Systems
## Neuro and Cardiac MRI: The Next Challenges

Room C112
12:30 – 13:30

**Introduction: Changing How the World Looks at MR**
*Peter Luyten*
Philips Medical Systems, Best, Netherlands

**Three-Dimensional Imaging of Human Axonal Tracts Using Diffusion Tensor Imaging**
*Susumu Mori*
Johns Hopkins University Medical School, Baltimore, MD, USA

**Advanced Coronary MRA Methodologies**
*Matthias Stuber*
Beth Israel Deaconess Medical Center, Boston, MA, USA

## POSTER WALKING TOUR
## MRI Microscopy

Wednesday, 5 April, 2000
Hall C
13:30 – 15:30

**Chairs: Gheorghe D. Mateescu**
**Richard W. Bowtell**

**Please see page 117 for details.**

## POSTER WALKING TOUR
## Registration, Segmentation, and Tissue Characterization

Wednesday, 5 April, 2000
Hall C
13:30 – 15:30

**Chairs: Max A. Viergever**
**Louis Lemieux**

**Please see page 118 for details.**

# CLINICAL FOCUS SESSION
# Gastrointestinal Fast MRI

Room C205
13:30 – 15:30

**Chairs: Russell N. Low, Keynote Speaker**
**Myeong-Jin Kim**

13:30 **Keynote.**

13:45 ***340.*** **MR Colography Using $CO_2$ and Single-Shot Half-Fourier RARE.**
*D.J. Lomas, R.R. Sood, I. Joubert, C. Sims, H. Franklin, A. Watson and M.J. Graves.*
Addenbrooke's Hospital, University of Cambridge, Cambridge, UK.

13:57 ***341.*** **Recurrent Pyogenic Cholangitis: Comparison of MR Cholangiography and Direct Cholangiography.**
*M.S. Park, J-S. Yu, M-J. Kim and K.W. Kim.*
Yonsei University College of Medicine, Seoul, South Korea.

14:09 ***342.*** **A Single Breath-Hold, High Resolution, 3D Field-Echo EPI Sequences for Liver and Pancreas.**
*Y. Kassai, H. Kanazawa, J. Makita and Y. Machida.*
Toshiba Medical Systems R&D Center and Toshiba Nasu Operations, Tochigi, Japan.

14:21 ***343.*** **Living Donor Liver Transplants (LDLT): A Comprehensive Pre-Surgical MRI Evaluation.**
*M. Goyen, S.G. Ruehm, J. Barkhausen, M.E. Ladd, I.M. Carstens, M. Malago, G. Laub and J.F. Debatin.*
University Hospital, Essen, Germany and Siemens Medical Systems, Erlangen, Germany.

14:33 ***344.*** **MR Imaging of Intestinal Disease with Oral and Rectal Water Soluble Contrast Material: Comparison of SSFSE and Gadolinium-Enhanced Fat Suppressed SPGR MRI.**
*R.N. Low and C.P. Sebrechts.*
Sharp and Children's MRI Center, San Diego, CA, USA.

14:45 ***345.*** **Magnetization Transfer Ratios in Normal Pancreas and Pancreaticobiliary Cancer.**
*A.R. Gillams, S. Smart and W.R. Lees.*
The Middlesex Hospital and University College London Medical School, London, UK.

14:57 ***346.*** **Vascular and Extravascular Complications of Liver Transplantation: Comprehensive Evaluation with 3D Volumetric MR Imaging.**
*P.V. Pandharipande, V.S. Lee, M.C. Roy, L. Teperman, G.A. Krinsky and N.M. Rofsky.*
New York University, New York, NY, USA.

15:09 ***347.*** **Superparamagnetic Iron Oxide-Enhanced MR Imaging: Can Breath-Hold Pulse Sequences Replace Non-Breath-Hold Spin Echo or Turbo Spin Echo Sequences for Hepatocellular Carcinoma Detection?**
*J-M. Lee, I-H. Kim, H-S. Kwak and C-S. Kim.*
Chonbuk National University Hospital, Chonbuk, Korea.

# CLINICAL FOCUS SESSION
# Gynecologic and Fetal MRI

Room C209
13:30 – 15:30

**Chairs: Caroline Reinhold, Keynote Speaker**
**Reena C. Jha**

13:30 **Keynote.**

13:45 ***348.*** **Evaluation of Uterine Contraction with Kinematic Imaging.**
*T. Masui, M. Katayama, S. Kobayashi, T. Ito, H. Sakahara and A. Nozaki.*
Seirei Hamamatsu General Hospital and Hamamatsu University School of Medicine, Hamamatsu, Shizuoka, Japan and GE Yokogawa Medical System, Hino, Tokyo, Japan.

13:57 ***349.*** **Uterine Artery Embolization for Uterine Fibroids and Concomitant Adenomyosis: Assessment by MRI.**
*R.C. Jha, S.M. Ascher, F. Banovac, I. Imaoka and J.B. Spies.*
Georgetown University Medical Center, Washington, DC, USA.

14:09 ***350.*** **Interactive Imaging of the Pelvic Floor with MR Fluoroscopy.**
*R.F. Busse, S.J. Riederer, J.G. Fletcher and A.E. Bharucha.*
Mayo Clinic, Rochester, MN, USA.

14:21 ***351.*** **Descending Perineum Syndrome: Evaluation and Classification Using Dynamic Magnetic Resonance Imaging.**
*T. Pfeifer and T. Hager.*
Frankenwaldklinik, Kronach, Germany.

14:33 ***352.*** **Dynamic MR Imaging of the Female Genitalia Using AngioMark: Initial Experience Evaluating the Female Sexual Response.**
*A.V. Deliganis, K.R. Maravilla, J. Heiman, W. Carter, P.A. Garland, R.M. Weisskoff, L. Hackbert, D. Echelard and H. Nghiem.*
University of Washington, Seattle, WA, USA; Pfizer, Inc., Groton, CT, USA; Epix Medical, Boston, MA, USA and University of Michigan, Ann Arbor, MI, USA.

14:45 ***353.*** **Evaluation of Pelvic Adhesion: Multiphase-Multislice MR Imaging with Kinematic Approach.**
*M. Katayama, T. Masui, S. Kobayashi, T. Ito, H. Sakahara and A. Nozaki.*
Seirei Hamamatsu General Hospital and Hamamatsu University School of Medicine, Hamamatsu, Shizuoka, Japan and GE Yokogawa Medical System, Hino, Tokyo, Japan.

14:57 ***354.*** **Relating *In Utero* Diffusion Measurements with Known Fetal Morphology.**
*R.J. Moore, B. Strachan, D.J. Tyler, P.N. Baker, I.R. Johnson and P.A. Gowland.*
University of Nottingham, Nottingham, UK.

15:09 ***355.*** **Three Dimensional Magnetic Resonance Imaging of the Fetal Brain *in Utero*.**
*L. Schierlitz, H. Dumanli, A.G. Schreyer, J.N. Robinson, R. Kikinis, F. Jolesz and C. Tempany.*
Brigham and Women's Hospital, Boston, MA, USA.

# Vessel Wall Mechanics and Morphology

Room A102
16:00 – 18:00

**Chairs: Charles M. Anderson**
**Stuart Berr**

16:00 ***356.*** **Measurement of Local Pulsewave Velocity in a Single Heartbeat Using Intravascular MR.**
*B.D. Bolster Jr., J-M. Serfaty and E. Atalar.*
Johns Hopkins University, Baltimore, MD, USA.

16:12 ***357.*** ***In vivo* Validation of Aortic Compliance Estimation by MR Pulse Wave Velocity Measurement.**
*J.M. Boese, M. Bock, M.L. Bahner, J. Albers and L.R. Schad.*
Deutsches Krebsforschungszentrum (dkfz) and Universität Heidelberg, Heidelberg, Germany.

16:24 ***358.*** **Use of Phase Contrast Magnetic Resonance Angiography to Assess Vascular Endothelial Function: The Relation Between Hyperemic Wall Shear Stress and Flow-Mediated Arterial Dilatation.**
*H.A. Silber, D.A. Bluemke, P. Ouyang, Y.P. Du and J.A.C. Lima.*
John Hopkins University, Baltimore, MD, USA and GE Medical Systems, Milwaukee, WI, USA.

16:36 ***359.*** **Changes in and Reproducibility of Wall Shear Stresses Measured by MRI-Techniques after Growth Hormone Administration.**
*R. Stokholm, R. Dall, S. Oyre, M.S. Hansen, S. Ringgaard, S. Nielsen, J.O.L. Jørgensen and E.M. Pedersen.*
Aarhus University Hospital and Aarhus Kommunehospital, Aarhus, Denmark.

16:48 ***360.*** **MRI Evidence of Arterial Wall Inflammation in Patients with Preclinical or Established Atherosclerosis.**
*C.R. Weiss, A.E. Arai, K.O. Agyeman, A. Blum, G. Csako, R.S. Balaban and R.O. Cannon III.*
National Institutes of Health, Bethesda, MD, USA.

17:00 ***361.*** **Noninvasive Detection of Unstable Fibrous Caps in Carotid Atherosclerotic Plaques by Multispectral High Resolution MR Imaging.**
*L.M. Mitsumori, C. Yuan, M.S. Ferguson and T.S. Hatsukami.*
University of Washington, Seattle, WA, USA.

17:12 ***362.*** **MR Microscopy of Atherosclerotic Lesions in Transgenic Mice at 2 Tesla.**
*L. Chaabane, E. Canet, F. Contard, D. Guerrier, P. Douek and A. Briguet.*
UCB-CPE, Villeurbanne, France; Hôpital Cardiologique, Lyon, France and Lipha SA, Lyon, France.

17:24 ***363.*** **Mouse Strain Differences in the Cerebrovascular Anatomy Detected Non-Invasively by High Resolution Magnetic Resonance Angiography.**
*N. Beckmann.*
Novartis Pharma Inc., Basel, Switzerland.

17:36 ***364.*** **Diagnosis of Lower Limb Deep Venous Thrombosis (DVT): Prospective Blinded Analysis of Magnetic Resonance Direct Thrombus Imaging.**
*D. Fraser, A. Moody, I. Davidson, A. Martel and P. Morgan.*
University Hospital, Nottingham, UK.

17:48 ***365.*** **Characterisation of Carotid Stenosis with Magnetic Resonance Direct Thrombus Imaging in Patients with Transient Cerebral Ischaemia.**
*A.R. Moody, S. Allder, P. Morgan, S. Delay, J. Lowe, R. Murphy, W. Tennant, S. MacSweeney and J. Gladman.*
Nottingham University, Nottingham, UK.

# Spectroscopic Localization and Imaging

Room A108
16:00 – 18:00

**Chairs: Dieter Leibfritz**
**Kamil Ugurbil**

16:00 ***366.*** **Improving Clinical MRSI With Very Selective Saturation Pulses to Reduce Chemical Shift Errors and Conform PRESS Selection.**
*T-K.C. Tran, D.B. Vigneron, N. Sailasuta, J. Tropp, P. Le Roux, J. Kurhanewicz, S. Nelson, M. Swanson and R. Hurd.*
University of California, San Francisco, CA, USA and General Electric Medical Systems, Fremont, CA, USA.

16:12 ***367.*** ***In Vivo*** **$^{1}$H NMR Spectroscopy of Human Brain at 7 Tesla.**
*I. Tkáč, P. Andersen, G. Adriany, H. Merkle, K. Ugurbil and R. Gruetter.*
University of Minnesota, Minneapolis, MN, USA.

16:24 ***368.*** **Sensitivity Encoded Multi-Echo Spectroscopic Imaging.**
*U. Dydak, M. Weiger, K.P. Pruessmann, D. Meier and P. Boesiger.*
University and ETH Zurich, Zurich, Switzerland.

16:36 ***369.*** **Test-Retest Reliability of Short Multislice $^{1}$H-MRSI.**
*D. Wiedermann, N. Schuff, G. Matson, B. Soher, A.A. Maudsley and M.W. Weiner.*
DVA Medical Center and University of California San Francisco, CA, USA.

16:48 ***370.*** **Fast $^{1}$H Spectroscopic Imaging Combined with 2D Correlation Spectroscopy Uncoupled In Both Frequency Domains.**
*D. Mayer, W. Dreher and D. Leibfritz.*
Universität Bremen, Bremen, Germany.

17:00 ***371.*** **A New Method for Fast Spectroscopic Imaging with High Signal-to-Noise Ratio: Spectroscopic RARE.**
*W. Dreher and D. Leibfritz.*
Universität Bremen, Bremen, Germany.

17:12 ***372.*** **Improved Lipid Removal Using Dual K-Space Sampling for EPSI.**
*A. Ebel and A.A. Maudsley.*
DVA Medical Center and University of California, San Francisco, CA, USA.

17:24 ***373.*** **Lipid Containment Achieved for Echo Planar Spectroscopic Imaging by Modulation of the Readout-Gradient Envelope.**
*L.G. Hanson.*
Hvidovre Hospital, Copenhagen, Denmark.

17:36 ***374.*** **Volumetric Multi-Shot Echo Planar $^{1}$H Spectroscopic Imaging.**
*J.M. Tyszka and A.N. Mamelak.*
City of Hope National Medical Center, Duarte, CA, USA.

17:48 ***375.*** **A New Method for Editing Lactate and Detecting Other $^{1}$H Metabolites Simultaneously.**
*J.C. Lin, L. DelaBarre and M. Garwood.*
University of Minnesota, Minneapolis, MN, USA.

# MR PHYSICS AND TECHNIQUES FOR CLINICIANS:

Room A201
16:00 – 18:00

**Chairs: Frank R. Korosec**
**Joseph C. McGowan**

**Educational Objectives**
Upon completion of this course, participants should be able to:

- Define and describe the fundamental principles of MR imaging, including spin magnetization, the Larmor relationship, relaxation phenomena, and the process of using the spin magnetization to produce an image;
- Explain imaging pulse sequences based upon spin and gradient echoes, including fast spin echo and echo planar techniques;
- Design MR imaging protocols for diagnostic applications considering image contrast, spatial resolution, acquisition time, signal-to-noise ratio, and artifacts;
- Describe the principles and capabilities of various advanced MR techniques including perfusion and diffusion, spectroscopy, interventional MRI, and cardiac MR imaging.

Materials to accompany today's lectures can be found at http://jcmsgi.rad.upenn.edu/jmcgowan/ismr/ismrm.html.

16:00 **Image Quality and Acquisition Speed.**
*Norbert J. Pelc.*

16:40 **Echo Planar Imaging.**
*Robert M. Weisskoff.*

17:20 **Perfusion and Diffusion Imaging.**
*David A. Roberts.*

# New Contrast Agents and Applications

Room A207
16:00 – 18:00

**Chairs: Val M. Runge**
**Charles S. Springer**

16:00 ***376.*** **Renal Reabsorption, a New Strategy in the Development of Vascular Contrast Agents.**
*J.M. Colet, S. Laurent and R.N. Muller.*
University of Mons-Hainaut, Mons, Belgium.

16:12 ***377.*** **Dendrimer-Based Cellular MR Contrast Agents: Development of a Molecular "Off-Switch" for a Macromoleular Contrast Agent.**
*L.H. Bryant, Jr., J.W.M. Bulte, C.A. Combs, B.K. Lewis and J.A. Frank.*
National Institutes of Health, Bethesda, MD, USA.

16:24 ***378.*** **WITHDRAWN.**

16:36 ***379.*** **Proton Chemical Exchange Dependent Saturation Transfer (CEST): Evaluation as a Mechanism for Non-Metal Based Exogenous MRI Contrast Agent.**
*K.M. Ward, A.H. Aletras and R.S. Balaban.*
National Institutes of Health, Bethesda MD, USA.

16:48 ***380.*** **Spin Transition Molecular Materials: Intelligent Contrast Agents for Magnetic Resonance Thermometry.**
*A. Bartholet, J.F. Goudemant, S. Laurent, O. Kahn, L. Vander Elst and R.N. Muller.*
University of Mons-Hainaut, Mons, Belgium and Institut Universitaire, Pessac, France.

17:00 ***381.*** **Molecular Imaging of Thrombus with a New Targeted Magnetic Resonance Contrast Agent.**
*S. Flacke, S.E. Fischer, C.S. Hall, M.J. Scott, J.N. Marsh, P.J. Gaffney, C.H. Lorenz, S.A. Wickline and G.M. Lanza.*
NIBSC, Potters Bar, UK; Philips Medical Systems, Best, The Netherlands and Barnes Jewish Hospital at Washington University Medical Center, St. Louis, MO, USA.

17:12 ***382.*** **Detection of Apoptosis by MRI Using SPIO-conjugated C2 Domain of Synaptotagmin I.**
*M. Zhao, D.A. Beauregard, B.A. Davletov and K.M. Brindle.*
University of Cambridge and Medical Research Council, Cambridge, UK.

17:24 ***383.*** **3D MR Tracking of Magnetically Labeled Oligosphere Transplants: Initial *In Vivo* Experience in the LE (Shaker) Rat Brain.**
*J.W.M. Bulte, S-C. Zhang, P. van Gelderen, B.K. Lewis, I.D. Duncan and J.A. Frank.*
National Institutes of Health, Bethesda, MD, USA and University of Wisconsin, Madison, WI, USA.

17:36 ***384.*** **The Potential of Ultrasmall Iron Oxides for Specific Labeling of Microglia and Distinguished Delineation of Gliomas.**
*G. Fleige, C. Diekmann, M. Kresse and C. Zimmer.*
University Medical Center Charité and Freie Universität, Berlin, Germany.

17:48 ***385.*** **Interstitial $T_1$- Weighted MR-Lymphography With Lipophilic, Perfluorated Gadolinium-Chelates.**
*G. Staatz, G. Adam, C.C. Nolte-Ernsting, S. Grobkortenhaus, B. Misselwitz, A. Bücker and R.W. Günther.*
Aachen University of Technology, Aachen, Germany and Schering, Berlin, Germany.

# MRI and MRS of Brain Tumors

Room C106
16:00 – 18:00

**Chairs: Jeffry R. Alger**
**Shoji Naruse**

16:00 ***386.*** **Assessment of Cerebral Gliomas by a New Dark Fluid Sequence HIRE (High Intensity REduction).**
*M. Essig, M. Deimling, H. Hawighorst, J. Debus and G. van Kaick.*
German Cancer Research Center (DKFZ), Heidelberg, Germany; Siemens Medical Systems, Erlangen, Germany and University of Heidelberg, Heidelberg, Germany.

16:12 ***387.*** **Sodium MRI in Cancer at 1.5T.**
*C.D. Constantinides, F. Boada, D. Bolar, J. Gillen and M.G. Pomper.*
Johns Hopkins University, Baltimore MD, USA and University of Pittsburgh, Pittsburgh, PA, USA.

16:24 ***388.*** ***In Vivo* Triple-Quantum-Filtered Sodium Imaging of Brain Neoplasms in Humans.**
*I. Hancu, K.R. Thulborn, G.X. Shen, D. Schiff and F.E. Boada.*
University of Pittsburgh, Pittsburgh, PA, USA.

16:36 ***389.*** **Correlation Between *in vitro* $^{1}$H Magnetic Resonance Spectroscopy and Histology of Glial Tumor Serial Biopsies: Its Usefulness for the Diagnosis.**
*J. Sabatier, O. Robert, V. Gilard, M. Malet-Martino, M.B. Delisle, M. Tremoulet and I. Berry.*
Paul Sabatier University, Toulouse, France.

16:48 ***390.*** **The Effect of Gadolinium on Quantitative Short-Echo Time Single Voxel MRS of Treated and Untreated Brain Tumors.**
*A. Lin and B.D. Ross.*
Huntington Medical Research Institutes, Pasadena, CA, USA.

17:00 ***391.*** **Automated Analysis of 3D $^{1}$H-MRSI Data from Patients with Glioma.**
*T. McKnight, D. Vigneron, S. Noworolski and S. Nelson.*
University of California, San Francisco, CA, USA.

17:12 ***392.*** **Increased Choline Levels Coincide With Enhanced Proliferative Potential of Human Brain Tumors.**
*S. Herminghaus, U. Pilatus, W. Möller-Hartmann, H. Lanfermann and F.E. Zanella.*
University of Frankfurt, Frankfurt, Germany.

17:24 ***393.*** **Choline Signal Correlates With Vascular Permeability in Human Gliomas.**
*P. Murphy, A. Dzik-Jurasz, I. Baustert, M. Leach and I. Rowland.*
The Institute of Cancer Research and The Royal Marsden NHS Trust, Sutton, Surrey, UK.

17:36 ***394.*** **Abnormal Diffusion and Perfusion MRI and Proton MRS in Peri-Tumoural Oedematous Brain.**
*M.R. Garnett, R.G. Corkill, T.A.D. Cadoux-Hudson, A.M. Blamire, B. Rajagopalan and P. Styles.*
University of Oxford and Radcliffe Infirmary, Oxford, UK.

17:48 ***395.*** **The Use of $^{1}$H MRS, Diffusion and Perfusion MRI in the Evaluation of Brain Tumor Reponse to Therapy: Correlation between Choline Level and ADC, rCBV.**
*W. Huang, P. Roche, A. Tudorica, S. Madajewicz, D. Madoff, T. Button, H. Li, J. Manzione and C. Roque.*
State University of New York, Stony Brook, NY, USA.

# Motion and Artifacts

Room C205
16:00 – 18:00

**Chairs: W. Thomas Dixon**
**Alice M. Wyrwicz**

16:00 ***396.*** ***Young Investigator Awards Finalist:*** **Postprocessing Technique to Correct for Background Gradients in Image-Based $R_2$* Measurements.**
*M.A. Fernández-Seara and F.W. Wehrli.*
University of Pennsylvania Medical Center, Philadelphia, PA, USA.

16:20 ***397.*** **$B_0$-Fluctuation-Induced Temporal Variation in EPI Image Series Due to the Disturbance of Steady-State Free Precession (SSFP).**
*X. Zhao, J. Bodurka, A. Jesmanowicz, J.S. Hyde and S-J. Li.*
Medical College of Wisconsin, Milwaukee, WI, USA and University School of Medical Sciences, Bydgoszcz, Poland.

16:32 ***398.*** **Oblique K-Space Scan for Motion Artifact Suppression.**
*Q-S. Xiang and S. Chavez.*
University of British Columbia, Vancouver, BC, Canada.

16:44 ***399.*** **A Two-Step Navigator-less Motion Correction Algorithm Using Radial Trajectories.**
*A. Shankaranarayanan, M. Wendt, J.S. Lewin, A.J. Aschoff and J.L. Duerk.*
Case Western Reserve University and University Hospitals of Cleveland, Cleveland, OH, USA.

16:56 ***400.*** **Real-Time Motion Correction of Linear Expansion in MRI by Navigator-based Gradient Scaling.**
*D. Manke, P. Börnert, K. Nehrke, B. Aldefeld and O. Dössel.*
Universität Karlsruhe, Karlsruhe, Germany and Philips Research, Hamburg, Germany.

17:08 ***401.*** **Autocorrection of Motion in Shoulder MRI at 1 Second/Image.**
*A. Manduca, K.P. McGee, E.B. Welch, J.P. Felmlee and R.L. Ehman.*
Mayo Clinic, Rochester, MN, USA.

17:20 ***402.*** **Motion-Artifact-Free $T_2$-Weighted 3D Imaging of the Cervical Spine.**
*J.P. Mugler III.*
University of Virginia School of Medicine, Charlottesville, VA, USA.

17:32 ***403.*** **Phase Ordering with Automatic Window Selection (PAWS): A Novel Motion Resistant Technique for 3D Coronary Imaging.**
*P. Jhooti, P.D Gatehouse, J. Keegan, N. Bunce, A.M. Taylor and D.N. Firmin.*
Royal Brompton Hospital, London, UK.

17:44 ***404.*** **Study of the Respiratory Motion of the Heart Using Multiple Navigator Pulses.**
*K. Nehrke and P. Börnert.*
Philips Research Laboratories, Hamburg, Germany.

# Interventional MRI Devices

Room C209
16:00 – 18:00

**Chairs: Mark E. Ladd**
**Ronald D. Watkins**

16:00 ***405.*** **Remote Control of Catheter Tip Deflection: A Special Opportunity for Interventional MRI.**
*T.P.L. Roberts, W. Hassenzahl and R.L. Arenson.*
University of California, San Francisco, CA, USA.

16:12 ***406.*** **Dual Functions of a Single Micro RF Coil Design: Interventional Device Tip Tracking and High Resolution Imaging Using MRI.**
*Q. Zhang, M. Wendt, A.J. Aschoff, J.S. Lewin and J.L. Duerk.*
Case Western Reserve University and University Hospitals of Cleveland, Cleveland, OH, USA.

16:24 ***407.*** **An Optical Technique for Detuning Parallel-Resonance Circuits in i-MRI Procedures.**
*E.Y. Wong, J.L. Duerk, Q. Zhang, J.S. Lewin and M. Wendt.*
Case Western Reserve University and University Hospitals of Cleveland, Cleveland, OH, USA.

16:36 ***408.*** **Catheter Visualization for Interventional MR: Modulating Currents of Field Inhomogeneity Catheters.**
*A. Glowinski, A. Bücker, G. Adam, P. Haage, J.J. van Vaals and R.W. Günther.*
Aachen University of Technology, Aachen, Germany and Philips Medical Systems, Best, The Netherlands.

16:48 ***409.*** **MR-Guided Balloon Angioplasty of Stenosed Hemodialysis Access Grafts.**
*L.W. Bartels, C. Bos, H.F.M. Smits, R. van der Weide, P.J. Blankestijn, C.J.G. Bakker, W.P.T.M. Mali and M.A. Viergever.*
University Medical Center, Utrecht, The Netherlands.

17:00 ***410.*** **Aortic Stent Placement Under Passive Near-Real-Time MR Guidance with AngioMARK (MS-325): An Animal Study.**
*Y-M. Dion, H.B. El Kadi, C. Boudoux, H. Chakfé, J. Gourdon and C. Moisan.*
Quebec City University Hospital and Laval University, Quebec City, Quebec, Canada.

17:12 ***411.*** **Robotic System for Biopsy and Therapy in a High-Field Whole-Body Magnetic-Resonance-Tomograph.**
*W.A. Kaiser, H. Fischer, J. Vagner and M. Selig.*
Friedrich-Schiller-Universität, Jena, Germany and Forschungszentrum Karlsruhe, Karlsruhe, Germany.

17:24 ***412.*** **Magnetic Resonance Image Guided Biopsy in Prostate.**
*R.D. Watkins, K.W. Rohling, E.E. Uzgiris, C.L. Dumoulin, R.D. Darrow and R.O. Giaquinto.*
General Electric Research & Development, Schenectady, NY, USA.

17:36 ***413.*** **TmDOTA: A Promising Temperature Sensitive Probe for MR Thermometry.**
*C.S. Zuo, K. Hynynen, A. Mahmood, S.N. Goldberg and N. Lu.*
Beth Israel Deaconess Medical Center, Brigham & Women's Hospital, the Children's Hospital, and Harvard Medical School, Boston, MA, USA.

17:48 ***414.*** **The Effect of Absorbable Hemostatic Agents on $1/T_1$ of Blood: An *in vitro* Relaxometry Study with Implications for Postoperative MRI.**
*M. Spiller, M.S. Tenner, W. Couldwell and S.H. Koenig.*
New York Medical College, Valhalla, NY, USA and Relaxometry, Inc., Mahopac, NY, USA.

# STUDY GROUP:
# MR Engineering

Room A108
19:15 – 21:15

**Business Meeting**

- **Welcome, *James Tropp, Chair***
- **Introduction of New Officers**
- **Call for Nominations for 2001 Governing Committee Ballot**
- **New Business**

**Scientific Meeting**

**Current Density Modeling in RF Resonators by Integral Equations**
*Stuart Crozier*
Queensland University, Brisbane, Australia

**The Polynomial Bloch Equations**
*Patrick LeRoux*
Palaiseau, France

**Towards a Universal MR Application Programming Environment**
*Graeme C. McKinnon*
GE Medical Systems, Milwaukee, WI, USA

**Peripheral Nerve Stimulation in MR Imaging**
*Brian K. Rutt*
Robarts Research Institute, London, ON, Canada

# STUDY GROUP:
# MR of Cancer

Room A207
19:15 – 21:15

**Scientific Program**

**Chair:** **June S. Taylor**
St. Jude Children's Research Hospital, Memphis, TN, USA

**What We Know about Lactate and pH in Tumors**
*Eric O. Aboagye*
PET Oncology Group, Imperial College School of Medicine, Hammersmith Hospital, London UK.

**Studying Lactate and pH Noninvasively with MR**
*Michael Garwood*
University of Minnesota, Minneapolis, MN, USA

**Comments and questions from the audience for 2 minutes each, with response from speakers.**

**Business Meeting**

- **Introduction and Installation of 2000 Steering Committee**
- **Call for Nominations for 2001 Steering Committee Ballot**
- **Negendank Fund Update**
- **Workshop Report**
- **New Business**

# STUDY GROUP:
# Hyperpolarized Noble Gas MR

Room C205
19:15 – 21:15

**Business Meeting**

- **Welcome**
  *Mitchell S. Albert, Chair*
- **Report on the Progress of the Study Group (membership, etc.)**
  *Hans-Ulrich Kauczor, Recorder*
- **Call for Nominations for 2001 Governing Committee Ballot**
  *Mitchell S. Albert, Chair*
- **New Business**

**Scientific Meeting**

**Moderator:** *John Mugler, III, Program Director*

**Getting Started with Hyperpolarized Gases**
*Speaker TBA*

**Scientific Focus: Mechanisms of Image Contrast**
*Speaker TBA*

**Clinical Focus: Airway Disease**
*Speaker TBA*

**Hot Topic: *In Vivo* Very Low-Field Hyperpolarized Gas Imaging**
*Speaker TBA*

**Round Table Discussion: Gas Breathing Protocols and Safety**
*Speaker TBA*

# STUDY GROUP:
# Interventional MR

Room C209
19:15 – 21:15

**Business Meeting**

- **Welcome, *Jeffrey L. Duerk, Chair***
- **Introduction of New Officers:**
  - Chairman: Jonathan S. Lewin
  - Vice-Chairman: Thomas Kahn
  - Secretary: TBA
- **Call for nominations for 2001 Governing Committee ballot**
- **ACR Neuroradiology and MRI commission list of MRI guided procedures, both diagnostic and therapeutic – CPT codes**
- **Overview of 3rd International IMRI Symposium (Leipzig)**
  - ISMRM Involvement
  - Dates
  - Program
- **Mission Statement Proposal**
- **New Business**

**Scientific Meeting**

- **Current and Future Trends in IMRI Research: A Summary and Group Discussion of Work seen at the 8th ISMRM Conference.**

The Officers of the ISMRM Interventional MR Study Group, and a limited number of other recruited experts in the field, will canvas the 8th Annual Meeting to assess current trends, new directions, and important new developments in the IMRI field. Borrowed material will be used as much as possible.

# MORNING CATEGORICAL COURSE
# Cardiac MR Imaging

Room C205
07:00 – 08:00

**Chairs: Andre Duerinckx**
**Roderic I. Pettigrew**
**Cynthia B. Paschal**

**Educational Objectives**
Upon completion of this course, participants should be able to:

- Describe basic areas of routine and promising clinical use of MR in assessing cardiovascular disease;
- Describe basic areas of MR use which are both routine and promising in assessing cardiovascular disease;
- Explain the MR methodology and techniques used to assess acquired and congenital heart disease;
- Apply MR protocols for the evaluation of cardiac morphology, function, viability and blood flow;
- Describe approaches for cardiac data analysis and presentation.

*The final five minutes of each talk will be reserved for questions.*

07:00 **Techniques for Assessing Myocardial Function and Viability.**
*Joao A.C. Lima.*

07:30 **Coronary Artery MR.**
*Andre J. Duerinckx.*

# MORNING CATEGORICAL COURSE
# fMRI in Neuro-Psychiatric Disease and Treatment: fMRI of Psychiatric and Degenerative Disorders

Room A201
07:00 – 08:00

**Chairs: Linda Chang**
**Peter Jezzard**

**Educational Objectives**
Upon completion of this course, participants should be able to:

- Identify the special issues facing clinicians and researchers who wish to apply functional MRI to patient populations;
- Describe fMRI studies that have been successfully accomplished in neurological and psychiatric disorders;
- List a number of issues that remain to be resolved before widespread use of fMRI in patient populations is feasible;
- Describe the role and potential of animal models in increasing the understanding of fMRI studies in disease;
- Explain the principles and theory of pharmacological (ph) MRI;
- Appraise the potential for phMRI in humans and predict the impact on disease treatment.

07:00 **Addiction.**
*Elliot A. Stein.*

07:15 **Schizophrenia.**
*Joseph H. Callicott.*

07:30 **AIDS Dementia.**
*Thomas Ernst.*

07:50 **Discussion.**

# MORNING CATEGORICAL COURSE
## Abdominal Imaging

Room A207
07:00 – 08:00

**Chair: Donald G. Mitchell**

**Educational Objectives**
Upon completion of this course, participants should be able to:

- Implement modern MR applications for diagnosing focal and diffuse liver disease;
- Incorporate into their practices recent developments for MR imaging of the pancreas and biliary tract, including MR cholangiopancreatography;
- Use MRI to diagnose extrahepatic disease, such as that of the bowel and peritoneum, as well as vascular disease using state of the art MR angiographic techniques.

07:00 **Bowel and Peritoneum.**
*Russell N. Low.*

07:50 **Questions.**

# MORNING CATEGORICAL COURSE
## The Nano-Meter Film: How MRS and MRI Can Probe Tissue Microstructure

Room C106
07:00 – 08:00

**Chairs: Chris Boesch**
**R. Mark Henkelman**

**Educational Objectives**
Upon completion of this course, participants should be able to:

- Describe methods in MRS and MRI that allow studies of tissue ultra-structure
- Identify areas in which MR can contribute to the knowledge of tissue organization
- Evaluate potential applications and limitations of MR methods to study compartmentation, order, and transport processes *in vivo*
- Generate an overview of advanced methods in MRS and MRI that give information on the nanometer scale
- Explain the influence of tissue structure upon MR parameters.

*The final five minutes of each talk will be set aside for questions.*

07:00 **Dipolar Coupling and Ordering Effects in Muscles.**
*Chris Boesch.*

07:30 ***In Vivo* Tissue Compartmentation and Membrane Transport.**
*Douglas L. Rothman.*

08:00 **Adjournment.**

# PLENARY LECTURES
## Acute Stroke

Ballroom
08:15 – 09:30

**Chairs: Jay S. Tsuruda**
**Chrit T. Moonen**

**Educational Objectives**
Upon completion of this session participants should be able to:

- Describe the biochemical and pathophysiological events of stroke;
- Explain the principles of acute stroke therapies;
- Discuss the clinical role of imaging in therapeutic decisions in acute stroke patients
- Describe the necessary elements of acute stroke MR protocols;
- Compare the potential and limitations of MR diffusion, perfusion and angiography in acute stroke management.

08:15 ***415.*** **Acute Stroke: Strategies for Optimal Therapy.**
*Burkhard Ostertun.*
University of Bonn, Bonn, Germany.

08:40 ***416.*** **The Role of MR in the Evaluation of Pathophysiology and Therapy of Acute Stroke Models.**
*Mathias Hoehn.*
Max-Planck-Institute for Neurological Research, Cologne, Germany.

09:05 ***417.*** **The Clinical Role of MR in the Treatment of Acute Stroke.**
*Steven Warach.*
National Institutes of Health, Bethesda, MD, USA.

# Spectroscopic Quantitation

Room A102
10:30 – 12:30

**Chairs: Jan A. den Hollander**
**Roland Kreis**

10:30 ***418.*** **3D-Localized $^{13}$C NMR Measurements of Rat Brain Glucose Concentrations and Transport Kinetics Using a Reversible Michaelis-Menton Model.**
*R. Gruetter and I-Y. Choi.*
University of Minnesota, Minneapolis, MN, USA.

10:42 ***419.*** **Gray and White Matter Metabolic Rate in Human Brain by Spectroscopic Imaging.**
*J.W. Pan, D.T. Stein, F. Telang, J.H. Lee, S. Heydari, G. Mason, D.L. Rothman and H.P. Hetherington.*
Brookhaven National Laboratory, Upton, NY, USA; Albert Einstein College of Medicine, Bronx, NY and Yale University School of Medicine, New Haven, CT, USA.

10:54 ***420.*** **Quantitative Evaluation of Regional Heterogeneity of Phosphorus Metabolites in Human Brain.**
*H.P. Hetherington, W.J. Chu, J.T. Vaughan, D.D. Spencer and J.W. Pan.*
Brookhaven National Laboratory, Upton, NY, USA; University of Alabama, Birmingham, AL, USA; University Minnesota, Minneapolis, MN, USA and Yale University, New Haven, CT, USA.

11:06 ***421.*** **A New FAST Method for *In Vivo* Measurement of Chemical Exchange Rates.**
*R. Ouwerkerk, R. Lee, R.G. Weiss and P. Bottomley.*
Johns Hopkins University, Baltimore, MD, USA.

11:18 ***422.*** **Measurement of the Rate of Pyruvate Carboxylase in Human Brain by $^{13}$C NMR.**
*G.F. Mason, K. Petersen, J. Shen, K.L. Behar, O.A.C. Petroff, G.I. Shulman and D.L. Rothman.*
Yale University School of Medicine, New Haven, CT, USA and Nathan Kline Institute, Orangeburg, NY, USA.

11:30 ***423.*** **Modeling Recovery of $pH_i$ in Muscle *in vivo* to Provide a Novel Index of Proton Handling in Mitochondrial Myopathy.**
*J.T. Chen and D.L. Arnold.*
Montreal Neurological Institute, Montreal, Quebec, Canada.

11:42 ***424.*** **Associations between Central and Peripheral Measures of Phospholipid Breakdown Revealed by Cerebral 31-Phosphorus MRS and Fatty Acid Composition of Erythrocyte Membranes.**
*A.J. Richardson, S. Allen, J.V. Hajnal, T. Easton and B.K. Puri.*
University of Oxford, Oxford, UK; Scotia Research Institute, Nova Scotia and Imperial College School of Medicine, Hammersmith Hospital, London, UK.

11:54 ***425.*** **Automated Voxel Selection and Assessment of Partial Volume Effects in $^{1}$H MRSI Studies of Hippocampus.**
*N. Schuff, F. Ezekiel, A.T. Du, D. Amend and M.W. Weiner.*
DVA Medical Center and University of California, San Francisco, CA, USA.

12:06 ***426.*** **Visibility of the Methylene Signals of Ethanol in $^{1}$H-MR Spectra of the Human Brain and Implications for Model Fitting.**
*R. Kreis, L. Hofmann and C. Boesch.*
University of Bern, Bern, Switzerland.

12:18 ***427.*** **Quantitative Comparison of Variable and Constant Repetition Time Proton Spectroscopic Imaging.**
*H. Yu and P. Narayana.*
University of Texas-Houston Medical School, Houston, TX, USA.

# Quantitation - Relaxation Measurements

Room A108
10:30 – 12:30

**Chairs: Kathleen M. Donahue**
**Peter Jezzard**

10:30 ***428.*** **$T_1$ Maps From Shifted Spin Echoes and Stimulated Echoes.**
*S. Ropele, R. Stollberger, F. Ebner, H-P. Hartung and F. Fazekas.*
Karl-Franzens University, Graz, Austria.

10:42 ***429.*** **Effect of Slice Profiles on the Accuracy of Fast $T_1$ Measurements.**
*K. Sidaros, I.K. Andersen and H.B.W. Larsson.*
Technical University of Denmark and Hvidovre Hospital, Copenhagen, Denmark.

10:54 ***430.*** **Fast $T_1$ Mapping Using Multislice EPI.**
*S. Clare and P. Jezzard.*
University of Oxford and John Radcliffe Hospital, Oxford, UK.

11:06 ***431.*** **Quantitative $T_2$ Contrast with Gradient Echoes.**
*D.A. Yablonskiy.*
Washington University, St. Louis, MO, USA.

11:18 ***432.*** **Accurate Imaging Measurement of $T_2$ from a Single Echo Train.**
*D. Tyler, L. Marciani and P. Gowland.*
University of Nottingham, Nottingham, UK.

11:30 ***433.*** **Reproducibility and Accuracy of Frequency Domain-Derived Bone Marrow $R_2$*.**
*L. Hilaire, F.W. Wehrli, B. Gomberg, H.K. Song and M.A. Seara-Fernández.*
University of Pennsylvania Medical Center, Philadelphia, PA, USA.

11:42 ***434.*** **High Resolution MR Imaging for Trabecular Structure Assessment of Lumbar Vertebrae.**
*O. Beuf, D.C. Newitt, L. Mosekilde and S. Majumdar.*
University of California, San Francisco, CA, USA and University of Aarhus, Aarhus, Denmark.

11:54 ***435.*** **Two-Dimensional $T_1$ and $T_2$ Relaxometry of *In Vivo* Skeletal Muscle at 3 Tesla.**
*G. Saab, P.A. Picot, C.L. Devine, G.D. Marsh and R.T. Thompson.*
St. Joseph's Health Care Centre, London, Ontario, Canada.

12:06 ***436.*** **Correction for $B_1$ and $B_0$ Variations in Quantitative $T_2$ Measurements Using MRI.**
*J.G. Sled and G. B. Pike.*
Montréal Neurological Institute, Montréal, Québec, Canada.

12:18 ***437.*** ***In-vivo* $^1$H Imaging of Intermolecular Multiple-Quantum Coherences at High Field: Practical Issues.**
*S. Kennedy, Z. Chen, P. Connelly and J. Zhong.*
University of Rochester, Rochester, NY, USA.

# CLINICAL CATEGORICAL:
# Dynamic Contrast Imaging of Tumors

Room A201
10:30 – 12:30

**Chair: Michael V. Knopp**
**Michal Neeman**

**Educational Objectives**
Upon completion of this course, participants should be able to:

- Explain the basic pathophysiological principles underlying the contrast enhancement in tumors with emphasis on dynamic Gd-chelate contrast-enhanced methodologies;
- Perform dynamic contrast imaging of tumors in the brain, thorax, breast, liver, pelvis and musculoskeletal system;
- Analyze and interpret dynamic contrast enhanced studies;
- Select and recommend appropriate dynamic MR techniques for different situations;
- Describe the range of diagnostic and therapeutic questions that can be evaluated by dynamic contrast enhanced MRI

10:30 **Introduction.**
*Bruce A. Berkowitz.*

11:00 **Brain Tumors.**
*John N. Gomori.*

11:15 **Breast Tumors.**
*Michael V. Knopp.*

11:30 **Liver Tumors.**
*Mitchell Schnall.*

11:45 **Musculoskeletal Tumors.**
*June Taylor.*

12:00 **Panel Discussion.**
*Hakan Ahlstrom, Hadassah Degani, Jeffrey Evelhoch, Michael V. Knopp, Nina Mayr, Val Runge, June Taylor, William T. C. Yuh.*

# fMRI: Quantitative Measurements

Room A207
10:30 – 12:30

**Chairs: Richard Hoge**
**Richard B. Buxton**

10:30 ***438.*** **Study of Oxygen Utilization Changes in Human Visual Cortex During Hemifield Stimulation Using $^{1}H - \{^{13}C\}$ MRS and fMRI.**
*W. Chen, X-H. Zhu, R. Gruetter, E.R. Seaquist and K. Ugurbil.*
University of Minnesota School of Medicine, Minneapolis, MN, USA.

10:42 ***439.*** **Changes of Cerebral Blood Flow and Oxidative Metabolism during Graded Motor Activation.**
*A. Kastrup, G. Krüger, T. Neumann-Haefelin, G.H. Glover and M.E. Moseley.*
Stanford University, Stanford, CA, USA.

10:54 ***440.*** **Quantitative MR Measurements of Interstitial Oxygen Tension in Intact Rat Brain: Hyperoxia and Hypercapnia.**
*T.Q. Duong and S-G. Kim.*
University of Minnesota School of Medicine, Minneapolis, MN, USA.

11:06 ***441.*** **WITHDRAWN.**

11:18 ***442.*** **Quantitative Measurements of Cerebral Blood Oxygen Saturation Using Magnetic Resonance Imaging.**
*H. An and W. Lin.*
Washington University, St. Louis, MO, USA and The University of North Carolina at Chapel Hill, Chapel Hill, NC, USA.

11:30 ***443.*** **Quantification of Oxygen Extraction in Venous $T_2$ BOLD Experiments Using a CPMG Sequence.**
*X. Golay, J. Zhou, M.J. Silvennoinen, R.A. Kauppinen, J. Pekar and P.C.M. van Zijl.*
Kennedy Krieger Institute and Johns Hopkins University School of Medicine, Baltimore, MD, USA and University of Kuopio, Kuopio, Finland.

11:42 ***444.*** **Localized Energetic Changes with Brain Activation from Anesthesia I: Absolute CBR Changes at 7 Tesla.**
*F. Hyder, R.G. Shulman, D.L. Rothman and K.L. Behar.*
Yale University, New Haven, CT, USA.

11:54 ***445.*** **Altered Resting Blood Flow May Mediate Theophylline Augmentation of the BOLD Response.**
*D.W Morton, K.R. Maravilla, J.R. Meno and H.R. Winn.*
University of Washington, Seattle, WA, USA.

12:06 ***446.*** **Modulation of Cerebral Blood Oxygenation by Drugs. A Pharmacologic MR Neuroimaging Study.**
*H. Bruhn, G. Stoppe and J. Frahm.*
Biomedizinische NMR Forschungs GmbH and Psychiatrische Uni-Klinik, Göttingen, Germany.

12:18 ***447.*** **Correlated Changes in MR Signal Intensity and Frequency Suggest Correlated Changes in Brain Temperature and Metabolism During Functional Activation.**
*D.A. Yablonskiy, J.J.H. Ackerman and M.E. Raichle.*
Washington University, St. Louis, MO, USA.

# MR Imaging of Brain –Vascular

Room C106
10:30 – 12:30

**Chairs: E. Mark Haacke**
**Peter B. Barker**

10:30 ***448.*** **High-Resolution UHFMRI of the Human Cerebral Vasculature Patterns.**
*D. Chakeres, A. Kangarlu, A.M. Abduljalil and P-M L. Robitaille.*
The Ohio State University, Columbus, OH, USA.

10:42 ***449.*** **Cortical Cerebral Hemodynamics in Human Acute Ischemic Stroke: A Study with Combined Diffusion Weighted and Perfusion Weighted MRI.**
*Y. Liu, J.O Karonen, R. Vanninen, L. Østergaard, J. Nuutinen, J. Perkiö, M. Könönen, E. Vanninen, S. Soimakallio, J. Kuikka and H.J. Aronen.*
Kuopio University, Kuopio, Finland and Aarhus University Hospitals, Aarhus, Denmark.

10:54 ***450.*** **Dynamic MR Bolus Tracking in Hyperacute Stroke: Comparison with Diffusion Weighted MR Imaging.**
*J. Perkiö, L. Soinne, L. Østergaard, T. Tatlisumak, A. Kangasmäki, J. Helenius, S. Martinkauppi, O. Salonen, S. Savolainen, M. Kaste and H.J. Aronen.*
Helsinki University Central Hospital and University of Helsinki, Helsinki, Finland; Aarhus University Hospital, Aarhus, Denmark and Kuopio University Hospital, Kuopio, Finland.

11:06 ***451.*** **Correlation of ADC Decreases and Perfusion MRI Parameters In the Ischemic Core of Acute Stroke Patients.**
*J. Fiehler, R. Knab, J.R. Reichenbach, C. Fitzek, F. Hamzei, C. Weiller and J. Röther.*
Friedrich-Schiller University, Jena, Germany.

11:18 ***452.*** **Viability Thresholds of the Penumbra of Acute Human Ischemic Stroke Defined from rCBF and rCBV.**
*L. Røhl, L. Østergaard, C.Z. Simonsen, P. Vestergaard-Poulsen, G. Andersen, D. Le Bihan and C. Gyldensted.*
Aarhus University Hospital, Aarhus, Denmark and SHFJ, Orsay, France.

11:30 ***453.*** **Immediate Changes in Cerebral Perfusion Due to Carotid Stenting.**
*I.D. Wilkinson, P.D. Griffiths, P. Gaines, T. Cleveland, G. Darwent, N. Hoggard and G.S. Venables.*
University of Sheffield, Northern General Hospital and Royal Hallamshire Hospital, Sheffield, UK.

11:42 ***454.*** **The PWI-DWI Mismatch in Patients With and Without Carotid Artery Stenosis.**
*T. Neumann-Haefelin, H.J. Wittsack, G. Fink, T.Q. Li, M.E. Moseley, R. Seitz, M. Siebler and H.J. Freund.*
University of Duesseldorf, Duesseldorf, Germany and Stanford University, Stanford, CA, USA.

11:54 ***455.*** **Comparison of the Time-Course of CBF and BOLD $T_2$ During Post-Ischaemic Hypoperfusion Measured Using Double Echo FAIR (DEFAIR).**
*D.L. Thomas, M.F. Lythgoe, F. Calamante, D.G. Gadian and R.J. Ordidge.*
University College London, London, UK.

12:06 ***456.*** **MR Signatures of Cerebral Infarction vs. Reversibility in Acute Stroke in Patients Treated with Thrombolytic Therapy.**
*J.R. Alger, C.S. Kidwell, J. Mattiello, J.L. Saver, J. Sayre, R.P. Woods, S. Starkman, J.P. Villablanca, D.S. Liebeskind, P.M. Vespa, R. Jahan, Y.P. Gobin, G.R. Duckwiler and F. Vinuela.*
UCLA Medical Center and UCLA Stroke Center, Los Angeles, CA, USA.

12:18 ***457.*** **A Magnetization Transfer Study of the Brain in Patients with Migraine.**
*M.A. Rocca, B. Colombo and M. Filippi.*
H San Raffaele, University of Milan, Milan, Italy.

# MR Angiography: Function and New Techniques

Room C205
10:30 – 12:30

**Chairs: Thomas M. Grist**
**Arno Buecker**

10:30 ***458.*** **Design and Construction of a Robust Flow Phantom for the ISMRM Flow and Motion Group Multi-Centre Trial.**
*P. Summers, D.W. Holdsworth, H. Nikolov, Y. Papaharilou and B.K. Rutt.*
King's College and Imperial College, London, UK and John P. Robarts Research Institute, London, Ontario, Canada.

10:42 ***459.*** **Evaluation of Vascular Function Using Phase Contrast Based MRI; Reproducibility and Repeatability.**
*M.S. Hansen, H.G. Flaagoy, K. Sorensen, S. Oyre and E.M. Pedersen.*
Aarhus University Hospital, Aarhus, Denmark.

10:54 ***460.*** **Quantification of Aortic and Mitral Regurgitation Using Heart Motion Adapted Cine Phase Contrast Flow Measurements.**
*S. Kozerke, J. Schwitter, E.M. Pedersen and P. Boesiger.*
University and ETH and University Hospital, Zurich, Switzerland and Aarhus University Hospital, Aarhus, Denmark.

11:06 ***461.*** **MR Clearance Measurements Predict Hemodynamically Significant Renal Artery Stenosis Following Angiotension Converting Enzyme (ACE) Inhibition.**
*T.M. Grist, O. Unal, R.A. Omary, D. Koscielski, E.R. Niendorf, R. Frayne and F.R. Korosec.*
University of Wisconsin, Madison, WI, USA.

11:18 ***462.*** **Rose Model in MRI: Noise Limitation on Spatial Resolution and Implications for Contrast Enhanced MR Angiography.**
*R. Watts, Y. Wang, P.A. Winchester, N. Khilnani and L. Yu.*
Weill Medical College of Cornell University, New York, NY, USA.

11:30 ***463.*** **Embedded MR Fluoroscopy: High Temporal Resolution Real-Time Imaging During High Spatial Resolution 3D MRA Acquisition.**
*S.B. Fain, R.F. Busse, S.J. Riederer and J. Huston III.*
Mayo Clinic, Rochester, MN, USA.

11:42 ***464.*** **Radial Scanning for Real-time Non-Breath-Hold Pulmonary Angiography: Preliminary Experience for Detection of Pulmonary Embolism.**
*A. Bücker, P. Haage, S. Döhmen, G. Adam, A. Glowinski, T. Schaeffter, S. Weiß, J.J. van Vaals and R.W. Günther.*
University of Aachen, Aachen, Germany and Philips Research Laboratories, Hamburg, Germany.

11:54 ***465.*** **Molecular Characterization of Thrombus Using Bimodal $^{1}H/^{19}F$ MR Imaging with a Novel Fibrin-Targeted Nanoparticulate Contrast Agent.**
*X. Yu, S-K. Song, M.J. Scott, R.J. Fuhrhop, G.M. Lanza, C.S. Hall and S.A. Wickline.*
Washington University, St. Louis, MO, USA.

12:06 ***466.*** **Intra-Arterial Contrast Enhanced MRA (IA-CEMRA).**
*D.J. Taylor and G. Brown.*
Royal Adelaide Hospital, Adelaide, Australia.

12:18 ***467.*** **Steady State and First Pass Blood Pool Agent Contrast Enhanced MRA.**
*W.J. Niessen, A.D.M. van Swijndregt, B.H.P. Elsman, O. Wink, M.A. Viergever and W.P.T.M. Mali.*
University Medical Center, Utrecht, the Netherlands.

# Analysis and Interpretation of Diffusion MRS and MRI

Room C209
10:30 – 12:30

**Chairs: Michael E. Moseley**
**Christopher H. Sotak**

10:30 ***468.*** **Measurement of Cardiomyocyte Diameter in the Isolated Rat Heart Using Diffusion-Weighted $^{1}$H-MRS: Changes with Ischaemia.**
*C. Liess, G.K. Radda and K. Clarke.*
University of Oxford, Oxford, UK.

10:42 ***469.*** **Analysis of Susceptibility Effect of Microvasculature on MR Diffusion Measurements.**
*V.G. Kiselev.*
Research Center Jülich, Jülich, Germany and Institute of Physics, Minsk, Byelorussia.

10:54 ***470.*** **q-Space Diffusion MRI of Demyelination in Stroke Prone Spontaneously Hypertensive Rats.**
*Y. Assaf, A. Mayk and Y. Cohen.*
Tel-Aviv University and TEVA Pharmaceutical Industries, Tel Aviv, Israel.

11:06 ***471.*** **Two-Component Diffusion Tensor MRI of the Isolated Perfused Heart.**
*D.L. Buckley, E.W. Hsu, J.D. Bui, S.J. Blackband and J.R. Forder.*
University of Florida, Gainesville, FL, USA; Duke University, Durham, NC, USA and University of Alabama, Birmingham, AL, USA.

11:18 ***472.*** **Is a Multiexponential Decay of Diffusion Weighted Water Signal an Indicator for Multicompartmentalized Tissue?**
*C. Meier, D. Mayer, W. Dreher and D. Leibfritz.*
Universität Bremen, Bremen, Germany.

11:30 ***473.*** **Quantification of Fiber Orientation with Diffusion Tensor MR Imaging and 3D Resolved Two-Photon Microscopy.**
*V.J. Napadow, V. Wedeen, Q. Chen, V. Mai, P. So and R.J. Gilbert.*
Massachusetts Institute of Technology, Cambridge, MA, USA and Massachusetts General Hospital and Beth Israel Deaconess Medical Center, Boston, MA, USA.

11:42 ***474.*** **Investigation of Techniques to Quantify *In Vivo* Lesion Volume Based on Comparison of $ADC_{av}$ Maps with Histology in Focal Cerebral Ischemia Studies of Rats.**
*M. Kazemi, M.D. Silva, O. Mayzel-Oreg, F. Li and C.H. Sotak.*
Worcester Polytechnic Institute, UMass Memorial Health Care and University of Massachusetts Medical School, Worcester, MA, USA.

11:54 ***475.*** **Diffusion-Weighted Spectroscopy of $^{13}$C-Labelled Lactate in Rat Glioma *In Vivo*.**
*J. Pfeuffer, J. Lin, K. Ugurbil and M. Garwood.*
University of Minnesota Medical School, Minneapolis, MN, USA.

12:06 ***476.*** **Rapid Three-Dimensional Diffusion MRI for Stroke Studies in Mice.**
*R. Xue, M. Sawada, S. Goto, P.D. Hurn, R.J. Traystman, P.C.M. van Zijl and S. Mori.*
The Johns Hopkins University, Baltimore, MD, USA.

12:18 ***477.*** **Interleaved EPI and TurboSE DWI of the Human Cervial Spinal Cord.**
*R. Bammer, M. Augustin, J. Simbrunner, F. Ebner, R. Stollberger, H.P. Hartung and F. Fazekas.*
University of Graz, Graz, Austria.

## GOLD CORPORATE MEMBER LUNCHTIME SYMPOSIUM
## Siemens Medical Systems
## Advanced Hardware Drives Advanced Applications – Cardiovascular and Neurological Imaging

Room C112
12:30 – 13:30

## POSTER WALKING TOUR
## Rapid Imaging

Thursday, 6 April, 2000
Hall C
13:30 – 15:30

**Chairs: Gary H. Glover**
**Graeme C. McKinnon**

**Please see page 120 for details.**

## POSTER WALKING TOUR
## MR Angiography: Technique Optimization

Thursday, 6 April, 2000
Hall C
13:30 – 15:30

**Chairs: Michael V. Knopp**
**Michael Bock**

**Please see page 121 for details.**

# CLINICAL FOCUS SESSION
# Diffusion MRI

Room A207
13:30 – 15:30

**Chairs: A. Gregory Sorenson, Keynote Speaker**
**Denis Le Bihan**

13:30 **Keynote.**

13:45 ***478.*** **Reduction of Fractional Anisotropy in Normal Appearing White Matter of MS Patients.**
*R. Bammer, M. Augustin, T. Seifert, S. Strasser-Fuchs, R. Stollberger, F. Ebner, H.P. Hartung and F. Fazekas.*
University of Graz, Graz, Austria.

13:57 ***479.*** **Characterization of Tissue in Multiple Sclerosis Using Diffusion Tensor Imaging.**
*R.G. Henry, D. Portnoy and D. Goodkin.*
The University of California, San Francisco, CA, USA.

14:09 ***480.*** **Magnetic Resonance Tractography for Pre-Surgical Planning and Post-Surgical Evaluation.**
*X.J. Zhou, N.E. Leeds, C. Karmonik and B.J. Mock.*
M.D. Anderson Cancer Center, Houston, TX, USA and General Electric Medical Systems, Milwaukee, WI, USA.

14:21 ***481.*** **Angular Differentiation of Thalamic Nuclei by Quantitative DTI.**
*M.R. Wiegell, D.S. Tuch, H.B.W. Larsson and V.J. Wedeen.*
Masachusetts General Hospital, Boston, MA, USA and Danish Research Center for Magnetic Resonance, Hvidovre, Denmark.

14:33 ***482.*** **Axon Tractography with Tensorlines.**
*M. Lazar, D. Weinstein, K. Hasan and A.L. Alexander.*
University of Utah, Salt Lake City, UT, USA.

14:45 ***483.*** **Pathological Damage in MS Assessed by Diffusion-Weighted and Magnetization Trasnfer MRI.**
*M. Cercignani, G. Iannucci, M.A. Rocca, G. Comi, M.A. Horsfield and M. Filippi.*
H San Raffaele, University of Milan, Milan, Italy and University of Leicester and Leicester Royal Infirmary, Leicester, UK.

14:57 ***484.*** **Biexponential Apparent Diffusion Coefficient Parametrization in Adult vs Newborn Brain.**
*R.V. Mulkern, S. Vajapeyam, R.L. Robertson, H.P. Zengingonul, M. Rivkin and S.E. Maier.*
Children's Hospital, and Brigham and Women's Hospital, Harvard Medical School, Boston, MA, USA.

15:09 ***485.*** **Cytokine Induced Inflammation Causes Alterations in Brain Water Diffusion and Cerebral Perfusion.**
*A.M. Blamire, D.C. Anthony, B. Rajagopalan, N.R. Sibson, V.H. Perry and P. Styles.*
John Radcliffe Hospital, Headington, Oxford, UK; University of Oxford, Oxford, UK and University of Southampton, Southhampton, UK.

# CLINICAL FOCUS SESSION
# MR Imaging of Breast Cancer

Room C205
13:30 – 15:30

**Chairs: Steven E. Harms, Keynote Speaker**
**Bruce L. Daniel**

13:30 **Keynote.**

13:45 ***486.*** **MRI Surveillance of Women at High Risk for Hereditary Breast Cancer: Preliminary Results.**
*R. Shumak, E. Ramsay, E. Warner, J. Bishop, L. DiProspero, S. Narod and D.B. Plewes.*
Sunnybrook and Women's College Health Sciences Centre, Toronto, Ontario, Canada.

13:57 ***487.*** **Axillary Lymph Node Metastases in Breast Cancer: Preoperative Detection with Dynamic Contrast Enhanced MRI.**
*K.A. Kvistad, J. Rydland, H-B. Smethurst, S. Lundgren, H.E. Fjøsne, I.S. Gribbestad, G. Nilsen and O. Haraldseth.*
University Hospital, Trondheim, Norway.

14:09 ***488.*** **Positive Predictive Value of Exclusively MR-Detected Breast Lesions.**
*K.C. Siegmann, M. Müller-Schimpfle, N. Fersis, P. Ruck and C.D. Claussen.*
University Hospital, Tuebingen, Germany.

14:21 ***489.*** **MRI-Directed Laser Photocoagulation of Breast Cancer.**
*S.E. Harms, V.S. Klimberg, S. Korourian, R. Henry-Tillman, B. Hyslop, H. Mumtaz, A.T. Mancino, M.P. Jones, D.E. Duncan, D. Lindquist, D. Cardwell and K.C. Westbrook.*
University of Arkansas for Medical Sciences, Little Rock, AR, USA.

14:33 ***490.*** **MR Evaluation of Breast Lesions with Dynamic Contrast Enhanced $T_1$-Weighted Imaging and $T_2$*-Weighted First Pass Perfusion Imaging.**
*K.A. Kvistad, J. Rydland, J. Vainio, H-B. Smethurst, S. Lundgren, H.E. Fjøsne, I.S. Gribbestad, G. Nilsen and O. Haraldseth.*
University Hospital, Trondheim, Norway.

14:45 ***491.*** **Inter-Observer Variability in Classification of Time-Signal Intensity Curves from Contrast-Enhanced Breast MRI.**
*B.L. Daniel, B.J. Betts, D.M. Ikeda, R.J. Herfkens, R.L. Birdwell and the IWGBMRI Lesion Diagnosis Group.*
Stanford University, Stanford CA, USA.

14:57 ***492.*** **Influence of Menstrual Phase on Apparent Diffusion Coefficients Measured in the Breast.**
*S.C. Partridge, G. McKinnon, D.C. Newitt, M.R. Day and N.M. Hylton.*
University of California, San Francisco, CA, USA and GE Medical Systems, Waukesha, WI, USA.

15:09 ***493.*** ***In Vivo* Tensor MR-Elastography - Anisotropy of Mamma-Carcinoma.**
*R. Sinkus, J. Lorenzen, D. Schrader, M. Lorenzen, M. Dargartz and D. Holz.*
Philips Research and Uni-Krankenhaus Eppendorf, Hamburg, Germany.

# fMRI: Spatial-Temporal Characteristics

Room A102
16:00 – 18:00

**Chairs: Peter A. Bandettini**
**Seong-Gi Kim**

16:00 ***494.*** **Mapping Iso-Orientation Columns with Ultra-High Resolution fMRI.**
*D-S. Kim, T.Q. Duong and S-G. Kim.*
University of Minnesota School of Medicine, Minneapolis, MN, USA.

16:12 ***495.*** **Early Negativity Enhanced BOLD fMRI Using Short Inter-Stimulus Intervals.**
*B.M. Ances and J.A. Detre.*
University of Pennsylvania, Philadelphia, PA, USA.

16:24 ***496.*** **Spatially Coincident Patterns of Cerebral Blood Flow and Metabolism Response During Neuronal Stimulation.**
*R.D. Hoge, J. Atkinson, B. Gill, J.B. Mandeville, S. Marrett and G.B. Pike.*
Massachusetts General Hospital, Charlestown MA, USA and Montreal Neurological Institute, Montreal Quebec, Canada.

16:36 ***497.*** **Arterial Spin Labeling Localizes the fMRI Signal to Brain Tissues Better than BOLD.**
*W-M. Luh, E.C. Wong and J.S. Hyde.*
University of California, San Diego, CA, USA and Medical College of Wisconsin, Milwaukee, WI, USA.

16:48 ***498.*** **Negative Visually Induced BOLD Response During Human Adult Slow-Wave Sleep.**
*A.P. Born, T.E. Lund, L.G. Hanson, A. Steensgaard, P.L. Madsen, E. Rostrup and H.C. Lou.*
Hvidovre Hospital, Copenhagen, Denmark; John F. Kennedy Institute, Glostrup, Denmark and Rigshopitalet, Copenhagen, Denmark.

17:00 ***499.*** **Spatiotemporal fMRI during Motor and Picture-Naming Tasks.**
*M. Singh, W. Sungkarat, J. Jeong and A. Dimoka.*
University of Southern California, Los Angeles, CA, USA.

17:12 ***500.*** **Characterizing the Dynamic Perfusion Response to Stimuli of Short Duration.**
*K.L. Miller, W.M. Luh, T.T. Liu, A. Martinez, T. Obata, E.C. Wong, L.R. Frank and R.B. Buxton.*
University of California, San Diego, CA, USA and Stanford University, Stanford, CA, USA.

17:24 ***501.*** **Probing Fast Neuronal Events and Neuronal Interaction in Human Visual Cortex During Short Visual Stimulation Based on fMRI BOLD Response.**
*W. Chen, X-H. Zhu, S. Ogawa and K. Ugurbil.*
University of Minnesota, Minneapolis, MN, USA and Bell Laboratories, Murray Hill, NJ, USA.

17:36 ***502.*** **fMRI Activation Secondary to Finger Tapping has Shorter Duration in Subcortical Regions Than in Sensorimotor Cortex.**
*C.H. Moritz, M.E. Meyerand, D. Cordes and V.M. Haughton.*
University of Wisconsin, Madison, WI, USA.

17:48 ***503.*** **Comparison of Temporal Characteristics Between Event-Related Potential and BOLD Response to Checkerboard Stimulation in Human V1.**
*K. Kashikura, S. Yamamoto, X. Zhang, J. Kershaw and I. Kanno.*
Japan Science and Technology Corporation (JST), Akita, Japan; Kobe City College of Techonology, Kobe, Japan and Akita Research Institute of Brain and Blood Vessels, Akita, Japan.

# Contrast Mechanisms

Room A108
16:00 – 18:00

**Chairs: Joseph C. McGowan**
**Dmitriy A. Yablonskiy**

16:00 ***504.*** **Anatomic and Functional MRI with Intermolecular Double-Quantum Coherences at 7 Tesla.**
*W. Richter, M. Mescher, K. Ugurbil, G. Adriany, P. Andersen, L. Bouchard and W.S. Warren.*
National Research Council, Winnipeg, MB, Canada; University of Minnesota, Minneapolis, MN, USA and Princeton University, Princeton NJ, USA.

16:12 ***505.*** **Intermolecular Double-Quantum Coherence Imaging of Human Brain at 1.5T.**
*J. Zhong, Z. Chen and E. Kwok.*
University of Rochester, Rochester, NY, USA.

16:24 ***506.*** **Mitochondrial Structural Integrity Contributes Significantly to its Magnetization Transfer Effect.**
*A.E. Schussheim, K.M. Ward and R.S. Balaban.*
National Institutes of Health, Bethesda, MD, USA.

16:36 ***507.*** **Depth Dependent Proton Magnetization Transfer in Articular Cartilage.**
*R.R. Regatte, J.H. Kaufman, U. Duvvuri, J.S. Leigh and R. Reddy.*
University of Pennsylvania, Philadelphia, PA, USA.

16:48 ***508.*** **Quantitative Imaging of Magnetization Transfer Parameters *in vivo* Using MRI.**
*J.G. Sled and G. B. Pike.*
Montréal Neurological Institute, Montréal, Québec, Canada.

17:00 ***509.*** **Imaging Ultra-Short $T_2$ Species in the Brain.**
*K.S. Nayak, J.M. Pauly, G.E. Gold and D.G. Nishimura.*
Stanford University, Stanford, CA, USA.

17:12 ***510.*** **Imaging Method Sensitive to Microvessel Density.**
*J.H. Jensen and R. Chandra.*
New York University School of Medicine, New York, NY, USA.

17:24 ***511.*** **Effects of Oxygenation Level in Contrast-Enhanced Magnetic Resonance Angiography Using NC100150 Injection.**
*L.O. Johansson, A. Bjørnerud, K. Briley-Sæbø and K.E. Kellar.*
Nycomed Imaging A/S, Oslo, Norway and Uppsala University Hospital, Uppsala, Sweden.

17:36 ***512.*** **Microscopic Susceptibility Variation and $T_1 r$ .**
*A.C. Nugent and G.A. Johnson.*
Duke University Medical Center, Durham, NC, USA.

17:48 ***513.*** **Effects of pH and Ionic Environment on the On-Resonance $T_1 r$ in Native and Cross-Linked Protein Solution as Determined with Spin-Lock Methods.**
*H.I. Mäkelä, O.H.J. Gröhn and R.A. Kauppinen.*
University of Kuopio, Kuopio, Finland.

# MR PHYSICS AND TECHNIQUES FOR CLINICIANS:

Room A201
16:00 – 18:00

**Chair: Frank R. Korosec**

**Educational Objectives**
At the conclusion of this course, participants should be able to:

- Define and describe the fundamental principles of MR imaging, including spin magnetization, the Larmor relationship, relaxation phenomena, and the process of using the spin magnetization to produce an image;
- Explain imaging pulse sequences based upon spin and gradient echoes, including fast spin echo and echo planar techniques;
- Design MR imaging protocols for diagnostic applications considering image contrast, spatial resolution, acquisition time, signal-to-noise ratio, and artifacts;
- Describe the principles and capabilities of various advanced MR techniques including perfusion and diffusion, spectroscopy, interventional MRI, and cardiac MR imaging.

Materials to accompany today's lectures can be found at http://jcmsgi.rad.upenn.edu/jmcgowan/ismr/ismrm.html.

16:00 **Cardiac MRI.**
*Lawrence Dougherty.*

16:40 **Interventional MRI.**
*Mark E. Ladd.*

17:20 **Introduction to MR Spectroscopy.**
*Robert E. Lenkinski.*

# MR Spectroscopy of Brain

Room A207
16:00 – 18:00

**Chairs: James W. Prichard**
**Rolf Gruetter**

16:00 ***514.*** **Volumetric Magnetization Transfer Imaging Correlates with Proton Spectroscopy in Neuropsychiatric Systemic Lupus Erythematosus.**
*G.P.T. Bosma, M.A. van Buchem, M.J. Rood, J. Doornbos, A. van den Haak and T.W.J. Huizinga.*
Leiden University Medical Center, Leiden, The Netherlands.

16:12 ***515.*** **Early Proton MRS in Normal Appearing Frontal White Matter Correlates with Injury Severity and Outcome in Patients Following Traumatic Brain Injury.**
*M.R. Garnett, R.G. Corkill, T.A.D. Cadoux-Hudson, A.M. Blamire, B. Rajagopalan and P. Styles.*
University of Oxford and Radcliffe Infirmary, Oxford, UK.

16:24 ***516.*** **Neuronal Recovery Following Traumatic Brain Injury: $^{1}$H-MRS Evidence in Humans.**
*W.M. Brooks, C.A. Stidley, H. Petropoulos, R.E. Jung, D.C. Weers, S.D. Friedman, M.A. Barlow, W.L. Sibbitt Jr. and R.A. Yeo.*
University of New Mexico, Albuquerque, NM, USA.

16:36 ***517.*** **2D MR Spectroscopic Characterization of NAA, Glutamate and Glutathione in Human Brain *In Vivo*.**
*M.A. Thomas, K. Yue, N. Binesh, P. Davanzo, A. Kumar, J. Curran and B. Guze.*
University of California, Los Angeles, CA, USA.

16:48 ***518.*** **Measurement of Glutamate and Glutamine in the Anterior Cingulate and Thalamus of Drug Naïve Schizophrenic Patients at 4.0 Tesla.**
*R. Bartha, P.C. Williamson, D.J. Drost, R.W.J. Neufeld, J. Théberge, A.K. Malla and R.S. Menon.*
John P. Robarts Research Institute and University of Western Ontario, London, Ontario, Canada.

17:00 ***519.*** **Human Brain b-Hydroxybutyrate and Lactate Increase in Fasting Induced Ketosis.**
*J.W. Pan, D.L. Rothman, K.L. Behar and H.P. Hetherington.*
Brookhaven National Laboratory, Upton, NY, USA and Yale University School of Medicine, New Haven, CT, USA.

17:12 ***520.*** **Lithium Increases *N*-Acetyl-Aspartate (NAA) in the Human Brain: *In Vivo* Evidence in Support of Lithium-Induced CNS Bcl-2 Increases?**
*G.J. Moore, J.M. Bebchuk, G. Chen, K. Hasanat, I.B. Wilds, N. Seraji-Bozorgzad, M.W. Faulk, L. Jolkovsky, S. Koch, D. Glitz and H.K. Manji.*
Wayne State University School of Medicine, Detroit, MI, USA.

17:24 ***521.*** **Cortical GABA Differs Between Unipolar and Bipolar Depression.**
*G.F. Mason, G. Sanacora, A. Anand, N. Epperson, A. Goddard, D. Rothman, D. Charney and J. Krystal.*
Yale University School of Medicine, New Haven, CT, USA.

17:36 ***522.*** **The Basal Ganglia, Low-Field, $^{1}$H MRS Purine Resonance (7.5-8.5 PPM) is Decreased in Major Depression, Correlates with b-NTP by $^{31}$P MRS, and Predicts Treatment Response.**
*P.F. Renshaw, A.M. Parow, Y. Ke, C.M. Moore, B.deB. Frederick and J.A. Hennen.*
McLean Hospital, Belmont, MA, USA.

17:48 ***523.*** **Reduced Brain GABA Levels in Cocaine Abusers.**
*H.P. Hetherington, J.W. Pan, F. Telang, N. Pappas and N.D. Volkow.*
Brookhaven National Laboratory, Upton, NY, USA.

# Perfusion: Contrast Agent Based Methods

Room C106
16:00 – 18:00

**Chairs: Bruce R. Rosen**
**Leon Axel**

16:00 ***524.*** **A New Approach for the Estimation of MTT in Bolus Passage Perfusion Techniques.**
*N.A. Thacker, X. Zhu, A. Jackson and A.J. Lacey.*
University of Manchester, Manchester, UK.

16:12 ***525.*** **Quantitative Perfusion Imaging: Methods and Results.**
*M.J.P. van Osch, E.P.A. Vonken, C.J.G. Bakker, J. van der Grond and M.A. Viergever.*
University Hospital, Utrecht, The Netherlands.

16:24 ***526.*** **3D MR Pulmonary Perfusion and Angiography with a New Intravascular Contrast Agent B22956/1 in Detection of Pulmonary Flow and Perfusion Defects.**
*J. Zheng, J.P. Finn, J. Carr, M. Sake, G. Laub, F. Cavagna, F. Maggioni and D. Li.*
Northwestern University, Chicago, IL, USA; Bracco, Milan, Italy and Siemens Medical Systems, Chicago, IL, USA.

16:36 ***527.*** **Determination of Cerebral Blood Volume and Mean Transit Time by Dynamic Contrast Enhanced MR Imaging in Patients with Acute Stroke: A Comparison of Four Post Processing Methods.**
*J. Perkiö, H.J. Aronen, J. Karonen, Y. Liu, S. Savolainen and L. Østergaard.*
Kuopio University Hospital, Kuopio, Finland; Helsinki University Central Hospital, Helsinki, Finland; University of Helsinki, Helsinki, Finland and Aarhus University Hospital, Aarhus, Denmark.

16:48 ***528.*** **Quantification of the Effect of Water Exchange in Myocardial Perfusion Measurement Using Contrast Enhanced MRI.**
*H.B.W. Larsson, S. Rosenbaum and T. Fritz-Hansen.*
Hvidovre University Hospital, Hvidovre, Denmark.

17:00 ***529.*** **Estimation of Myocardial Blood Flow Using Tracer Kinetic Modelling and a Fast $T_1$-Mapping Method.**
*D. Bellamy, R.S. Pereira, C. McKenzie, F.S. Prato, J. Sykes and G. Wisenberg.*
Lawson Research Institute, St. Joseph's Health Centre and University of Western Ontario, London, Ontario, Canada.

17:12 ***530.*** **Evaluation of Myocardial Perfusion and Coronary Imaging Using Gadomer-17 in a Porcine Model of Single Vessel Disease.**
*B.L. Gerber, D.A. Bluemke, A.W. Heldman, B.B. Chin, C.L. Steinert, J.A.C. Lima and D.L. Kraitchman.*
Johns Hopkins University, Baltimore, MD, USA.

17:24 ***531.*** **Quantification of Myocardial Perfusion and Perfusion Reserve with Magnetic Resonance First-Pass Measurements on Patients with Known Coronary Artery Disease.**
*M. Schmitt, W.G. Schreiber, S.E. Petersen, K-F. Kreitner, J. Scharhag, C. Klessen, T. Voigtländer, J. Meyer and M. Thelen.*
Johannes Gutenberg University, Mainz, Germany.

17:36 ***532.*** **Myocardial Blood Flow in Normals with MRI and PET: Comparison and Assessment of Reproducibility.**
*S. Nekolla, T. Ibrahim, K. Schreiber, F. Bengel and M. Schwaiger.*
Technische Universität, München, Germany.

17:48 ***533.*** **Intra- and Interobserver Agreement of Quantitative Magnetic Resonance First-Pass Perfusion Imaging.**
*O.M. Muehling, M.E. Dickson, A. Zenovich, Y. Huang, M. Jerosch-Herold, B.V. Wilson, R.F. Wilson, I.S. Anand and N.M. Wilke.*
University of Minnesota Medical School and VA Medical Center, Minneapolis, MN, USA.

# Image Processing

Room C205
16:00 – 18:00

**Chairs: Ron Kikinis**
**Harvey E. Cline**

16:00 ***534.*** **Automatic Aorta Tracking for Blood Flow Analysis in MR PCA Image Sequences.**
*A.J. Lacey, N.A. Watson, N.A. Thacker and A. Jackson.*
University of Manchester, Manchester, UK.

16:12 ***535.*** **Image Segmentation Based Upon the Maximum Intensity Projection Z-Buffer.**
*D.L. Parker, B.E. Chapman, J.A. Roberts, A.L. Alexander and J. Tsuruda.*
University of Utah, Salt Lake City, UT, USA.

16:24 ***536.*** **Analysis of Subtraction Methods in 3D MR DSA for Peripheral Vascular Disease.**
*Y. Huang, C.A. Webster and G.A. Wright.*
University of Toronto, Toronto, ON, Canada.

16:36 ***537.*** **Unsupervised Computation of Left Ventricular Strain from Tagged Cardiac MR Images.**
*T.S. Denney Jr. and L. Yan.*
Auburn University, Auburn, AL, USA.

16:48 ***538.*** **Fast Maximum Intensity Projection Algorithm Using Shear Warp Factorization and Reduced Resampling.**
*L. Fang, B. Qiu, Y. Qian, X. Ma and Y. Wang.*
PLA General Hospital, Beijing, China; Hefei University of Technology, China; GE Medical Systems, Hong Kong and Cornell University, New York, NY, USA.

17:00 ***539.*** **Magnetic Resonance Elastography Revisited: Reinterpreting Phase-Difference Data as the Output of a Linear Filter.**
*T.E. Oliphant, R.L. Ehman and J.F. Greenleaf.*
Mayo Clinic, Rochester, MN, USA.

17:12 ***540.*** **Direct, Fast Estimation of Complex-Valued Stiffness for Magnetic Resonance Elastography.**
*T.E. Oliphant, A. Manduca, J. F. Greenleaf and R.L. Ehman.*
Mayo Clinic, Rochester, MN, USA.

17:24 ***541.*** **2D and 3D Visualization of Human Brain Diffusion Tensor Data Combined with fMRI and High-Resolution Anatomical Data.**
*C. Karmonik, X.J. Zhou and E.F. Jackson.*
University of Texas, M.D. Anderson Cancer Center, Houston, TX, USA.

17:36 ***542.*** **An Integrated Visualization System for Surgical Planning and Guidance.**
*D. Gering, A. Nabavi, R. Kikinis, W. Wells, W.E.L. Grimson and F. Jolesz.*
MIT AI Laboratory and Brigham and Women's Hospital, Harvard Medical School, Boston, MA, USA.

17:48 ***543.*** **A Platform for Visualization of Anatomical, Functional and Sub-Dural Cortical Stimulation Data.**
*O. Skinjar, A. Carpentier, T. Constable, C. Studholme and J. Duncan.*
Yale University School of Medicine, New Haven, CT, USA.

# MR Imaging of the Head andNeck

Room C209
16:00 – 18:00

**Chairs: Jonathan S. Lewin**
**Robert W. Dalley**

16:00 ***544.*** **Dynamic Contrast Uptake in Cervical Lymph Nodes: Correlation with Biopsy.**
*S.M. Noworolski, N.J. Fischbein, M.J. Kaplan, S.J. Nelson and R.G. Henry.*
The University of California, San Francisco, CA, USA.

16:12 ***545.*** **Dynamic MRI of Head and Neck Carcinomas to Assess Microcirculation and Changes During Therapy.**
*M.V. Knopp, M.M. Lumer, H.P. Schlemmer, A. Dietz, D. Vanselow, F. Giesel, H. Hawighorst and R. Lucht.*
German Cancer Research Center and University Hospitals, Heidelberg, Germany and The Ohio State University, Columbus, OH, USA.

16:24 ***546.*** **Combined Analysis of Morphologic and Dynamic MRI Criteria in Differentiation Between Malignant and Benign Thyroid Tumors.**
*J. Mihailovic.*
Institute of Oncology, Sremska Kamenica, Yugoslavia.

16:36 ***547.*** **Prospective Comparison of Magnetic Resonance Sialography and Digital Subtraction Sialography.**
*J.T. Heverhagen, M. Kalinowski, E. Rehberg, J.A. Werner, H-J. Wagner and K.J. Klose.*
Philipps University, University Hospital, Marburg, Germany.

16:48 ***548.*** **High-Resolution CSF-Suppressed Diffussion Measurement in the Optic Nerve *In Vivo*.**
*C.A. Wheeler-Kingshott, M.R. Symms, G.J.M. Parker, S.J. Hickman, D.H. Miller and G.J. Barker.*
University College, London, UK.

17:00 ***549.*** **Virtual Endoscopy of the Labyrinth Using a 3D-FastASE Sequence.**
*S. Naganawa, H. Kawai, E. Iwayama, T. Koshikawa, H. Fukatsu, T. Ishigaki, A. Ninomiya and I. Aoki.*
Nagoya University School of Medicine, Nagoya, Japan and Toshiba Medical Systems, Tokyo, Japan.

17:12 ***550.*** **MR Imaging of the Inner Ear with a $T_2$-Weighted Axial Three-Dimensional Fast Spin-Echo Technique and Post-Processing of the Data.**
*G.A. Krombach, T. Schmitz-Rode, J. Tacke, C. Nolte-Ernsting, A. Glowinski and R.W. Günther.*
University of Technology (RWTH) Aachen, Germany.

17:24 ***551.*** **Correlating MR Spectral Features with Histopathology in Squamous Cell Carcinoma of the Head and Neck Region.**
*T. Bezabeh, S. El-Sayed, N. Ahmed, K. MacDonald, R. Nason, D. Sutherland and I.C.P. Smith.*
National Research Council of Canada, Manitoba Cancer Research and Treatment Foundation and St. Boniface General Hospital, Winnipeg, Manitoba, Canada.

17:36 ***552.*** **Evaluation of Head and Neck Tumor Response to Therapy Using *In Vivo* $^1$H MR Spectroscopy: Correlation with Pathology.**
*W. Huang, P. Roche, M. Shindo, D. Madoff, C. Geronimo and T. Button.*
State University of New York, Stony Brook, NY, USA.

17:48 ***553.*** **Three-Dimensional Tracking of Tongue Motion Using Tagged MRI.**
*D. Dick, C. Ozturk, A. Douglas, E.R. McVeigh and M. Stone.*
Johns Hopkins University and University of Maryland School of Medicine, Baltimore, MD, USA.

# MORNING CATEGORICAL COURSE
# Cardiac MR Imaging

Room C205
07:00 – 08:00

**Chairs: Andre Duerinckx**
**Roderic I. Pettigrew**
**Cynthia B. Paschal**

**Educational Objectives**
Upon completion of this course, participants should be able to:

- Describe basic areas of routine and promising clinical use of MR in assessing cardiovascular disease;
- Describe basic areas of MR use which are both routine and promising in assessing cardiovascular disease;
- Explain the MR methodology and techniques used to assess acquired and congenital heart disease;
- Apply MR protocols for the evaluation of cardiac morphology, function, viability and blood flow;
- Describe approaches for cardiac data analysis and presentation.

*The final five minutes of each talk will be reserved for questions.*

07:00 **Contrast-Enhanced Cardiac MRI.**
*Christine Lorenz.*

07:30 **Presentation and Quantitative Analysis.**
*Leon Axel.*

# MORNING CATEGORICAL COURSE
# fMRI in Neuro-Psychiatric Disease and Treatment: Models for fMRI and phMRI in Disease Treatment

Room A201
07:00 – 08:00

**Chairs: Linda Chang**
**Peter Jezzard**

**Educational Objectives**
Upon completion of this course, participants should be able to:

- Identify the special issues facing clinicians and researchers who wish to apply functional MRI to patient populations;
- Describe fMRI studies that have been successfully accomplished in neurological and psychiatric disorders;
- List a number of issues that remain to be resolved before widespread use of fMRI in patient populations is feasible;
- Describe the role and potential of animal models in increasing the understanding of fMRI studies in disease;
- Explain the principles and theory of pharmacological (ph) MRI;
- Appraise the potential for phMRI in humans and predict the impact on disease treatment.

07:00 **Issues of Animal fMRI Models.**
*Mathias Hoehn.*

07:15 **Animal Models of phMRI.**
*Bruce G. Jenkins.*

07:30 **Prospects for Human phMRI.**
*Irene Tracey.*

07:45 **Discussion.**

# MORNING CATEGORICAL COURSE
## Abdominal Imaging

Room A207
07:00 – 08:00

**Chair: Donald G. Mitchell**

**Educational Objectives**
Upon completion of this course, participants should be able to:

- Implement modern MR applications for diagnosing focal and diffuse liver disease;
- Incorporate into their practices recent developments for MR imaging of the pancreas and biliary tract, including MR cholangiopancreatography;
- Use MRI to diagnose extrahepatic disease, such as that of the bowel and peritoneum, as well as vascular disease using state of the art MR angiographic techniques.

07:00 **Abdominal MRA.**
*George A. Holland.*

07:50 **Questions.**

# MORNING CATEGORICAL COURSE
## The Nano-Meter Film: How MRS and MRI Can Probe Tissue Microstructure

Room C106
07:00 – 08:00

**Chairs: Chris Boesch**
**R. Mark Henkelman**

**Educational Objectives**
Upon completion of this course, participants should be able to:

- Describe methods in MRS and MRI that allow studies of tissue ultra-structure
- Identify areas in which MR can contribute to the knowledge of tissue organization
- Evaluate potential applications and limitations of MR methods to study compartmentation, order, and transport processes *in vivo*
- Generate an overview of advanced methods in MRS and MRI that give information on the nanometer scale
- Explain the influence of tissue structure upon MR parameters.

*The final five minutes of each talk will be set aside for questions.*

07:00 **Diffusion MRI.**
*David G. Norris.*

07:30 **Diffusion MRS.**
*Klaas Nicolay.*

08:00 **Adjournment.**

# PLENARY LECTURES
## Advanced Processing and Display

Ballroom
08:15 – 09:30

**Chairs: Sarah J. Nelson**
**Michael H. Buonocore**

**Educational Objectives**
Upon completion of this session participants should be able to:

- Describe tools and techniques for visualizing scientific and medical data
- Describe growth of computational power and graphics speed
- Compare processing and display strategies used in imaging research
- Explain challenges of visualizing spatially resolved physiological data
- Predict ways that data will be visualized in the future

08:15 ***554.*** **Advanced Processing and Visualization in the World.**
*Kurt Akeley.*
SGI, Mountain View, CA, USA.

08:40 ***555.*** **Methods and Applications in Brain Imaging.**
*Alan C. Evans.*
Montreal Neurological Institute, Montreal, Quebec, Canada.

09:05 ***556.*** **Advanced Processing and Display: Methods and Applications in Body Imaging.**
*Elliott McVeigh.*
National Institutes of Health, Bethesda, MD, USA and Johns Hopkins University School of Medicine, Baltimore, MD, USA.

# RF Coil Design

Room A102
10:30 – 12:30

**Chairs: Mark A. Griswold**
**Barbara L. Beck**

10:30 ***557.*** **Synergy Body Coil Optimal Design for SENSE Imaging.**
*P.C.H.A. Haans.*
Philips Medical Systems, Best, The Netherlands.

10:42 ***558.*** **Planar Strip Array Antenna for Parallel Spatial Encoded MRI.**
*R.F. Lee, C.R. Westgate, R.G. Weiss and P.A. Bottomley.*
Johns Hopkins University, Baltimore, MD, USA.

10:54 ***559.*** **SMASH RF Coil Arrays: Specialized Design Considerations.**
*J. Willig, R. Brown, T. Eagan and S. Shvartsman.*
Case Western Reserve University, Cleveland, OH, USA.

11:06 ***560.*** **Effects of End Ring Configuration on Homogeneity in a Birdcage Coil.**
*C.M. Collins, P.J. Delp and M.B. Smith.*
The Pennsylvania State University College of Medicine, Hershey, PA, USA.

11:18 ***561.*** **A Novel Quadrature Birdcage Coil for a Vertical $B_0$ Field Open MRI System.**
*H. Fujita, W.O. Braum and M.A. Morich.*
Picker International, Inc., Cleveland, OH, USA.

11:30 ***562.*** **SNR Discrimination of Useful MRS Data from a Phased Array.**
*T. Prock, E. Bassouls, D.J. Collins and M.O. Leach.*
Institute of Cancer Research and Royal Marsden Hospital, Sutton, Surrey, UK.

11:42 ***563.*** **Shielded Surface Coils and Halfvolume Cavity Resonators for Imaging and Spectroscopy Applications at 7 Tesla.**
*G. Adriany, E. Yacoub, I. Tkac, P. Andersen, H. Merkle, J.T. Vaughan and K. Ugurbil.*
University of Minnesota, Minneapolis, MN, USA.

11:54 ***564.*** **Analysis of the Interaction between RF Field and Sample with a Surface Coil at 7.0T.**
*J.H. Wang, Q.X. Yang, C.M. Collins, M.B. Smith, S. Michaeli, X-H. Zhu, G. Adriany, X. Zhang, H. Liu, P. Andersen, J.T. Vaughan, K. Ugurbil and W. Chen.*
The Pennsylvania State University College of Medicine, Hershey, PA, USA and University of Minnesota, Minneapolis MN, USA.

12:06 ***565.*** **Circularly Polarized RF Helmet Coil for Brain Studies at 7 Tesla.**
*H. Merkle, W. Driesel, P. Andersen, G. Adriany, K. Ugurbil and M. Garwood.*
The University of Minnesota Medical School, Minneapolis, MN, USA and Max-Planck-Institute of Cognitive Neuroscience, Leipzig, Germany.

12:18 ***566.*** **Measurement of Magnetic Coupling Coefficients of TEM Resonators.**
*M. Alecci and P. Jezzard.*
John Radcliffe Hospital, University of Oxford, Headington, Oxford, UK.

# MR Spectroscopy of Cells, Body Fluids and Other

Room A108
10:30 – 12:30

**Chairs: Sabrina M. Ronen**
**Zaver M. Bhujwalla**

10:30 ***567.*** **N-acetyl-aspartate: *In-vitro* Expression in Oligodendrocytes; Implications for Proton-MRS Signal *in vivo*.**
*K.K. Bhakoo and P. Styles.*
University of Oxford, Oxford, UK.

10:42 ***568.*** **Metabolic Differences Between Normal Human Astrocytes and Astrocytomas: Evidence from $^{1}$H-NMR for Lineage and Transformation-Specific Features.**
*J.E. Le Belle, S.R. Williams and K.K. Bhakoo.*
University College, London, Medical School, London, UK; University of Manchester, Manchester, UK and Oxford University, Oxford, UK.

10:54 ***569.*** **Implication of Hyperammonemic Conditions on Astrocytic Lipid Metabolism.**
*C. Zwingmann and D. Leibfritz.*
University of Bremen, Bremen, Germany.

11:06 ***570.*** **Effects of Extracellular Acidification on Lipid/Phospholipid Synthesis of Neural Cell Lines Studied By One- and Two-Deimensional NMR Spectroscopy.**
*K. Glunde, J. Engelmann and D. Leibfritz.*
Universität Bremen, Bremen, Germany.

11:18 ***571.*** **The Effect of an Anti-Inflammatory Agent Indomethacin on Human Vascular Endothelial Cell Phospholipids.**
*N. Mori, K. Natarajan, V.P. Chacko, D. Artemov and Z.M. Bhujwalla.*
The Johns Hopkins University, School of Medicine, Baltimore, MD, USA.

11:30 ***572.*** **Ras Transformation Could Be Detectable By MRS.**
*S.M. Ronen, L.E. Jackson and M.O. Leach.*
Institute of Cancer Research, Royal Marsden Hospital, Sutton, Surrey, UK.

11:42 ***573.*** **Detection of Neutral Lipid Droplets in Fas-Induced Apoptotic Jurkat T-Cells.**
*N.M. Al-Saffar, P.A. Clarke, D. Robertson, M.O. Leach and S.M. Ronen.*
Institute of Cancer Research, Royal Marsden Hospital, Sutton Surrey, UK.

11:54 ***574.*** **The Mitochondrial Permeability Transition Inhibitor, Cyclosporin A, Induces NMR-Visible Lipid Via a Chlorpromazine Inhibitable Pathway.**
*N. Harper, N. Sathasivam and E.J. Delikatny.*
University of Sydney, Sydney, Australia.

12:06 ***575.*** **Multinuclear Magnetic Resonance Imaging and Spectroscopy of Prostate Cancer Cell Invasion.**
*E. Ackerstaff, U. Pilatus, D. Artemov, N. Mori, R.J. Gillies and Z.M. Bhujwalla.*
The Johns Hopkins University School of Medicine, Baltimore, MD, USA and University of Arizona, Tucson, AZ, USA.

12:18 ***576.*** **Analysis of $^{2}$H Enrichment in All Positions of Plasma Glucose by $^{2}$H NMR Spectroscopy Following Infusion of $^{2}H_2O$.**
*J.G. Jones, A.D. Sherry and C.R. Malloy.*
University of Texas, Southwestern Medical Center, Dallas, TX, USA.

# CLINICAL CATEGORICAL:
# Head and Neck Imaging

Room A201
10:30 – 12:30

**Chair: Jonathan S. Lewin**

**Educational Objectives**
Upon completion of this course, participants should be able to:

- Compare the normal and pathological MR imaging appearance of the sinuses and nasal cavity;
- Apply the latest MR imaging techniques to diagnose abnormalities of the brachial plexus;
- Describe the rationale for pulse sequence selection in the head and neck, and the advantages of MRI over CT in evaluation of this region;
- Discuss imaging issues in evaluation of the larynx and hypopharynx.

10:30 **Sinonasal MRI.**
*David M. Yousem.*

11:00 **Brachial Plexus.**
*Robert W. Dalley.*

11:30 **Evaluating Cancer of the Pharynx.**
*Laurie A. Loevner.*

12:00 **What Sequence Should I Use?**
*Suresh Mukherji.*

# Registration, Segmentation, and Tissue Characterization

Room A207
10:30 – 12:30

**Chairs: Zhi-Pei Liang**
**Hamid Soltanian-Zadeh**

10:30 ***577.*** **Detection of Areas with Viable Remnant Tumor in Postchemotherapy Patients with Ewing's Sarcoma by Dynamic Contrast-Enhanced MRI Using a Neural Network.**
*M. Egmont-Petersen, J.P. Janssen, R.J. v.d. Geest, H.A. Vrooman, P.C.W. Hogendoorn, J.L. Bloem and J.H.C. Reiber.*
Leiden University Medical Center, Leiden, the Netherlands.

10:42 ***578.*** **Tissue Characterization of Multiparameter MRI with Histopathological Validation in Experimental Cerebral Ischemia in Rat.**
*M.A. Jacobs, R.A. Knight, Z.G. Zheng, H. Soltanian-Zadeh, A.V. Goussev, D.J. Peck, R. Hammoud, I. Duhaini and M. Chopp.*
Henry Ford Hospital, Detroit, MI, USA and Oakland University, Rochester, MI, USA.

10:54 ***579.*** **Numerical Tissue Characterization in MS via Standardization of the MR Image Intensity Scale.**
*Y. Ge, J.K. Udupa, L.G. Nyul, L. Wei and R.I. Grossman.*
University of Pennsylvania Medical Center, Philadelphia, PA, USA.

11:06 ***580.*** **Characterising Cortical Changes in Alzheimer's Disease.**
*A.L. Janke, G. de Zubicaray, S.E. Rose, J.B Chalk, G.J. Galloway, G. Cowin, J. Semple and D.M. Doddrell.*
University of Queensland and Princess Alexandra Hospital, Brisbane, Australia and SmithKline Beecham Pharmaceuticals, Cambridge, UK.

11:18 ***581.*** **Evaluation of Automatic Guided Specific Tissue Segmentation Using VX-2 Tumor in the Rabbit.**
*B.T. Wyman, C.L. Stork, R.E. Price, J.D. Hazle, P.R. Gavin, R.L. Tucker and J.P. Smith.*
Confirma, Inc. Kirkland WA, USA; University of Texas, M.D. Anderson Cancer Center, Houston TX, USA; Washington State University, Pullman, WA, USA and First Hill Imaging, Seattle WA, USA.

11:30 ***582.*** **Independent Component Analysis of Multi-Channel MRI Data.**
*S. Muraki and T. Nakai.*
Electrotechnical Laboratory (ETL), Tsukuba, Japan.

11:42 ***583.*** **Detecting Bilateral Brain Abnormalities with Voxel-Based Morphometry.**
*C.H. Salmond, J. Ashburner, F. Vargha-Khadem, D.G. Gadian and K.J. Friston.*
University College London, London, UK.

11:54 ***584.*** **A New Method for the Registration of EPI fMRI and Gradient Echo $T_1$-Weighted Volume Data.**
*L. Lemieux.*
University College London, London, UK and National Society for Epilepsy, Chalfont St. Peter, UK.

12:06 ***585.*** **Alignment of Functional Data Acquired Before and After Intra-Cranial Electrode Implantation Using Non-Rigid Anatomical MRI Registration.**
*C. Studholme, E. Novotny, R. Stokking, J.S. Duncan, I.G. Zubal and D. Spencer.*
Yale University School of Medicine, New Haven, CT, USA.

12:18 ***586.*** **Image Registration Using a Discrete Fourier Transform Implementation of the Decoupled Automated Rotation and Translation Algorithm (DFT-DART).**
*M.S. NessAiver and S. Biswas.*
University of Maryland School of Medicine, Baltimore, MD, USA.

# Pediatric MR Imaging and Spectroscopy

Room C106
10:30 – 12:30

**Chairs: Petra Pouwels**
**David Gadian**

10:30 ***587.*** **Quantitation of Standard and Less Prominent Metabolites in Neonatal Brain Using Short TE $^{1}$H-MR Spectroscopy and Advanced Model Fitting.**
*R. Kreis, L. Hofmann, B. Kuhlmann, P. Hüppi, E. Bossi and C. Boesch.*
University of Bern, Bern, Switzerland.

10:42 ***588.*** **Fetal Brain Development as Reflected in Metabolite Ratios Recorded by $^{1}$H MRS.**
*A. van den Bergh, A. Heerschap, R. Kok and P. van den Berg.*
University Hospital Nijmegen, Nijmegen, The Netherlands.

10:54 ***589.*** **Myelin Metabolites and Brain Water are Abnormal in Patients with Vanishing White Matter Disease (VWMD).**
*B.D. Ross, K.S. Seymour, M. Philippart, J. Tan and S. Bluml.*
Huntington Medical Research Institutes, Pasadena, CA, USA; Rudi Schulte Research Institute, Santa Barbara, CA, USA and University of California, Los Angeles, CA, USA.

11:06 ***590.*** **Quantitative $^{1}$H-MRS in Early Human Brain Development and Metabolic Changes after Perinatal Brain Injury.**
*P.S. Hüppi, G.P. Zientara, L. Hofmann, R. Kreis, C. Boesch, F.A. Jolesz and J.J. Volpe.*
Harvard Medical School, Boston, MA, USA; University of Geneva, Geneva, Switzerland; University of Berne, Berne, Switzerland and Brigham and Women's Hospital and Harvard Medical School, Boston, MA, USA.

11:18 ***591.*** **Evaluation of Diffusion Anisotrophy During Human Cortical Grey Matter Development.**
*J.J. Neil, R.C. McKinstry, B.L. Schlaggar, G. Schefft, S.I. Shiran, J.S. Shimony, J.S. Shimony, A.Z. Snyder, C.R. Almli, E. Akbudak and T.E. Conturo.*
Washington University School of Medicine, St. Louis, MO, USA.

11:30 ***592.*** **Patterns of Global Apparent Diffusion Coefficient Distribution in Normal and Asphyxiated Neonatal Brain.**
*A. Radjenovic, S.F. Tanner, J.P. Ridgway, V. Toh, M.I. Levene and M.A. Smith.*
University of Leeds and Leeds General Infirmary, Leeds, UK.

11:42 ***593.*** **Quantitative ADC Measurements in Term Neonates for Early Detection of Hypoxic-Ischemic Encephalopathy.**
*R.L. Wolf, J.H. Haselgrove, R. Clancy and R.A. Zimmerman.*
Univesity of Pennsylvania Medical Center and Children's Hospital of Philadelphia, Philadelphia, PA, USA.

11:54 ***594.*** **The Identification of At-Risk Tissue in Children with Sickle Cell Disease Using MR Diffusion and Perfusion Imaging.**
*F. Calamante, F.J. Kirkham, M. Bynevelt, T.C. Cox, D.A. Porter, C.L. Johnson, E. Strehle, M. Prengler, W.K. Chong, D.G. Gadian and A. Connelly.*
University College London Medical School and Great Ormond St. Hospital for Children, London, UK.

12:06 ***595.*** **Quantitative $T_1$ and $T_2$ Changes in White Matter of Children Treated for ALL.**
*W.E. Reddick and J.O. Glass.*
St. Jude Children's Research Hospital, Memphis, TN, USA.

12:18 ***596.*** **Quantitative Assessment of Brain Development in the Premature Infant Post Hemorrhagic Hydrocephalus.**

*B.P. Murphy, P.S. Huppi, S. Warfield, T.E. Inder, G.P. Zientara, R. Kikinis, F.A. Jolesz and J.J. Volpe.*
Harvard Medical School, Boston, MA, USA; University of Geneva, Geneva, Switzerland; Harvard Medical School and Brigham & Women's Hospital, Boston, MA, USA; University of Otago, Christchurch School of Medicine, Christchurch, New Zealand and Children's Hospital, Boston, MA, USA.

# MR Spectroscopy - Other

Room C205
10:30 – 12:30

**Chairs: Peter S. Allen**
**Gilles F. Bloch**

10:30 ***597.*** **Semiselective POCE NMR Spectroscopy.**
*P-G. Henry, R. Roussel, F. Vaufrey, C. Dautry and G. Bloch.*
Service Hospitalier Frédéric Joliot, Orsay, France.

10:42 ***598.*** **Dynamic Dtection of NAA/GSH Turnover: a 3D-Localized *in vivo* $^{13}$C NMR Study of Rat Brain.**
*I-Y. Choi and R. Gruetter.*
University of Minnesota, Minneapolis, MN, USA.

10:54 ***599.*** **Differentiation of Glucose Transport in Human Brain Gray and White Matter.**
*R.A. de Graaf, J.W. Pan, F. Telang, J-H. Lee, P. Brown, E.J. Novotny, H.P. Hetherington and D.L. Rothman.*
Yale University School of Medicine, New Haven, CT, USA and Brookhaven National Laboratory, Upton, NY, USA.

11:06 ***600.*** **Localized Spectroscopy with Intermolecular Zero Quantum Coherences: Phantom Results.**
*M. Mescher, W. Richter, L. DelaBarre, M. Garwood and W.S. Warren.*
University of Minnesota, Minneapolis, MN, USA; National Research Council, Winnipeg, MB, Canada and Princeton University, Princeton NJ, USA.

11:18 ***601.*** **An Investigation of the Relationship between $T_2$ and the Absorbed Dose in Radiation Dosimetry Polymer Gels.**
*M. Lepage, A.K. Whittaker, L. Rintoul and C. Baldock.*
Centre for Medical and Health Physics and Centre for Instrumental and Developmental Chemistry Queensland University of Technology, Brisbane, Australia.

11:30 ***602.*** **Early Phase Bone Formation Studied by Solid State $^{1}$H-$^{31}$P Differential Cross Polarization/ Magic Angle Spinning NMR Spectroscopy.**
*Y. Wu, J.L. Ackerman, E.S. Strawich, C.C. Rey and M.J. Glimcher.*
Children's Hospital, Boston, MA, USA; Massachussetts General Hospital, Charlestown, MA, USA; Harvard Medical School, Boston, MA, USA and Institut National Polytechnique, Toulouse, France.

11:42 ***603.*** **Two-Dimensional Localised MRS for Applicatio *In Vivo*.**
*J.W.R. Welch, A.M. Blamire, R.M. Dixon and P. Styles.*
University of Oxford, Oxford, UK.

11:54 ***604.*** **Single Quantum Coherance Filtering of Strongly Coupled Spin Systems: Application to Taurine.**
*A.H. Trabesinger, D.C. Mueller and P. Boesiger.*
University and ETH Zurich, Zurich, Switzerland.

12:06 ***605.*** **GABA Detection by Longitudinal Scalar Order Difference Editing.**
*R.A. de Graaf, M. Santovito, J.H. Duyn and D.L. Rothman.*
Yale University School of Medicine, New Haven, CT, USA and National Institutes of Health, Bethesda, MD, USA.

# fMRI: Insights to Neuroscience

Room C209
10:30 – 12:30

**Chairs: Robert Turner**
**Mark S. Cohen**

10:30 ***606.*** **Activation in Multiple Cortical Regions in a Visually Cued Grip Force Task: An Event-Related fMRI Study.**
*X. Golay, G.R. Crelier, H. Alkadhi, M-C. Hepp-Raymond and S.S. Kollias.*
University Hospital and University and ETH, Zurich, Switzerland.

10:42 ***607.*** **Visual Cue in fMRI as an External Initiator for Motor Execution.**
*T. Nakai, K. Matsuo, C. Kato, G.H. Glover, T. Moriya and T. Okada.*
AIST, MITI, Tsukuba, Japan; Toyohashi Sozo College, Toyohashi, Japan; Stanford University, Stanford, CA, USA and National Institute for Physiological Sciences, Okazaki, Japan.

10:54 ***608.*** **The fMRI Response Associated with Static Force Contractions in the Human.**
*J-H. Lee, J.M. Brener, J.M. Sniffen, G. Hudson and C.S. Springer,Jr.*
Brookhaven National Laboratory, Upton, NY, USA and State University of New York, Stony Brook, NY, USA.

11:06 ***609.*** **Functional Connectivity in the Cortical and Subcortical Regions of the Motor System.**
*M.E. Meyerand, C.H. Moritz, D. Cordes, M. Quigley and V.M. Haughton.*
University of Wisconsin, Madison, WI, USA.

11:18 ***610.*** **Accurate Measurement of the Relative Timing of Functional Events in the Motor System.**
*R.A. Jones, B. Dilharreguy, J.A. Brookes, M. Allard and C.T.W. Moonen.*
Université Bordeaux 2, Bordeaux, France.

11:30 ***611.*** **fMRI Response in Somatosensory Cortices Upon Median Nerve Stimulation: Effects of Current Amplitude and Selective Attention.**
*W.H. Backes, W.H. Mess, V. van Kranen-Mastenbroek and J. Reulen.*
University Hospital Maastricht, Maastricht, The Netherlands.

11:42 ***612.*** **Functional Magnetic Resonance Imaging in Rats Subjected to Noxious Electrical and Chemical Stimulation of the Forepaw.**
*U.I. Tuor, K. Malisza, T. Foniok, R. Papadimitropoulos, M. Jarmasz, R. Somorjai and P. Kozlowski.*
National Research Council, Winnipeg, MB, Canada.

11:54 ***613.*** **fMRI Assessment of the Chinese Character-Word Dissociation Hypothesis of Cerebral Laterality.**
*H.L. Liu, L.H. Tan, J.A. Spinks, C.A. Perfetti, J. Xiong, Y. Pu, Y. Liu, P.T. Fox and J-H. Gao.*
University of Texas Health Science Center, San Antonio, TX, USA; University of Hong Kong, Hong Kong and University of Pittsburgh, Pittsburgh, PA, USA.

12:06 ***614.*** **Event-Related fMRI Study of Delayed Match-to-Sample and Nonmatch-to Sample Tasks.**
*J. Zhuang, C.S. Monk, W.J. Curtis, C.A. Nelson and X. Hu.*
University of Minnesota, Minneapolis, MN, USA.

12:18 ***615.*** **Event Related fMRI During Retrieval Encoded Spatial Scenes.**
*S.A.R.B. Rombouts, F. Barkhof, M.P. Witter, W.C.M. Machielsen and P. Scheltens.*
Vrije Universiteit, Amsterdam, The Netherlands.

# POSTER SESSIONS

Hall C
Monday: 14:00 – 16:00
Tuesday – Wednesday: 13:30 – 15:30

## Young Investigator Awards Finalists

Poster 4 and 5 will also be presented in the oral session **Hyperpolarized Gas Imaging in the Lung** on Monday, 3 April, 2000 at 11:00 in Room A102.

T ***4.*** ***Young Investigator Awards Finalist:*** **Probing Lung Physiology with Xenon Polarization Transfer Contrast (XTC).**
*K. Ruppert, J.R. Brookeman, K.D. Hagspiel and J.P. Mugler III.*
University of Virginia School of Medicine, Charlottesville, VA, USA.

W ***5.*** ***Young Investigator Awards Finalist:*** **Hyperpolarized $^{3}$He MR Lung Ventilation Imaging in Asthmatics: Preliminary Findings.**
*T.A. Altes, P.L. Powers, J. Knight-Scott, G. Rakes, T.A.E. Platts-Mills, E.E. de Lange, B.A. Alford, J.P. Mugler, III and J.R. Brookeman.*
University of Virginia, Charlottesville, VA, USA.

Poster 80 will also be presented in the oral session **Diffusion Tensor MRI of the Central Nervous System** on Monday, 3 April, 2000 at 16:30 in Room A102.

T ***80.*** ***Young Investigator Awards Finalist:*** **Diffusion Anisotropy MRI for Quantitative Assessment of Recovery in Injured Rat Spinal Cord.**
*U. Nevo, E. Hauben, E. Yoles, E. Agranov, I.R. Cohen, S. Akselrod, M. Schwartz and M. Neeman.*
The Weizmann Institute of Science, Rehovot, Israel; Tel-Aviv University, Tel-Aviv, Israel and Beit Levinstein Hospital, Raanana, Israel.

Poster 228 will also be presented in the oral session **MR Imaging of Brain: Multiple Sclerosis** on Tuesday, 4 April, 2000 at 16:00 in Room A108.

W ***228.*** ***Young Investigator Awards Finalist:*** **Magnetization Transfer and Multi-Component $T_2$ Measurements with Histopathologic Correlation in an Experimental Model of Multiple Sclerosis.**
*P.J. Gareau, B.K. Rutt, S.J. Karlik and J.R. Mitchell.*
John P. Robarts Research Institute and London Health Sciences Center, London, Ontario, Canada.

Poster 300 will also be presented in the oral session **Rapid Imaging II** on Wednesday, 5 April, 2000 at 10:30 in Room A207.

M ***300.*** ***Young Investigator Awards Finalist:*** **Interactive Fast Spin Echo Imaging.**
*R.F. Busse, S.J. Riederer, J.G. Fletcher, A.E. Bharucha and K.R. Brandt.*
Mayo Clinic, Rochester, MN, USA.

Poster 396 will also be presented in the oral session **Motion and Artifacts** on Wednesday, 5 April, 2000 at 16:00 in Room C205.

M ***396.*** ***Young Investigator Awards Finalist:*** **Postprocessing Technique to Correct for Background Gradients in Image-Based $R_2$* Measurements.**
*M.A. Fernández-Seara and F.W. Wehrli.*
University of Pennsylvania Medical Center, Philadelphia, PA, USA.

# POSTER WALKING TOUR
## Angiogenesis

Hall C
Monday: 14:00 – 16:00

**Chairs: Kevin Brindle**
**Anwar R. Padhani**

14:00 ***616.*** **New MRI Contrast Agent for Labeling of Tumor-Associated Macrophages that Stimulate Tumor Angiogenesis.**
*S.E. Harms, T. Hinton, L. Manning and S. Korourian.*
University of Arkansas for Medical Sciences and Little Rock VA Hospital, Little Rock, AR, USA.

14:04 ***617.*** **Characterization of DR2*/DR2 for the Evaluation of Angiogenesis Induced Changes in Vascular Morphology.**
*A.P. Pathak, R.J. Linderman, H. Xu, B.D. Ward, A.S. Greene and K.M. Donahue.*
Marquette University and Medical College of Wisconsin, Milwaukee, WI, USA.

14:08 ***618.*** **Quantification of Endothelial Permeability, Leakage Space and Blood Volume in Brain Tumors Using Combined $T_1$ and $T_2$* Contrast-Enhanced Dynamic MR Imaging.**
*X.P. Zhu, K.L. Li, I.D. Kamaly-Asl, D.R. Checkley, J.J.L. Tessier, J.C. Waterton and A. Jackson.*
University of Manchester, Manchester, UK and AstraZeneca, Macclesfield, Cheshire, UK.

14:12 ***619.*** **Parametric Mapping of Scaled Fitting Error in Dynamic Susceptibility Contrast Enhanced MR Perfusion Imaging. Part II: Clinical Application.**
*A. Jackson, X.P. Zhu, A. Kassner, Y. Watson and K.L. Li.*
University of Manchester, Manchester, UK and Philips Medical Systems, Hammersmith, London, UK.

14:16 ***620.*** **Analysis of Perfusion MRI in Cerebral Glioma Using a Linear Filter.**
*D.J. Peck, T. Mikkelsen, R. VanHulle, L. Scapace and D. Hearshen.*
Henry Ford Hospital, Detroit, MI, USA.

14:20 ***621.*** **Temporal Sampling Requirements for the Estimation of Blood Flow, Blood Volume and Extraction Ratio from Dynamic Contrast-Enhanced MRI Studies.**
*T-Y. Lee, E. Henderson and B.K. Rutt.*
St. Joseph's Health Centre; The University of Western Ontario and Robarts Research Institute, London, ON, Canada.

14:24 ***622.*** **Angiogenesis in Cerebral Gliomas: $T_2$* rCBV Map versus Pathological Vascularity.**
*M-L. Wu, W-C. Wu, C-W. Ko, C-Y. Chen and H-W. Chung.*
National Taiwan University and Tri-Service General Hospital, Taipei, Taiwan, ROC.

14:28 ***623.*** **Tumor Oxygen Dynamics with Respect to Growth and Respiratory Challenge by $^{19}$F NMR EPI.**
*D. Zhao, A. Constantinescu, E.W. Hahn and R.P. Mason.*
University of Texas, Southwestern Medical Center, Dallas, TX, USA.

14:32 ***624.*** **Assessing Tumour Response to Treatment: Histogram Analysis of Parametric Maps of Tumour Vascular Function Derived From Dynamic Contrast-Enhanced MR Images.**
*C. Hayes, A.R. Padhani and M.O. Leach.*
Institute of Cancer Research and Royal Marsden NHS Trust, Sutton, Surrey, UK.

14:36 ***625.*** **Assessment of Human Tumor Response to a Vascular Targeting Agent Through Contrast-Enhanced MRI Perfusion Measurement.**
*N. Rafie, J.A. Jesberger, J.L. Duerk, M. Mendez, S.C. Remick and J.S. Lewin.*
Case Western Reserve University, Cleveland, OH, USA.

# POSTER WALKING TOUR
## MR Spectroscopy of Degenerative and Inflammatory Brain Disease

Hall C
Monday: 14:00 – 16:00

**Chairs: Norbert Schuff**
**Hoby P. Hetherington**

14:00 ***626.*** **Absolute Brain Metabolite Concentrations In Multiple Sclerosis During Therapy Measured by MRS at 3 T.**
*F. Schubert, F. Seifert, H. Rinneberg, S. Mientus and J. Haas.*
Physikalisch-Technische Bundesanstalt and Jüdis ches Krankenhaus, Berlin, Germany.

14:04 ***627.*** **$^{1}$H MRS Study in Occipital Gray Matter of Multiple Sclerosis Patients.**
*O. Presciutti, P. Sarchielli, G. Gobbi, R. Tarducci, G.P. Pelliccioli, P. Chiarini, E. Gentile and V. Gallai.*
Azienda Ospedaliera di Perugia and Perugia University, Perugia, Italy and ASL n. 3, Foligno, Italy.

14:08 ***628.*** **Neuronal Dysfunction in the Cerebral Cortex of the Multiple Sclerosis Brain Demonstrated with Quantitative Magnetic Resonance Spectroscopic Imaging.**
*P. Kapeller, M.A. McLean, C. Griffin, D. Chard, G.J.M. Parker, A.J. Thompson and D.H. Miller.*
University College London, London, UK; Karl-Franzens- University, Graz, Austria and National Society for Epilepsy, Chalfont St. Peter, UK.

14:12 ***629.*** **Acetate Metabolismis Altered in Some Multiple Sclerosis Plaques.**
*R. Sharma, H. Yu, J. Wolinsky and P. Narayana.*
University of Texas-Houston Medical School, Houston, TX, USA.

14:16 ***630.*** **$^{1}$H MRSI Measurement of Early Detection and Longitudinal Changes in ALS.**
*J. Suhy, N. Schuff, R.G. Miller, N. Gatto, A.A. Maudsley and M.W. Weiner.*
University of California and DVA Medical Center, San Francisco, CA, USA.

14:20 ***631.*** **MR Imaging and Localized $^{1}$H Spectroscopy of the Precentral Gyrus in Amyotrophic Lateral Sclerosis.**
*B.C. Bowen, P.M. Pattany, W.G. Bradley, J.B. Murdoch, F. Rotta, A.A. Younis, R.C. Duncan and R.M. Quencer.*
University of Miami, Miami, FL, USA and Picker International, Highland Heights, OH, USA.

14:24 ***632.*** **Study of the Primary Motor Cortex in Amyotrophic Lateral Sclerosis by Quantitative $^{1}$H MRS.**
*R. Tarducci, P. Sarchielli, O. Presciutti, G.P. Pelliccioli, V. Gallai, E. Gentile and G. Gobbi.*
Ospedale Policlinico di Perugia and Università di Perugia, Perugia, Italy and ASL n. 3, Foligno, Italy.

14:28 ***633.*** **$^{1}$H-MRS Reveals Diffuse Neuronal Injury in Amyotrophic Lateral Sclerosis.**
*H. Petropoulos, R.N. Mandler, C. Qualls, J. Dencoff, M. Meister, J. Werner and W.M. Brooks.*
University of New Mexico Health Science Center, Albuquerque, NM, USA.

14:32 ***634.*** **Relationship Between Metabolite Ratios and Degree of Cognitive Impairment in Alzheimer's Disease and Multi-Infarct Dementia Using Clinical Proton MRS at 1.0 T.**
*A.D. Waldman and G.S. Rai.*
National Hospital for Neurology and Neurosurgery and Whittington Hospital, London, UK.

14:36 ***635.*** **Diagnostic Impact of Proton NMR Spectroscopy ($^{1}$H MRS) in Dementia, A Comparative Study of Different Dementias and Mild Cognitive Impairment.**
*S. Herminghaus, C. Gorriz, U. Pilatus, H. Lanfermann, L. Frölich and F.E. Zanella.*
University of Franfurt/Main, Frankfurt, Germany.

14:40 ***636.*** **Proton Chemical Shift Imaging in the Pick Complex.**
*O. Kizu, S. Naruse, S. Furuya, K. Yamada, M. Ikejiri and T. Nishimura.*
Kyoto Prefectural University of Medicine, Kyoto, Japan.

# POSTER WALKING TOUR
# RF Coils

Hall C
Tuesday: 13:30 – 15:30

**Chairs: Richard W. Briggs**
**Joseph Murphy-Boesch**

13:30 ***637.*** **Electromagnetic Modelling of RF Coils Using the Transmission-Line Modelling Method.**
*P.J. Cassidy, K. Clarke and D.J. Edwards.*
University of Oxford, Oxford, UK.

13:34 ***638.*** **Homogeneous Truncated Head Coil for Vertical Field.**
*E. Boskamp.*
GE Medical Systems, Milwaukee, WI, USA.

13:38 ***639.*** **A Multi-Element Opposed Solenoid Catheter Coil Provides Homogenous Radial Sensitivi ty and Extended Coverage.**
*W.J. Rogers and E. Visser.*
Allegheny General Hospital, Pittsburgh, PA, USA and Cordis Europe N.V., Roden, The Netherlands.

13:42 ***640.*** **A Feasibility Study of a Dual Mode Loop and Loopless Catheter Probe Allowing Simultaneous Imaging With Both Modes.**
*D.J. Gilderdale and D.J. Larkman.*
Imperial College School of Medicine, Hammersmith Hospital, London, UK.

13:46 ***641.*** **Implications of Cable Shield Currents at 3.0 and 4.7 Tesla.**
*B.L. Beck, D.M. Peterson, G.R. Duensing and J.R. Fitzsimmons.*
University of Florida, Gainesville, FL, USA and The National High Magnetic Field Laboratory, Tallahassee, FL, USA.

13:50 ***642.*** **PIN Diode Behavior during High Peak $B_1$ Excitation: Measurement, Safety and Efficacy Concerns.**
*S.M. Varosi, G.R. Duensing and D.A. Molyneaux.*
MRI Devices Corporation, Gainesville, FL, USA.

13:54 ***643.*** **A Noise Correlation Measurement Tool for Multi-Channel RF Coils.**
*C.C. Guclu and P. Steen.*
General Electric Medical Systems, Milwaukee, WI, USA.

13:58 ***644.*** **Series Section Matching for Intravascular Coils.**
*G.C. Scott, P.A. Rivas and B.S. Hu.*
Stanford University, Stanford, CA, USA.

14:02 ***645.*** **Practical Design and Testing of Single Element TEM Resonators.**
*M. Alecci and P. Jezzard.*
John Radcliffe Hospital, University of Oxford, Headington, Oxford, UK.

14:06 ***646.*** **Assessment of the Sensitivity of Small NMR Coils With a Single-Loop Probe.**
*E. Durand, J.C. Ginefri and L. Darrasse.*
Université Paris -Sud, Orsay, France.

14:10 ***647.*** **Toward Understanding Power Requirements in High-Field Imaging of the Head: Instantaneous $B_1$ Flux and Faraday's Law.**
*C.M. Collins and M.B. Smith.*
The Pennsylvania State University College of Medicine, Hershey, PA, USA.

14:14 ***648.*** **Parametric Studies of Electromagnetic Compatibility between RF Hyperthermia and MR Systems.**
*W. Wlodarczyk, J. Nadobny, W. Hoffmann, G. Mönich, P. Wust, H. Rinneberg and R. Felix.*
Technische Universität, Charité Virchow Klinikum and Physikalisch-Technische Bundesanstalt, Berlin, Germany.

# POSTER WALKING TOUR
# Flow Quantification: Methods and Applications

Hall C
Tuesday: 13:30 – 15:30

**Chairs: Thomas K.F. Foo**
**David N. Firmin**

13:30 ***649.*** **Sampling Strategies for Improved Flow Quantification Using Fourier Velocity Encoding.**
*C-M. Tsai and D.G. Nishimura.*
Stanford University, Stanford, CA, USA.

13:34 ***650.*** **A New Approach to Study Aortic Flow Wave Propagation.**
*D.W. Kaandorp, P.F.F. Wijn and J.M.A. van Engelshoven.*
University Hospital Maastricht, Maastricht, The Netherlands and Saint Joseph Hospital, Veldhoven, The Netherlands.

13:38 ***651.*** **Comparing Spiral, FAcE and Gradient Echo Sequences For High Resolution Velocity Measurement in the Carotid Artery.**
*S. Ringgaard, M. Pedersen, R. Sangill, H. Stødkilde-Jørgensen, P. Börnert and E.M. Pedersen.*
Aarhus University Hospital, Aarhus, Denmark and Philips Research Laboratories, Hamburg, Germany.

13:42 ***652.*** **Assessment of Coronary Artery Bypass Graft Flow Reserve Using Magnetic Resonance Imaging and the Doppler Flow Wire.**
*S.E. Langerak, P. Kunz, J.W. Jukema, H.W. Vliegen, H. Lamb, A. de Roos and E.E. van der Wall.*
Leiden University Medical Center, Leiden, The Netherlands and Interuniversity Cardiology Institute of the Netherlands, Utrecht, The Netherlands.

13:46 ***653.*** **Change in Total Cerebral Blood Flow After Acetazolamide Measured With Phase - Mapping.**
*J.R. Marstrand, E. Rostrup, E. Garde and H.B.W. Larsson.*
University Hospital, Hvidovre, Denmark.

13:50 ***654.*** **Validation of Real Time MR Flow Measurements and Quantitation of the Hyperaemic Flow Response in Atherosclerotic Patients.**
*J. Rickers, A.D. Blankholm, T. Fründ, H.D. Sorensen, J. Laustsen and E.M. Pedersen.*
Aarhus University Hospital, Aarhus, Denmark.

13:54 ***655.*** **Delayed Cardiac Recovery from Physical Exercise Long After Repair of Tetralogy of Fallot: Assessment by Ultra-Fast MRI.**
*P. Kunz, A.A.W. Roest, H.J. Lamb, W.A. Helbing, J. Doornbos, E.E. van der Wall and A. de Roos.*
Leiden University Medical Center, Leiden, The Netherlands and the Interuniversity Cardiology Institute of the Netherlands, Utrecht, The Netherlands.

13:58 ***656.*** **Assessing the Influence of Temperature on Blood Flow in the Lower Extremities by ECG-Triggered 2D Phase Contrast Quantitative Flow Measurements.**
*L.W. Bartels, W.J. Niessen, C.J.G. Bakker, W.P.T.M. Mali and M.A. Viergever.*
University Medical Center Utrecht, Utrecht, The Netherlands.

# POSTER WALKING TOUR
# MRI Microscopy

Hall C
Wednesday: 13:30 – 15:30

**Chairs: Gheorghe D. Mateescu**
**Richard W. Bowtell**

13:30 ***657.*** **Anatomical Phenotyping of CRF Overexpressing Transgenic Mice by MRI.**
*N. Beckmann, D. Baumann, K. Bruttel, C. Gentsch and M. Rudin.*
Novartis Pharma AG, Basel, Switzerland.

13:34 ***658.*** **Web Publishable 11.7 Tesla Microscopy MRI Atlas of Mouse Embryos.**
*M. Dhenain, S.W. Ruffins, A. Dhenain and R.E. Jacobs.*
California Institute of Technology, Pasadena, CA, USA.

13:38 ***659.*** **Functional Cardiac Microscopy Using Projection Encoding.**
*A.C.S. Brau, G.P. Cofer, L.W. Hedlund, J.K. Tajik and G.A. Johnson.*
Duke University Medical Center, Durham, NC, USA.

13:42 ***660.*** **MRI as a Tool to Serially Assess the Progression of Heart Failure in a Mouse.**
*S.S. Berr, A.J. Ross, W.D. Gilson, Z. Yang, B.A. French and J.N. Oshinski.*
University of Virginia, Charlottesville, VA , USA.

13:46 ***661.*** **Multiple Component Water Diffusion Observed In Isolated Single Neurons.**
*S.J. Blackband, S.C. Grant, D.L. Buckley, S. Gibbs, A.G. Webb and T.H. Mareci.*
University of Florida, Gainesville, FL; The National High Magnetic Field Laboratory, Tallahassee, FL; and University of Illinois, Chicago, IL, USA.

13:50 ***662.*** **Microscopic Heterogeneity of Red Cell Transit Time, Path Length and Velocity in the Cerebral Cortex.**
*A.G. Hudetz.*
Medical College of Wisconsin, Milwaukee, WI, USA.

13:54 ***663.*** **Determination of Biomechanical Properties of Joint Cartilage by Dynamic MRT - a NMR Microscopic Study.**
*G. Hanke, U. Reibetanz and W. Gründer.*
Universität Leipzig, Leipzig, Germany.

13:58 ***664.*** **MR Micro-Imaging Study of Water Migration into Glass Ionomer Dental Cements - the Efficiency of Surface Coating.**
*I. Ser[1]a, P. Jevnikar, A. Sepe and N. Funduk.*
Jožef Stefan Institute and Dental Clinic, Ljubljana, Slovenia.

14:02 ***665.*** **Imaging the Long Range Dipolar Field in Structured Liquid State Samples.**
*S. Gutteridge, C. Ramanathan and R. Bowtell.*
University of Nottingham, Nottingham, UK.

# POSTER WALKING TOUR
## Registration, Segmentation, and Tissue Characterization

Hall C
Wednesday: 13:30 – 15:30

**Chairs: Max A. Viergever**
**Louis Lemieux**

13:30 ***666.*** **Automated Analysis of the Distribution and Severity of Cerebral Atrophy in Dementing Diseases: Diagnostic Power in Alzheimer's, Frontotemporal and Vascular Dementia.**
*N.A. Thacker, D. Bathgate, A. Varma, D. Neary, J.S. Snowden and A. Jackson.*
University of Manchester and Central Manchester Healthcare Trust, Manchester, UK.

13:34 ***667.*** **Texture Analysis of MRI Assists in the Detection of Focal Cortical Dysplastic Lesions.**
*A. Bernasconi, S. Antel, N. Bernasconi, F. Dubeau, A. Olivier, F. Andermann, D.L. Collins and D.L. Arnold.*
McGill University, Montreal, Quebec, Canada.

13:38 ***668.*** **How Does the Signal-to-Noise Ratio Influence Texture Measures?**
*A.M. Fenstad, A. Lundervold, M. Bock and L.R. Schad.*
University of Bergen, Bergen, Norway and German Cancer Research Center (DKFZ), Heidelberg, Germany.

13:42 ***669.*** **Unsupervised Segmentation of Clinical Stroke with Multiparameter MRI.**
*M.A. Jacobs, S. Patel, P. Mitsias, H. Soltanian-Zadeh, D.J. Peck, A. Ghanei, R. Hammoud, I. Duhaini, M. Pasnoor and M. Chopp.*
Henry Ford Hospital, Detroit, MI, USA and Oakland University, Rochester, MI, USA.

13:46 ***670.*** **Competitive Neural Networks for Segmentation of MR Images According to Contrast Agent Uptake Kinetics.**
*R.J. Maxwell, I. Wilson, G. Tozer, P. Barber and B. Vojnovic.*
Gray Laboratory Cancer Research Trust, Northwood, Middlesex, UK.

13:50 ***671.*** **$T_1$-Based Brain Image Segmentation Using Phase-Sensitive Inversion Recovery Imaging.**
*X. Ji, J. Ma, C. Bulkes and Z-P. Liang.*
GE Medical Systems, Milwaukee, WI, USA and University of Illinois, Urbana, IL, USA.

13:54 ***672.*** **An Automatic Algorithm for Skin Surface Extraction from MR Scans.**
*O. Skinjar and J. Duncan.*
Yale University School of Medicine, New Haven, CT, USA.

13:58 ***673.*** **The Effect of the Starting Image Volume on Brain Segmentation Results.**
*A.M. Smith and T. Duprez.*
Université catholique de Louvain, Louvain, Belgium.

14:02 ***674.*** **Serial Hippocampal and Cerebellar Volumetry in Coregistered Scan Pairs: Reproducibility In A Blinded Study.**
*R.S.N. Liu, D. Messina, S.M. Sisodiya, S.D. Shorvon, J.S. Duncan and L. Lemieux.*
National Society for Epilepsy, Chalfont St. Peter, Bucks, UK and University College London, London, UK.

14:06 ***675.*** **Improved Accuracy in Volume Measurement of Acoustic Neuroma Using Bayesian Classifiers.**
*E.A. Vokurka, A. Herwadkar, N.A. Thacker, R.T. Ramsden and A. Jackson.*
University of Manchester and Central Manchester Healthcare NHS Trust, Manchester,UK.

14:10 ***676.*** **The Intimate Combination of Low- and High Resolution Image Data: II. Fourier Space PET and $^1H_2O$ MRI, PEMRI.**
*J. Logan, A. Levy, J-H. Lee, F. Hode, C.A. Felder, M.K. Sammi, D.L. Alexoff, J.S. Fowler, N.D. Volkow and C.S. Springer, Jr.*
Brookhaven National Laboratory, Upton, NY, USA and State University of New York, Stony Brook, NY, USA.

14:14 ***677.*** **Registration of *In-Vivo* MRI to Postmortem Brain Photographs.**
*T-S. Kim, M. Singh, W. Sungkarat, C. Zarow and H. Chui.*
University of Southern California, Los Angeles, CA, USA.

# POSTER WALKING TOUR
## Rapid Imaging

Hall C
Thursday: 13:30 – 15:30

**Chairs: Gary H. Glover**
**Graeme C. McKinnon**

13:30 ***678.*** **POCS Based Image Reconstruction for SMART Imaging.**
*S. Lee and D.C. Noll.*
University of Michigan, Ann Arbor, MI, USA.

13:34 ***679.*** **Split-Displaced U-FLARE: A New Variant of Fast Spin Echo Imaging.**
*W. Dreher, D. Mayer and D. Leibfritz.*
Universität Bremen, Bremen, Germany.

13:38 ***680.*** **Spatial Three Dimensional Imaging Using RUFIS.**
*J.-J. Hsu and I.J. Lowe.*
University of Pittsburgh and Carnegie Mellon University, Pittsburgh, PA, USA.

13:42 ***681.*** **Simultaneous Image Refocusing (SIR): A New Approach to Multi-Slice MRI.**
*D.A. Feinberg, T.G. Reese and V.J. Wedeen.*
Washington University, St. Louis, MO, USA and Massachusetts General Hospital, Charlestown, MA, USA.

13:46 ***682.*** **High Resolution 3D-Myelography and -Ventriculography Using Inner Volume RARE With Optimized K-Space Trajectories.**
*J. Hennig and K. Scheffler.*
University Hospital, Freiburg, Germany.

13:50 ***683.*** **Single Slab High Resolution 3D Whole Brain Imaging Using Spiral FSE.**
*E.C. Wong, W-M. Luh, R.B. Buxton and L.R. Frank.*
University of California, San Diego, CA, USA.

13:54 ***684.*** **A Novel Method for the Rapid Generation of fMRI Covariance and Correlation Maps.**
*A.R. Wade, T.P. Burg, G.H. Glover and B.A. Wandell.*
Stanford University, Stanford, CA, USA.

13:58 ***685.*** **4Hz Volumizer fMRI Acquisition Using Multi-Slice PRESTO-EPI.**
*A.M. Gibson, A.M. Peters, R.J. Coxon, P.G. Morris and R. Bowtell.*
University of Nottingham, Nottingham., UK.

14:02 ***686.*** **Ultra-Fast Heavily $T_2$* Weighted 3D Brain Imaging Using a Half k-space PRESTO Acquisition.**
*J.A. Brookes, C. Delalande, M. Ries, B. Dilharreguy, R.A. Jones and C.T.W. Moonen.*
Université Victor Segalen Bordeaux II, Bordeaux, France.

14:06 ***687.*** **Three-Dimensional $T_2$-Weighted Imaging of the Brain Using Very Long Spin-Echo Trains.**
*J.P. Mugler III, B. Kiefer and J.R. Brookeman.*
University of Virginia School of Medicine, Charlottesville, VA, USA and Siemens Medical Engineering Group, Erlangen, Germany.

# POSTER WALKING TOUR
# MR Angiography: Technique Optimization

Hall C
Thursday: 13:30 – 15:30

**Chairs: Michael V. Knopp**
**Michael Bock**

13:30 ***688.*** **Clinical Evaluation of 75 Patients With Aortic Disease Using Contrast-Enhanced MRA and Non-Contrast-Enhanced MRA with ECG-gated 3D half-Fourier FSE.**
*J. Urata, H. Wada, M. Miyazaki, T. Nakaura, Y. Yamashita and M. Takahashi.*
Saiseikai Kumamoto Hospital, Kumamoto, Japan; Toshiba Medical Systems Division, Tochigi, Japan and Kumamoto University School of Medicine, Kumamoto, Japan.

13:34 ***689.*** **Quantitative Evaluation of Peripheral MRA in 139 Consecutive Patients Using Bolus Chase 3D MRDSA Combined with 2D MRDSA.**
*Y. Wang, P.A. Winchester, N.M. Khilnani, R. Watts, E. Vidan and M.R. Prince.*
Weill Medical College of Cornell University, New York, NY, USA.

13:38 ***690.*** **Multiphase-Multistep 3D Gadolinium-Enhanced MRA of the Abdominal Aorta and Run-Off Vessels.**
*S.O. Schoenberg, F. Londy, P. Licato, D. Williams, T. Wakefield and T.L. Chenevert.*
University of Michigan, Ann Arbor, MI, USA; German Cancer Research Center (dkfz), Heidelberg, Germany and General Electric Medical Systems, Milwaukee, WI, USA.

13:42 ***691.*** **Peripheral MRA with Flexible Choice of Imaging Parameters for Each Station.**
*T. Leiner, K. Yiu, J.A.M. Ho, P.J. Nelemans and J.M.A. van Engelshoven.*
Academic Hospital Maastricht, Maastricht, The Netherlands.

13:46 ***692.*** **Blood-Flow-Velocity-Dependent Method with 3-Phase Infusion of Reduced-Dose Gadolinium in Moving-Table 3D MR Angiography.**
*M. Kita, Y. Mitani, H. Tanihata, M. Sato, O. Takizawa and G. Laub.*
Seichokai Fuchu Hospital, Osaka, Japan; Wakayama Medical College, Wakayama, Japan; Siemens-Asahi Medical Technologies Ltd., Tokyo, Japan and Siemens Medical Systems Inc, Chicago, IL, USA.

13:50 ***693.*** **Estimation of Cross Sectional Accuracy as a Function of Resolution, Signal-to-Noise and Vessel Diameter.**
*W. Kong and E.M. Haacke.*
Washington University and The MRI Institute for Biomedical Research, St. Louis, MO, USA.

13:54 ***694.*** **Characterization of Structural and Functional Variability in Abdominal Aortic Aneurysms.**
*W.J. Rogers, N. Reichek and R.E. Pyeritz.*
Allegheny General Hospital, Pittsburgh, PA, USA.

13:58 ***695.*** **Gadolinium-Enhanced 3D Renal MRA: Paired Comparison of Bolus-Timing-Independent Fast Multiphase Acquistion with Standard Bolus-Timed 3D MRA in 20 Subjects.**
*G.B.C. Vasbinder, D.W. Kaandorp, K.Y. Ho, M.W. De Haan and J.M.A. van Engelshoven.*
University Hospital Maastricht, Maastricht, The Netherlands.

14:02 ***696.*** **Time-Resolved Contrast-Enhanced MRA with Undersampled Projection Trajectories and Vessel Segmentation.**
*K.K. Vigen, Y. Mazaheri, T.M. Grist, W.F. Block, F.R. Korosec and C.A. Mistretta.*
University of Wisconsin, Madison, WI, USA.

14:06 ***697.*** **A New Way to Perform 3D Time-Resolved Angiography.**
*B. Madore and N.J. Pelc.*
Stanford University School of Medicine, Stanford, CA, USA.

14:10 ***698.*** **A Comparison of Cardiac-Synchronized and Unsynchronized Gadolinium-enhanced Three-dimensional Magnetic Resonance Angiography of the Thoracic Aorta.**
*J.W. Goldfarb, A.E. Holland, F.M.J. Heijstraten, S. Skotnicki and J.O. Barentsz.*
University Hospital Nijmegen, Nijmegen, Netherlands.

14:14 ***699.*** **Anatomically Tailored K-Space Sampling for Bolus-Chase 3D MR Digital Subtraction Angiography.**
*R. Watts, Y. Wang, M.R. Prince and P.A. Winchester.*
Weill Medical College of Cornell University, New York, NY, USA.

## Perfusion: Arterial Spin Labeling - Applications

Hall C
Thursday: 13:30 – 15:30

***700.*** **Quantitative Measurements of $CO_2$-Induced Increases in Perfusion Using a Spin Labelling Technique in Normal Volunteers.**
*J. Goodey, E. Rostrup, H. Gesmar, H. Larsson and S.F. Keevil.*
The Guy's, King's and St. Thomas' School of Medicine and Guy's Hospital, London, UK and Hvidovre University Hospital, Copenhagen, Denmark.

***701.*** **Quantification of Cerebral Blood Flow Increases During Moderate Hypercapnia.**
*K.S. St. Lawrence, F.Q. Ye, B.K. Lewis, J.A. Frank and A.C. McLaughlin.*
National Institutes of Health, Bethesda, MD, USA.

***702.*** **Quantitative Evaluation of Vasomotor Reactivity By Acetazolamide Challenge Using FAIR Perfusion MRI.**
*Y-F. Yen, A.M. Takahashi, E.M. Martin, J.H. Burdette, L. Hernandez and D.M. Moody.*
Wake Forest University School of Medicine, Winston-Salem, NC, USA; Duke University School of Medicine, Durham, NC, USA and University of Michigan School of Medicine, Ann Arbor, MI, USA.

***703.*** **The Evaluation of the Perfusion Imaging in Rabbits With Acute Cerebral Ischemia Using FAIR Sequence and MR Dynamic Perfusion Imaging With Gd-DTPA.**
*B. Qiu, L. An, X. Meng, Y. Gao, H. Sato and X. Ma.*
PLA General Hospital, Beijing, China; GEYMS, Tokyo, Japan, and GEMS China, Beijing, China.

***704.*** **Dependence of FAIRER Lung Perfusion Signal on Cardiac Cycle, Slice Orientation, and Inversion Time.**
*S.D. Keilholz-George, J. Knight-Scott and S.S. Berr.*
University of Virginia, Charlottesville, VA, USA.

***705.*** **Multi-Slice Perfusion MRI of the Kidney Using SPDI-CASL.**
*S.L. Talagala and A.W. Kam.*
University of Pittsburgh, Pittsburgh, PA, USA.

***706.*** **Measurement of Renal Perfusion by Arterial Spin Labeling.**
*N. Karger, S. Lüsse, J. Biederer, M. Heller and C-C. Glüer.*
Universitätsklinikum Kiel, Kiel, Germany.

## Perfusion: Arterial Spin Labeling - Techniques

Hall C
Thursday: 13:30 – 15:30

***707.*** **FAIR Perfusion Signal (DM) at 1.5T and 3T.**
*M.N. Yongbi, P. van Gelderen, J.A. Frank and J.H. Duyn.*
National Institutes of Health, Bethesdsa MD, USA.

***708.*** **Physiological and Hardware Considerations for Continuous Arterial Spin Labelling in Humans.**
*J.F. Utting, D.L. Thomas, D.G. Gadian and R.J. Ordidge.*
University College London, London, UK.

*709.* **Decreasing Residual Magnetization Transfer Effects in SPDI-CASL Perfusion MRI by Pulsed Magnetization Transfer.**
*A.W. Kam and S.L. Talagala.*
University of Pittsburgh, Pittsburgh, PA, USA.

*710.* **Multiple-Slice Perfusion Imaging of Rat Brain Using a Saddle Coil for Spin Tagging.**
*C. Wei, V. Volotovsky, R. Buist and J. Peeling.*
University of Manitoba, Winnipeg, Manitoba, Canada.

*711.* **Notched FOCI Pulses for UNFAIR Perfusion Imaging.**
*D.P. Lewis, C.A. Branch and J.A. Helpern.*
Nathan S. Kline Institute, Orangeburg, NY, USA; Albert Einstein College of Medicine, Bronx, NY, USA and New York University School of Medicine, New York, NY, USA.

*712.* **Offset Correction in FAIR Imaging.**
*K. Sidaros, I.K. Andersen, H.B.W. Larsson, H. Gesmar and E. Rostrup.*
Technical University of Denmark and Hvidovre Hospital, Copenhagen, Denmark.

*713.* **A Dual-Echo- Un-Inverted FAIR (UNFAIR) Sequence for Optimized BOLD-Perfusion Measurements: Comparison with the FAIR Technique.**
*M.N. Yongbi, C.X. Tan and J.H. Duyn.*
National Institutes of Health, Bethesda, MD, USA.

*714.* **High Sensitivity Single-Shot Perfusion fMRI.**
*J.H. Duyn and M. Yongbi.*
National Institutes of Health, Bethesda, MD, USA.

*715.* **Quantification of Perfusion with Improved Temporal Resolution and Signal to Noise Ratio Using a Look-Locher-EPI-FAIR-$T_2$* Sequence.**
*S.T. Francis, J. Pears, F. McGlone, P.A. Gowland and R.W. Bowtell.*
University of Nottingham, Nottingham, UK and Unilever Research, Liverpool, UK.

*716.* **Evaluation of Non-Invasive Perfusion-Weighted MRI.**
*M. Takasu, T. Kajima, K. Ito, T. Akimitsu and K. Kurisu.*
Hiroshima University School of Medicine, Hiroshima, Japan.

*717.* **The Effect of Lung Inflation on Arterial Spin Labeling Signal in MR Perfusion Imaging of the Lung.**
*V.M. Mai, Q. Chen, K.D. Hagspiel, S.S. Berr, J. Knight-Scott and R.R. Edelman.*
Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, USA and University of Virginia, Charlottesville, VA, USA.

## Perfusion: Contrast Agents – Applications

Hall C
Thursday: 13:30 – 15:30

*718.* **Whole Brain Quantitative CBF, CBV and MTT Measures from Bolus Tracking Imaging: Application to Hyperacute Stroke Patients.**
*A.M. Smith, C.B. Grandin, T. Duprez, F. Mataigne and G. Cosnard.*
Université catholique de Louvain, Brussels, Belgium.

*719.* **Dynamic Susceptibility Contrast Magnetic Resonance Imaging (DSC MRI) In Evaluating Regional Cerebral Perfusion Reserve.**
*S. Arnold, R. Strohschein and M. Markl.*
University of Freiburg, Freiburg, Germany.

*720.* **Cerebral Infarction: Time Course of BBB Permeability Changes Evaluated by Gadolinium-Enhanced Perfusion MR Imaging.**
*Y-J. Liu, I-J. Huang, C-Y. Chen and H-W. Chung.*
National Taiwan University and Tri-Service General Hospital, Taipei, Taiwan, ROC.

*721.* **Regional Cerebral Blood Volume (rCBV) in the Cerebral and Cerebellar Hemispheres in Normal 41 Healthy Adults: Measurement with Contrast-Enhanced Dynamic Echo-Planar Imaging.**
*K. Muroi, T. Iwasawa, H. Kurihara, S. Matsubara and I. Yamamoto.*
Yokohama City University School of Medicine and Kanagawa Cardiovascular & Respiratory Center, Yokohama, Japan.

*722.* **Mapping of Microvascular Tortuosity in Moyamoya Syndrome by Estimation of Relative Contrast Recirculation Using Dynamic Susceptibility Contrast-Enhanced MRI.**
*A. Kassner, X.P. Zhu, K.L. Li, E. Keller, Y. Chan and A. Jackson.*
Philips Medical Systems, London, UK; University Hospital, Bonn, Germany; Prince of Wales Hospital, Hong Kong and University of Manchester, Manchester, UK.

*723.* **Comparison of Perfusion MR Imaging and SPECT in the Measurement of rCBF in Moyamoya Disease.**
*H.K. Lee, J.S. Kim, Y.S. Ra, C.H. Yoon, C.G. Choi, D.C. Suh and T-H. Lim.*
Asan Medical Center, University of Ulsan and Chul-Jung Army Hospital, Seoul, Korea.

*724.* **Quantitative Dynamic Contrast-Enhanced MRI in Tumors. A Reproducible Technique in the Head? A Reproducible Technique in the Breast?**
*K.L. Li, X.P. Zhu, G. Jayson, B. Carrington, A. Jones, J. Lawrance, J.C. Waterton, D. Checkley, J.J.L. Tessier and A. Jackson.*
University of Manchester and Christie Hospital, Manchester, UK and AstraZeneca, Macclesfield, Cheshire, UK.

*725.* **MR Perfusion Study of the Cervical Spinal Cord - A New Approach by PRESTO Pulse Sequence.**
*I. Anno, T. Isobe, H. Yoshioka, M. Niitsu, H. Akutsu, A. Matsumura, T. Nose and Y. Itai.*
University of Tsukuba, Tsukuba, Japan.

*726.* **MR Imaging of Perfusion Detects in Mice.**
*A. Bashir, J. Bao, M. Simons, M. Post and D. Burstein.*
Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, USA.

*727.* **Initial Evaluation of an Integrated Approach to MRI Measurement of Cardiac Perfusion.**
*L. Axel, J.E. McCloud, Q. Yuan, J.J. Pilla, D. Brockman, V.A. Ferrari and M.A. Acker.*
University of Pennsylvania School of Medicine, Philadelphia, PA, USA.

*728.* **Multislice Zonal EPI Myocardial Perfusion Imaging.**
*P.D. Gatehouse, J.R. Panting, F. Grothues and D.N. Firmin.*
Royal Brompton Hospital and Imperial College, London, UK.

*729.* **Myocardial Perfusion Reserve Index Imaging Via First-Pass Gd Dynamics in Vasodilated and Rest Conditions.**
*J.E. Siebert, M.C. DeLano, J.D. Eisenberg and J.A. Gift.*
Michigan State University, East Lansing, MI, USA.

*730.* **Preliminary Validation of (Semi-) Quantitative Assessment of Dynamic Contrast-Enhanced Myocardial Perfusion Imaging in Patients with Multi-Vessel Coronary Artery Disease.**
*M. Zhang, L. Li, P. Storey, W. Li, D. Bloomgarden, R. Edelman and P. Prasad.*
Beth Israel Deaconess Medical Center & Harvard Medical School, Boston, MA, USA.

*731.* **$T_2$* Renal Perfusion Using NC100150 Injection. Influence of $T_1$-Shortening on the First-Pass Response.**
*A. Bjørnerud, L.O. Johansson and H. Ahlström.*
Nycomed Imaging A/S, Oslo, Norway and Uppsala University Hospital, Uppsala, Sweden.

*732.* **Semi-Quantitative Assessment of First Pass Uterine Perfusion with Dynamic Contrast-Enhanced MR Imaging for Patients Treated by Uterine Fibroid Embolization.**
*W. Li, D.P. Brophy, Q. Chen, M. Zhang, R.R. Edelman and P.V. Prasad.*
Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, MA, USA.

*733.* **Application of Singular Value Decomposition in Prostate Perfusion.**
*B.J. Young, P. Gibbs, A.J. Knowles and L.W. Turnbull.*
Hull University, Hull,UK.

*734.* **Dynamic Contrast-Enhanced MRI With and Without 2% Carbogen Breathing: A Preliminary Study in Rectal Carcinoma Patients.**
*N.J. Taylor, J.J. Stirling, R. Glynne-Jones and H. Baddeley.*
Mount Vernon Hospital, Northwood, Middlesex, UK.

*735.* **Evaluation of Tissue Perfusion in a Rat Model of Hindlimb Muscle Ischemia Using First-Pass Contrast Enhanced Magnetic Resonance Imaging (MRI).**
*Y. Lou, K.M. Mohning, V.P. Hradil, J.A. Segreti, M.E. Nuss, T.R. Seifert, V.E. Cowles, S.E. Burke, B.F. Cox and C.D. Wegner.*
Abbott Laboratories, Abbott Park, IL, USA.

## Perfusion: Contrast Agents - Techniques

Hall C
Thursday: 13:30 – 15:30

*736.* **Dynamic First Pass Brain Perfusion Measurement With a Combined Double Contrast GE/SE EPI Sequence.**
*R. Strohschein, M. Markl, J. Hennig and S. Arnold.*
University of Freiburg, Freiburg, Germany.

*737.* **Quantitative Measurement of an Extraction Fraction by Double Echo Dynamic MRI.**
*H. Uematsu, N. Sadato, M. Maeda, T. Matsuda, Y. Koshimoto, H. Kimura, H. Yamada, Y. Kawamura, Y. Yonekura and H. Ito.*
Fukui Medical University, Fukui, Japan and GE-Yokogawa Medical Systems, Tokyo, Japan.

*738.* **Perfusion MRI of the Human Brain with Dynamic Susceptibility Contrast: Gradient Echo versus Spin Echo Techniques.**
*O. Speck, T. Ernst, N.M. DeSilva and L. Chang.*
Harbor-UCLA Medical Center, Torrance, CA, USA.

*739.* **A Low Cost Flow Phantom for Quantification of Flow and Volume from Perfusion MRI.**
*B.J. Young, P. Gibbs and L.W. Turnbull.*
University of Hull at Hull Royal Infirmary, Hull, UK.

*740.* **Automated Determination of the Arterial Input Function for Quantitative MR Perfusion Analysis.**
*E.D. Morris, J.W. VanMeter, T.A. Tasciyan and T.A. Zeffiro.*
Sensor Systems, Inc. Sterling, VA, USA.

*741.* **Determination of Arterial Input Function Using Fuzzy C-Means Clustering for Quantification of Cerebral Blood Flow with Dynamic Susceptibility Contrast-Enhanced MR Imaging.**
*K. Murase, K. Kikuchi, H. Miki, T. Shimizu, T. Mochizuki and J. Ikezoe.*
Ehime University School of Medicine, Ehime, Japan.

*742.* ***In Vitro* Determination of MR Properties of Gadolinium in Flowing Blood for Arterial Input Function Measurements.**
*M.J.P. van Osch, C.J.G. Bakker and M.A. Viergever.*
University Hospital, Utrecht, The Netherlands.

*743.* **Measurement of Arterial Input Function and Contrast Media Uptake Using Dual Stack SR/$T_1$-FFE.**
*R. Stollberger, H. Raith, F. Payer, M. Pedevilla, R. Bammer and F. Ebner.*
University of Graz, Graz, Austria.

*744.* **Quantitative Dynamic Contrast-Enhanced MR Imaging of Rat Tumor: Limitations of Using Changes in $T_2$* in the Aorta to Measure the Arterial Input Function.**
*G.O. Cron, J.C. Wallace, W.D. Stevens, T. Fortin, B.A. Pappas, F. Kelcz and G.E. Santyr.*
University of Wisconsin, Madison, WI, USA and Carleton University, Ottawa, ON, Canada.

*745.* **Delay and Dispersion Effects in Dynamic Susceptibility Contrast MRI: Simulations Using Singular Value Decomposition.**
*F. Calamante, D.G. Gadian and A. Connelly.*
University College London Medical School, London, UK.

*746.* **Independent Component Analysis (ICA) of MR Cerebral Perfusion Data.**
*T.J. Carroll, V.M. Haughton, D. Cordes, P.A. Turski, S.R. Amoli and F.R. Korosec.*
University of Wisconsin, Madison, WI, USA.

*747.* **Adaptive Weighting for Accuracy Improvements in Derivation of MR Perfusion Parameters.**
*F-N. Wang, I-J. Huang, Y-R. Liu, H-W. Chung and C-Y. Chen.*
National Taiwan University and Tri-Service General Hospital, Taipei, Taiwan, ROC.

*748.* **Parametric Mapping of Scaled Fitting Error in Dynamic Susceptibility Contrast Enhanced MR Perfusion Imaging. Part I: Statistical Analysis.**
*X.P. Zhu, A. Lacey, K.L. Li, N. Thacker and A. Jackson.*
University of Manchester, Manchester, UK.

*749.* **Curve Fitting of Dynamic MRI Enhancement Data of the Kidney.**
*J.A. den Boer, M.J.A.M. Geerlings, W.H. Backes, J.A. de Priester, E. Giele, F. Kessels and J.M.A. v. Engelshoven.*
University Hospital, Maastricht, the Netherlands and Eindhoven University of Technology, Eindhoven, the Netherlands.

*750.* **Underestimation in MR Measurement of Blood Volume of Brain Tumors.**
*H. Uematsu, M. Maeda, N. Sadato, T. Matsuda, Y. Koshimoto, H. Kimura, H. Yamada, Y. Kawamura, Y. Yonekura and H. Itoh.*
Fukui Medical University, Fukui, Japan and GE Yokogawa Medical Systems, Tokyo, Japan.

*751.* **Potential of Gd-DTPA-Mannan-Liposome Particles As a New Pulmonary Perfusion MRI Contrast Agent: Experimental Results.**
*K. Suga, M. Mikawa, N. Ogasawara, H. Okazaki, K. Takana, K. Takano and N. Matsunaga.*
Yamaguchi University School of Medicine, Ube, Japan and Tokyo Institute of Technology, Yokohama, Japan.

*752.* **Relative rCBF Distributions in Healthy Volunteers: Dynamic Susceptibility Contrast MRI Compared to Tc-99m-HMPAO SPECT.**
*R. Wirestam, E. Ryding, A. Lindgren, B. Geijer, L. Østergaard, L. Andersson, S. Holtås and F. Ståhlberg.*
Lund University Hospital, Lund, Sweden and Aarhus University Hospital, Aarhus, Denmark.

*753.* **Absolute Cerebral Blood Flow in Normal Volunteers: A Comparison Between Dynamic Susceptibility Contrast MRI and Xe-133 SPECT.**
*R. Wirestam, E. Ryding, A. Lindgren, B. Geijer, S. Holtås and F. Ståhlberg.*
Lund University Hospital, Lund, Sweden.

# Diffusional Restriction, Compartmentation and Exchange

Hall C
Monday: 14:00 – 16:00

*754.* **Diffusion of Hyperpolarized $^{129}$Xe in Biological Systems: Effects of Chemical Change.**
*J. Wolber, D. Santoro, M.O. Leach and A. Bifone.*
The Royal Marsden NHS Trust, Sutton, Surrey, UK.

*755.* **Metabolite ADCs in the Isolated Rat Heart During Ischaemia and Reperfusion.**
*C. Liess, G.K. Radda and K. Clarke.*
University of Oxford, Oxford, UK.

*756.* **Exercise Induced Signal Intensity and ADC Changes in Skeletal Muscle.**
*L. Ahvenjärvi, J. Jauhiainen, J. Oikarinen and O. Tervonen.*
Oulu University Hospital, Oulu, Finland.

*757.* **Time Course of the ADC in Patients with Cerebral Ischemia.**
*S. Heiland, J. Fiebach, P. Schellinger, O. Jansen and K. Sartor.*
University of Heidelberg Medical School, Heidelberg, Germany.

*758.* **Diffusion Weighted Imaging (DWI) of Early Stroke A Comparison of Fluid-Attenuated Inversion-Recovery (FLAIR) and Non-FLAIR Techniques.**
*A.T. Olson, K.M. Donahue, L.L. Latour and J. Ulmer.*
Marquette University; Medical College of Wisconsin and IGC Medical Advances, Milwaukee, WI, USA.

*759.* **Water Diffusion Compartmentation and Anisotropy at High b Values in Human Brain.**
*C.A. Clark and D. Le Bihan.*
Service Hospitalier Frederic Joliot, Orsay, France.

*760.* **Water Relaxation, Diffusion and Exchange in the Brain: Implications for Diffusion Imaging.**
*D.L. Buckley, E.L. Bossart, B.A. Inglis, T.H. Mareci and S.J. Blackband.*
University of Florida, Gainesville, FL, USA.

*761.* **The Effects of Spinal Cord Motion on Imaging of Diffusion and Anisotropy in the Human Spinal Cord.**
*D.C. Alsop, E.D. Schwartz and D.B. Hackney.*
University of Pennsylvania Medical Center, Philadelphia, PA, USA.

*762.* **A Finite Difference Model for Simulating Restricted Diffusion in the Spinal Cord.**
*S.N. Hwang, F.W. Wehrli and D.B. Hackney.*
University of Pennsylvania Medical Center, Philadelphia, PA, USA.

*763.* **Multiexponential Diffusion Imaging of Normal Rat Spinal Cords *In Vivo*.**
*E.L. Bossart, X.S. Silver, E. Mercer, B.A. Inglis and T.H. Mareci.*
University of Florida, Gainesville, FL, USA and the National High Magnetic Field Laboratory, Tallahassee, FL, USA.

*764.* **Diffusion Weighted Imaging of Normal Human Spinal Cords: Detection of Age-Related Morphometric Changes.**
*P.M. Pattany, A.A. Younis, B.C. Bowen, R.G. Weaver and R.M. Quencer.*
University of Miami, Miami, FL, USA and Picker International, Highland Heights, OH, USA.

*765.* **Changes in Water Spin Motion Characteristics After Pilocarpine Induced Status Epilepticus.**
*C. Wall, S. Eidt, A. Obenaus and E. Kendall.*
University of Saskatchewan, Saskatoon, Saskatchewan, Canada.

*766.* **Mono- and Bi-exponential Behavior Coexist in ADC Maps of Subcutaneously Implanted Murine Renal Carcinoma.**
*B.C. Tom, P.N. Venkatasubramanian and A.M. Wyrwicz.*
Northwestern University, Evanston, IL, USA.

*767.* **Mapping the Intracellular and Extracellular Apparent Diffusion Coefficient and Volume Fraction of MCF7 Human Breast Cancer.**
*Y. Paran, R. Edgar, D. Grobgeld, P. Bendel and H. Degani.*
Weizmann Institute of Science, Rehovot, Israel.

*768.* **Quantitative Diffusion Analysis in Human White Matter.**
*S. Peled and D. Ben-Bashat.*
Sourasky Medical Center, Tel Aviv, Israel.

*769.* **Unconventional Diffusion Behaviors of Intermolecular Multiple-Quantum Coherences.**
*Z. Chen and J. Zhong.*
University of Rochester, Rochester, NY, USA.

*770.* **The Correlation Between Cell Size and Transmembrane Water Flux for Diffusion Weighted MR-Experiments on Rat Brain Tissue Studied by Monte-Carlo-Simulations.**
*C. Meier, W. Dreher and D. Leibfritz.*
Universität Bremen, Bremen, Germany.

## Diffusion Tensor MRI

Hall C
Monday: 14:00 – 16:00

*771.* **Amyotrophic Lateral Sclerosis. Quantitative Diffusion-Tensor Analysis Using MR Imaging.**
*O. Abe, T. Okubo, H. Yamada, T. Masumoto, N. Hayashi, S. Komatsu, H. Kabasawa and K. Ohtomo.*
University of Tokyo and GE-Yokogawa Medical Systems, Tokyo, Japan.

*772.* **Spatial-Temporal Heterogeneity in the Pseudo-Normalization of ADC in Human Cerebral Ischemia.**
*O. Wu, A.G. Sorensen, W.J. Koroshetz, R.G. Gonzalez, B.R. Rosen, A.H. Thakore and L.H. Schwamm.*
Massachusetts Institute of Technology, Cambridge, MA, USA and Massachusetts General Hospital, Boston, MA, USA.

*773.* **Quantitative Diffusion Tensor Imaging of the Cervical Spinal Cord.**
*J.S. Shimony, E. Akbudak, M. Chen, A.Z. Snyder and T.E. Conturo.*
Washington University School of Medicine, St. Louis, MO, USA.

*774.* **Diffusion Tensor Mapping Of the Human Brain Stem Using Single-Shot Line Scan Imaging.**
*J. Finsterbusch and J. Frahm.*
Biomedizinische NMR Forschungs GmbH, Göttingen, Germany.

*775.* **Diffusion Tensor Tracking of Human Neuronal Fiber Bundles: Simulation of Effects of Noise, Voxel Size and Data Interpolation.**
*N.F. Lori, E. Akbudak, A.Z. Snyder, J.S. Shimony and T.E. Conturo.*
Washington University, School of Medicine, St. Louis MO, USA.

*776.* **Diffusion - Tensor Imaging fo Human Eye Lenses.**
*B.A. Moffat and J.M. Pope.*
Queensland University of Technology, Queensland, Australia.

*777.* **Determination of Axonal Damage in Primary Lateral Sclerosis Using DiffusionTensor Imaging.**
*A.M. Ulug, T. Grünewald, C.G. Filippi, M.F. Beal and R.D. Zimmerman.*
Weill Medical College of Cornell University, New York, NY, USA.

*778.* **Reversal of DWI Lesions May Be Associated with Increases in Anisotropy.**
*O. Wu, P.E. Grant, W.J. Koroshetz, R.G. Gonzalez, B.R. Rosen, J.P. Synnott and A.G. Sorensen.*
Massachusetts Institute of Technology, Cambridge, MA, USA and Massachusetts General Hospital, Boston, MA, USA.

*779.* **Apparent Diffusion Coefficient Imaging of the Healthy and Transplanted Human Kidney.**
*M. Ries, R.A. Jones, C.T.W. Moonen and N. Grenier.*
Université Bordeaux 2, Bordeaux, France.

*780.* **High Resolution Diffusion Anisotropy Mapping of the Brain.**
*J.P. Galons, R. Theilmann, V. Cwik, A.F. Gmitro and T.P. Trouard.*
University of Arizona, Tucson, AZ, USA.

*781.* **Analysis of Partial Volume Effects in Diffusion-Tensor MRI.**
*A.L. Alexander, K. Hasan, M. Lazar, J.S. Tsuruda and D.L. Parker.*
University of Utah, Salt Lake City, UT, USA.

*782.* **Errors In the Estimation of Diffusion Tensor and Anisotropic Indices.**
*Y. Cao.*
Michigan State University, East Lansing, MI, USA.

*783.* **Total Variation Denoising for Improved Diffusion Tensor Calculation.**
*S. Keeling, R. Bammer, F. Fazekas and R. Stollberger.*
University of Graz, Graz, Austria.

*784.* **Fiber-Tractography in Human Brain Using Diffusion Tensor MRI (DT-MRI).**
*P.J. Basser, S. Pajevic, C. Pierpaoli, A. Aldroubi and J. Duda.*
National Institutes of Health, Bethesda, MD, USA and Vanderbilt University, Nashville, TN, USA.

*785.* **Histogram Analysis of ADC and Fractional Anisotropy, Measured at Term, in Preterm Infants: Correlations to Birth Weight.**
*K. Woolley, M. Hedehus, M. Mirmiran, B. Fleisher, B. Betts, R. Ariagno and S.W. Atlas.*
Stanford University, Stanford, CA, USA.

*786.* **Regional Cerebral White Matter Diffusion Tensor Measurements Measured at Term in Preterm Infants: Correlations to Birth Weight.**
*K. Woolley, M. Mirmiran, M. Hedehus, B. Fleisher, A. deCrespigny, H. D'Arceuil, B. Betts, R. Ariagno and S.W. Atlas.*
Stanford Medical Center, Stanford, CA, USA.

*787.* **Line Scan Diffusion High-Resolution Tensor Images in Normal and Pathologic Brain.**
*H. Mamata, Y. Mamata, F. Jolesz and S.E. Maier.*
Brigham and Women's Hospital, Harvard Medical School, Boston, MA USA.

*788.* ***In Vivo*** **Neuronal Fiber Tract Mapping in Mouse Using Diffusion Tensor Imaging: Detection of Central Nervous System Phenotypes in Twitcher Mice.**
*S-K. Song, S-W. Sun, C. Fantz, M. Sands, C. Chang and J.J.H. Ackerman.*
Washington University, St. Louis, MO, USA and Academia Scinica, Taipei, Taiwan, ROC.

*789.* **Bootstrap Analysis of DT-MRI Encoding Techniques.**
*K.M. Hasan, D.L. Parker and A.L. Alexander.*
University of Utah, Salt Lake City, UT, USA.

*790.* **Distortionless Diffusion Tensor Imaging with UFLARE.**
*M. Koch and D.G. Norris.*
Max-Planck-Institute of Cognitive Neuroscience, Leipzig, Germany.

***791.*** **A Path Integral Approach to White Matter Tractography.**
*D.S. Tuch, J.W. Belliveau and V.J. Wedeen.*
Massachusetts General Hospital, Charlestown, MA, USA.

***792.*** **Comparison of Optimization Procedures for Diffusion-Tensor Encoding Directions.**
*K.M. Hasan, D.L. Parker, J. Roberts and A.L. Alexander.*
University of Utah, Salt Lake City, UT, USA.

***793.*** **A Quantitative Study of Water Diffusion in MS Lesions and NAWM Using Echo-Planar Imaging.**
*G. Iannucci, M. Cercignani, M.A. Rocca, M. Rovaris, G. Comi and M. Filippi.*
H San Raffaele, University of Milan, Milan, Italy.

***794.*** **Diffusion Tensor Brain MR Imaging in X-Linked Adrenoleukodystrophy.**
*R. Itoh, E.R. Melhem, S. Mori, G.V. Raymond and H.W. Moser.*
Johns Hopkins University Medical School and The Kennedy-Krieger Institute, Baltimore, MD, USA.

***795.*** **Serial Assessment of Symptomatic White Matter Lesions with Reductions of the ADC.**
*A. Gass, S. Behrens, J. Hirsch, O. Sedlaczek, J. Gaa and M.G. Hennerici.*
Klinikum Mannheim, University of Heidelberg, Mannheim, Germany.

***796.*** **Diffusion Tensor Imaging Reveals Disruption of White Matter Tracts in Ischaemic Leukoaraiosis.**
*M. O'Sullivan, P.E. Summers, D.K. Jones, M.A. Horsfield, S.C.R. Williams, J.M. Jarosz and H.S. Markus.*
GKT and Institute of Psychiatry, London, UK and University of Leicester, Leicester Royal Infirmary, Leicester, UK.

***797.*** **Diffusion Changes in Normal Pressure Hydrocephalus.**
*T. Chun, C.G. Filippi, N. Relkin, R.D. Zimmerman and A.M. Ulug.*
Weill Medical College of Cornell University, New York, NY, USA.

## Diffusion MRI: Pulse Sequences and Gradient Optimization

Hall C
Monday: 14:00 – 16:00

***798.*** **Gradient Preemphasis Calibration in Diffusion-Weighted Echo-Planar Imaging.**
*N.G. Papadakis, K.M. Martin, J.D. Pickard, L.D. Hall, C.L.-H. Huang and T.A. Carpenter.*
University of Cambridge, Cambridge, UK.

***799.*** **Eddy Current-Nulled Diffusion Weighting.**
*O. Heid.*
Siemens AG, Erlangen, Germany.

***800.*** **Correction of Distortion in ADC Maps Using the Reversed Gradient Method.**
*P.S. Morgan, A.R. Moody, S.J. Allder and R.W. Bowtell.*
University Hospital, Queen's Medical Centre and University of Nottingham, Nottingham, UK.

***801.*** **Optimization of B-Value and Gradient Orientation for Diffusion Tensor MRI.**
*A.H. Poonawalla, C. Karmonik and X.J. Zhou.*
The University of Texas M.D. Anderson Cancer Center, Houston, TX, USA.

***802.*** **Phase Corrected Complex Averaging for Diffusion Weighted Spine Imaging.**
*G.C. McKinnon, X.J. Zhou and N.E. Leeds.*
GE Medical Systems, Milwaukee, WI and M.D. Anderson Cancer Center, Houston, TX, USA.

***803.*** **Quantitative Diffusion-Weighted Imaging Using Diffusion Prepared TurboSTEAM.**
*Q. Nguyen and R.J. Ordidge.*
University College London, London UK.

***804.*** **Clinical Application of DIFRAD-FSE for High-Resolution Diffusion-Weighted MRI.**
*T.P. Trouard, R.J. Theilmann, M.I. Altbach and A.F. Gmitro.*
University of Arizona, Tucson, AZ, USA.

***805.*** **Ungated Diffusion-Weighted Interleaved EPI.**
*D. Atkinson, D. Porter, D.L.G. Hill, F. Calamante and A. Connelly.*
The Guy's, King's & St. Thomas' School of Medicine, Guy's Hospital and University College London Medical School, London, UK.

***806.*** **Characteristics and Stability of Different Diffusion Gradient Schemes.**
*S. Skare, M. Hedehus and T.Q. Li.*
Karolinska MR Center, Stockholm, Sweden; Stanford University, Stanford, CA, USA and Princeton University, Princton, NJ, USA.

***807.*** **Rapid Whole Brain Diffusion Mapping Without Susceptibility Artifacts Using Diffusion-Weighted Single-Shot STEAM MRI.**
*U. Nolte, J. Finsterbusch and J. Frahm.*
Biomedizinische NMR Forschungs GmbH, Göttingen, Germany.

***808.*** **Motion Correction Routine for a Diffusion-Weighted Radial Fast Spin-Echo Sequence.**
*R.J. Theilmann, T.P. Trouard, M.I. Altbach and A.F. Gmitro.*
University of Arizona, Tucson, AZ, USA.

## Spatio-Temporal Analysis of fMRI

Hall C
Thursday: 13:30 – 15:30

***809.*** **A Comparison of Clinical Functional Magnetic Resonance Images Processed With Independent Component Analysis and Student-t Analysis.**
*M. Quigley, V. Haughton, D. Cordes, G.J. Wendt, P.A. Turski, C.H. Moritz, K. Arfanakis and M.E. Meyerand.*
University of Wisconsin, Madison, WI, USA.

***810.*** **Improved fMRI Slice Timing Correction: Interpolation Errors and Wrap Around Effects.**
*V.D. Calhoun, X. Golay and G. Pearlson.*
Johns Hopkins University; University of Maryland and FM Kirby Research Center for Functional Brain Imaging, Baltimore, MD, USA.

***811.*** **Parameter-Free Spatio-Temporal Filtering of fMRI Data.**
*S-C. Ngan, S.M. LaConte, W.F. Auffermann and X. Hu.*
University of Minnesota, Minneapolis, MN, USA.

***812.*** **Pseudo-Noise fMRI.**
*O. Heid.*
Siemens AG, Erlangen, Germany.

***813.*** **Separation of Sequential Activation in Motor fMRI Using Finite-Element EEG Source Imaging.**
*T-S. Kim and M. Singh.*
University of Southern California, Los Angeles, CA, USA.

***814.*** **A Weighted-Least Squares Method for Latency Estimation in fMRI.**
*V.D. Calhoun, M. Kraut, T. Adai and G. Pearlson.*
Johns Hopkins University and University of Maryland, Baltimore, MD.

***815.*** **What's in the Noise Now?**
*L.R. Frank, R.B. Buxton and E.C. Wong.*
University of California, San Diego, CA, USA.

***816.*** **Spatio-Temporal Analysis in fMRI.**
*C. Gössl, D. Auer and L. Fahrmeir.*
Max-Planck-Institute of Psychiatry and University of Munich, Munich, Germany.

***817.*** **Harmonic Decomposition and Eigenanalysis of BOLD fMRI Timeseries Data in Different Functional Cortices.**
*S. Chen, C.A. Bouman and M.J. Lowe.*
Indiana University School of Medicine, Indianapolis, IN, USA and Purdue University, West Lafayette, IN, USA.

## Stability and Reproducibility of fMRI

Hall C
Tuesday: 13:30 – 15:30

***818.*** **Using Scanner's ECG-System for Single Channel EMG-Monitoring and Acquisition.**
*V. Graml, B. Haslinger, A. Ceballos-Baumann, H. Gräfin von Einsiedel, B. Conrad, M. Schwaiger and P. Erhard.*
Technische Universität, München, Germany.

***819.*** **fMRI Feasibility with Simultaneous EEG Recording.**
*I. Zimine, F. Lazeyras, S. Perrig and P. Descouts.*
Geneva University Hospitals and University of Geneva, Geneva, Switzerland.

***820.*** **Interference of Acoustic Noise Due to Gradient Pulsing with Visual Stimulation in fMRI.**
*S.T. Chung, K.J. Jung and H.W. Park.*
KAIST, Taejon, Korea and Medison Co., Seoul, Korea.

***821.*** **Simulation of Interplay Between Background and Slice Selection Gradients in fMRI.**
*J. Bodurka, X. Zhao and S-J. Li.*
Medical College of Wisconsin, Milwaukee, WI, USA and University School of Medical Sciences, Bydgoszcz, Poland.

***822.*** **Automated Measurement of Scanner Stability for Functional Brain Imaging.**
*J.J. Pekar, J.S. Gillen, T.L. Brawner and P.C.M. van Zijl.*
Kennedy Krieger Institute and Johns Hopkins University School of Medicine, Baltimore, MD, USA.

***823.*** **Cardiac Phase Reordering for Artifact Reduction in fMRI.**
*T. Yamamoto, S. Kumazawa and M. Tamura.*
Hokkaido University, Sapporo, Japan.

***824.*** **(In-) Stability in fMRI Activation Amplitude and its Consequence for Long Term Learning Studies.**
*P. van Gelderen, D. Waldvogel, K. Ishii and M. Hallett.*
National Institutes of Health, Bethesda, MD, USA.

***825.*** **Comparison of Scanner Stability for fMRI Investigations with EPI.**
*C. Janz, M. Büchert, J. Hennig, D. Auer, S. Felber, D. LeBihan, E. Martin, J.F. Nedelec, S. Posse, C. Segebarth and R. Turner.*
BIOMED II.

***826.*** **Evaluation of Test-Retest Reliability in Investigations of Higher Cognitive Processes Using Functional MRI.**
*I.K. Penner, M. Rausch, P. Freitag, L. Kappos and E.W. Radü.*
Kantonsspital Basel, Basel, Switzerland.

***827.*** **Improvement of Reliability in Functional MRI.**
*K. Specht, N.J. Shah, K. Zilles and L. Jäncke.*
Research Centre, Jülich, Germany and Otto-von-Guericke University, Magdeburg, Germany.

## Analysis of Single-Event fMRI

Hall C
Tuesday: 13:30 – 15:30

***828.*** **Detection of Event-Related fMRI Signal With Matched Filters.**
*E. Pettinelli, A. Londei, J.N. Sanes and G. Hagberg.*
Scientific Institute of Foundation Santa Lucia, Rome, Italy.

***829.*** **Event-Related fMRI of a Digit Ordering Working Memory Task Requiring Verbal Response.**
*M. Singh, W. Sungkarat, J. Jeong, A. Dimoka, M. MacDonald and V. Henderson.*
University of Southern California, Los Angeles, CA, USA.

***830.*** **Subsampling Characterization of Event-Related fMRI Data.**
*G.R. Crelier, X. Golay, T. Järmann, H. Alkadhi, P. Boesiger and S.S. Kollias.*
University Hospital and University and ETH, Zurich, Switzerland.

***831.*** **Artificial "Initial Dip" in Event-Related fMRI.**
*S. Lai, J.J. Wang and G. Ramsby.*
University of Connecticut School of Medicine, Farmington, CT, USA.

***832.*** **Feasibility of Real-Time Event-Related fMRI.**
*S-S. Yoo, C.R.G. Guttmann and L.P. Panych.*
Brigham and Women's Hospital, Harvard Medical School and Harvard MIT Health-Science and Technology, Boston, MA, USA.

***833.*** **Bayesian Inference for the Shape of the Hemodynamic Response Function in Event-Related fMRI.**
*J. Kershaw, S. Abe, K. Kashikura, X. Zhang and I. Kanno.*
Research Institute for Brain and Blood Vessels, Akita City, Japan.

***834.*** **Meta-K-Means Clustering as a Means to Separate Different Functional Components of a Cognitive Task in fMRI Single Trial Data.**
*A. Purushotham, F.A. Neilsen, L.K. Hansen and S-G. Kim.*
University of Minnesota, Minneapolis, MN, USA and Technical University of Denmark, Lyngby, Denmark.

***835.*** **An Adaptive-Iterative Algorithm for Event-Related fMRI Hemodynamic Response Extraction.**
*A. Londei, E. Pettinelli, J.N. Sanes and G. Hagberg.*
Scientific Institute of Foundation Santa Lucia, Rome, Italy.

***836.*** **Deconvolusion Analysis in Emotional Word Generation Monitored by Random Block and Event-Related fMRI.**
*R.W. Briggs, K.S. Gopinath, D.A. Soltysik, M.A. Cato and B.A. Crosson.*
University of Florida, Gainesville, FL, USA.

# Statistical Analysis of fMRI Data

Hall C
Tuesday: 13:30 – 15:30

***837.*** **Entropy-Based Detection of BOLD Functional Activation in the Human Brain.**
*R.T. Kneusel and R.W. Cox.*
Medical College of Wisconsin, Milwaukee, WI, USA.

***838.*** **Use of Jackknife Resampling Techniques to Estimate the Confidence Intervals of fMRI Parameters.**
*B.B. Biswal, P.A. Taylor and J.L. Ulmer.*
Medical College of Wisconsin, Milwaukee, WI, USA.

***839.*** **Caveat Correlator: The Limited Selectivity of Cross-Correlation-Based Methods in fMRI.**
*R. Baumgartner, R. Somorjai, R. Summers, L. Ryner and W. Richter.*
National Research Council Canada, Winnipeg, Manitoba, Canada.

***840.*** **Bayesian Approach to Edge Preserving fMRI Restoration.**
*S.J. Kisner, J.L. Ulmer and T.M. Talavage.*
Purdue University, West Lafayette, IN, USA and Medical College of Wisconsin, Milwaukee, WI, USA.

***841.*** **Validating Clusters in fMRI Data, Derived by Fuzzy Clustering Analysis: A Supervised Approach.**
*R. Somorjai, B. Dolenko, R. Baumgartner and M. Jarmasz.*
National Research Council Canada, Winnipeg, Manitoba, Canada.

***842.*** **Temporal De-Noising of MR Image Sequences Using Wavelet Domain Filters.**
*M.E. Alexander, R. Baumgartner, M. Klarhoefer, E. Moser and R.L. Somorjai.*
National Research Council Canada, Winnipeg, Manitoba, Canada and University of Vienna, Vienna, Austria.

***843.*** **fMRI Signal Modeling Using System Identification Techniques.**
*L.T. Muftuler and O. Nalcioglu.*
University of California, Irvine, CA, USA.

***844.*** **Signal Separation of fMRI Data by Independent Component Analysis.**
*K. Matsuo, S. Muraki, T. Okada, T. Moriya and T. Nakai.*
MITI, Tsukuba, Japan and National Institute for Physiological Sciences, Okazaki, Japan.

***845.*** **A New Correlation Analysis Using Direct Force Output in Motor Stimulation fMRI Studies.**
*K.K. Peck, J. Newton, A. Sunderland, S. Butterworth, A. Peters, R.W. Bowtell and P.A. Gowland.*
Nottingham City Hospital and University of Nottingham, Nottingham, UK.

***846.*** **BIASLESS: Detecting Brain Activation in fMRI Data Without Prior Knowledge of Mental Event Timing.**
*D.N. Levin and S.J. Uftring.*
University of Chicago, Chicago, IL, USA.

***847.*** **Using Image Entropy to Select Meaningful Spatial Maps in Independent Component Analysis.**
*T.T. Liu, K.L. Miller, E.C. Wong, L.R. Frank and R.B. Buxton.*
University of California, San Diego, CA, USA and Stanford University, Stanford, CA, USA.

***848.*** **Comparison of Functional MRI Image Realignment Tools Using a Computer Generated Phantom.**
*V.L. Morgan, D.R. Pickens, S.L. Hartmann and R.R. Price.*
Vanderbilt University, Nashville, TN, USA.

***849.*** **Two-Way ANOVA for Nonparametric Analysis of Event Related fMRI Data.**
*W.F. Auffermann, S-C. Ngan, S. Sarkar, E. Yacoub and X. Hu.*
University of Minnesota Medical School, Minneapolis, MN, USA.

***850.*** **Performance Comparison of Novelty Indices Used in Blind Source Separation for Preprocessing fMRI Time Series.**
*R. Summers, R. Baumgartner, R. Somorjai, L. Ryner and W. Richter.*
National Research Council Canada, Winnipeg, Manitoba, Canada.

***851.*** **Detection of Visual Attention Using Partial Least Squares (PLS) Analysis of fMRI Data.**
*F-H. Lin, A.R. McIntosh, G. Strangman, G. Bonmassar, G.V. Simpson and J.W. Belliveau.*
Massachusetts General Hospital and Harvard-MIT Division of Health Sciences and Technology, Boston, MA, USA; University of Toronto, Toronto, Ontario, Canada and Albert Einstein College of Medicine, Bronx, NY, USA.

***852.*** **Independent Component Analysis of Simultaneous fMRI Motor Tasks.**
*J. Carew, C. Moritz, V. Haughton, P. Turski, D. Cordes and M.E. Meyerand.*
University of Wisconsin, Madison, WI, USA.

***853.*** **Wavelet Transform Based Wiener Filtering of Event-Related fMRI Data.**
*S.M. LaConte, S-C. Ngan and X. Hu.*
University of Minnesota, Minneapolis, MN, USA.

***854.*** **An Experimental Method to Calculate Type II Errors in Statistical Analysis of fMRI Signals.**
*L.T. Muftuler and O. Nalcioglu.*
University of California, Irvine, CA, USA.

## Multi-Modality fMRI

Hall C
Wednesday: 13:30 – 15:30

***855.*** **Responses to Intraneural Microstimulation of Single Mechanoreceptive Afferents Can Be Measured Using fMRI.**
*S.T. Francis, M. Trulsson, E. Kelly, G. Westling, R. Bowtell and F. McGlone.*
University of Nottingham, Nottingham, UK; University of Umea, Umea, Sweden; University of North Carolina, Chapel Hill, NC, USA and Unilever Research, Liverpool, UK.

***856.*** **BOLD-fMRI Response versus 1 Hz Transcranial Magnetic Stimulation (TMS) Train Length.**
*D.E. Bohning, A. Shastri, M.P. Lomarev, J.P. Lorberbaum, Z. Nahas and M.S. George.*
Medical University of South Carolina, Charleston, SC, USA.

***857.*** **Simultaneous Mapping of Sensorimotor Activation by fMRI and Near IR Optical Topography: Effects of Magnet Environment.**
*R.P. Kennan, A. Maki, Y. Yamamoto, Y. Yamashita, H. Ochi, T. Yamamoto and H. Koizumi.*
Hitachi Central Research Laboratory, Kokobunji Japan and Yale University School of Medicine, New Haven, CT, USA.

***858.*** **Simultaneous VEP and fMRI Recordings: Comparison between EEG Localization and fMRI Activation.**
*G. Bonmassar, A.K. Liu, D.P. Schwartz, J. Ives, A.M. Dale and J.W. Belliveau.*
Massachusetts General Hospital, Charlestown, MA, USA and Beth Israel Deaconess Medical Center, Boston, MA, USA.

***859.*** **High Accuracy of Matching Spline-Interpolated EEG- with MRI-Derived Head Surfaces.**
*C. Lamm, Ch. Windischberger, U. Leodolter, E. Moser and H. Bauer.*
University of Vienna, Vienna, Austria.

***860.*** **Simultaneous fMRI and EEG Recordings of Awake and Anesthetized Condition of Rats during Forepaw Stimulation.**
*R.R. Peeters, I. Tindemans, M. Verhoye and A. Van der Linden.*
University of Antwerp, Antwerp Belgium.

***861.*** **Comparative Sutdy of fMRI and MEG for Objective Identification of the Central Sulcus in Patients with Brain Tumors.**
*T. Inoue, H. Shimizu, N. Nakasato, T. Kumabe, T. Yoshimoto and H. Kabasawa.*
Tohoku University School of Medicine and Kohnan Hospital, Sendai, Japan and GE Yokogawa Medical Systems, Tokyo, Japan.

## fMRI: Clinical Applications

Hall C
Wednesday: 13:30 – 15:30

***862.*** **Preliminary Evidence of Language Reorganization After Left Hemisphere Injury: A Whole Brain, Event-Related fMRI Study of Sentence Production.**
*R.W. Briggs, J.M. Anderson, B. Crosson, L.M. Maher, H.L. Roth, K.S. Gopinath, D. Gokcay, L.J. Gonzalez Rothi, E.J. Auerbach and D.A. Soltysik.*
University of Florida, Gainesville, FL, USA.

***863.*** **BOLD Response of the Auditory Cortex in Patients With Unilateral Internal Carotoid Artery Occlusion.**
*D. Bilecen, E. Seifritz, M. Rausch, S. Wetzel, E.W. Radü and K. Scheffler.*
University of Basel, Basel, Switzerland and University of Freiburg, Freiburg, Germany.

***864.*** **Effect of Severe Extra- and Intracranial Artery Disease in BOLD Signal Changes During a Motor Paradigm.**
*F. Hamzei, J. Fiehler, R. Knab, C. Fitzek, J.R. Reichenbach, V. Glauche, C. Büchel, C. Weiller and J. Röther.*
Friedrich-Schiller University, Jena, Germany.

***865.*** **Cortical Plasticity after Neonatal Cold Lesion in Rats: An fMRI Study.**
*W. Schwindt, M. Burke, F. Pillekamp, H.J. Luhmann and M. Hoehn.*
Max-Planck-Institute for Neurological Research, Cologne, Germany and University of Düsseldorf, Düsseldorf, Germany.

***866.*** **Relationship between fMRI Activation Patterns and Brain Plasticity: Classification of Structural Lesions in the Central Sulcus.**
*R.T. Constable, A.C. Carpentier, D.D. Spencer, J. Piepmeier and I.A. Awad.*
Yale University School of Medicine, New Haven, CT, USA.

***867.*** **Functional Brain Mapping Using fMRI in Patients with AVM.**
*J.W. Ryoo, H.S. Byun, D.G. Na, C.H. Moon, E.J. Lee and S.C. Hong.*
Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea.

***868.*** **The Localization of Epileptic Spikes Based on Spike-Triggered fMRI is Consistent with EEG Source Reconstruction.**
*L. Lemieux, K. Krakow, C. Scott, P.J. Allen and D.R. Fish.*
University College London, London, UK.

***869.*** **Functional MRI Activation From Individual Epileptiform Spikes.**
*D. Messina, K. Krakow, L. Lemieux, J.S. Duncan and D.R. Fish.*
University College London, London, UK.

*870.* **Influence of Different Physiological Conditions on the Functional MRI Response Before and During Bicuculline Induced Sub-clinical Epileptic Activity in the Rat Brain.**
*M. Abo, Z. Chen, L-J. Lai, T. Klason, T. Reese and B. Bjelke.*
Karolinska Hospital/Karolinska Institute, Stockholm, Sweden and Peking Union Medical College Hospital, Chinese Academy of Medical Sciences, Beijing, China.

*871.* **Decrease in Functional Connectivity in Dorsolateral-Prefrontal Cortex of Alzheimer's Subjects.**
*P. Tiger, Z. Li, P. Antuono, J. Jones and S-J. Li.*
Medical College of Wisconsin, Milwaukee, WI, USA.

*872.* **Resting State BOLD Fluctuations Reflect Impaired Functional Connectivity in Multiple Sclerosis.**
*M.J. Lowe, M.D. Phillips, D.H. Mattson, V.P. Mathews, J.T. Lurito, M. Dzemidzic and R. Srinivasan.*
Indiana University School of Medicine, Indianapolis, IN, USA.

*873.* **Robust Retest Reliability In Normal But Not Schizophrenia Subjects.**
*R.L. Gollub, E.S. Benson, Y. Chang, T.S. Kramer, D.C. Goff, N. Makris, S.L. Rauch and D.S. Manoach.*
Massachusetts General Hospital, Charlestown, MA, USA.

*874.* **Activation in fMRI during Verbal and Visuospatial Working Memory Tasks in Healthy Controls and Schizophrenic Patients.**
*A.P. Wunderlich, H. Walter, M. Blankenhorn, G. Groen, S. Schäfer, R. Tomczak and H-J. Brambs.*
Ulm University Clinic, Ulm, Germany.

*875.* **Antenatal Determination of Fetal Brain Activity in Response to an Acoustic Stimulus Using Functional Magnetic Resonance Imaging.**
*R.J. Moore, S. Vadeyar, D.J. Tyler, P.N. Baker, D. James, I. Johnson and P.A. Gowland.*
University of Nottingham, Nottingham, UK.

*876.* **Temporal Lobe Perfusion in the Deaf: MR Measurement with Pulsed Arterial Spin Labeling (FAIR).**
*D.K. Shibata, E. Kwok, J. Zhong, D.A. Shrier, H.Z. Wang and Y. Numaguchi.*
University of Rochester, Rochester, NY, USA.

*877.* **A Clinically Relevant Rat Model for BOLD fMRI at 1.5T.**
*D.W Morton, K.R. Maravilla, J.R. Meno and H.R. Winn.*
University of Washington, Seattle, WA, USA.

## fMRI: Neuroscience Applications

Hall C
Thursday: 13:30 – 15:30

*878.* **Paced Finger Tapping in Children Causes Discrete Motor and Auditory Activation of Brain on fMRI.**
*M.J. Rivkin, S. Vajapeyam, R.V. Mulkern, M.D. Weiler, C. Hutton, E.K. Hall, S.S. Yoo, P.H. Wolff and D.P. Waber.*
Wellcome Department of Cognitive Neurology, London, UK and Children's Hospital Boston, MA, USA.

*879.* **Functional Magnetic Resonance Imaging during Seven Motor Tasks: Variability of Primary and Secondary Motor Activation over 9 Subjects.**
*M. Rotte, M. Kanowski, A. Dale and H-J. Heinze.*
Otto von Guericke University, Magdeburg, Germany and Massachusetts General Hospital, Boston, MA, USA.

*880.* **Functional Magnetic Resonance Imaging of the Somatotopic Organization of the Human Primary Motor Cortex.**
*H. Alkadhi, G.R. Crelier, S. Hotz, X. Golay, M-C. Hepp-Reymond and S.S. Kollias.*
University Hospital of Zurich and University Zurich-Irchel, Zurich, Switzerland.

***881.*** **Functional MRI Validation of an Anatomical Technique for Localization of Hand Sensorimotor Cortex on MR Images.**
*J. Seinfeld, S. Lemieux, O. Boyko, J. Gaughan and M. Munz.*
Temple University School of Medicine, Philadelphia, PA, USA.

***882.*** **Bilateral Activation of Human MT/MST during Hemifield Motion Stimulation.**
*T. Stephan, S. Bense, T.A. Yousry, T. Brandt and M. Dieterich.*
Ludwig-Maximilians University, Munich, Germany.

***883.*** **Human Brain Regions Involved in Passive Visual Perception of Motion and Smooth Pursuit Eye Movements.**
*M.A. Rocca, M. Dieterich, G. Fesl, T. Stephan and T.A. Yousry.*
H San Raffaele, Milan, Italy and Klinikum Grosshadern, Munich, Germany.

***884.*** **Human Perception of Faces and Face Cartoons: an fMRI Study.**
*J. Jovicich, R.J. Peters, C. Koch, L. Chang and T. Ernst.*
Caltech, Pasadena, CA, USA and UCLA School of Medicine Harbor-UCLA Medical Center, Torrance, CA, USA.

***885.*** **The Role of the Posterior Parietal Cortex in Human Object Recognition: A Functional Magnetic Resonance Imaging Study.**
*T. Sugio, T. Inui, K. Matsuo, M. Matsuzawa, G.H. Glover and T. Nakai.*
MITI, Tsukuba, Japan; Kyoto University, Kyoto, Japan; Juntendo University, Tokyo, Japan and Stanford University, Stanford, CA, USA.

***886.*** **A Comparison Between Two Types of Imagery Tasks: An fMRI Study.**
*S. Tanaka, T. Okada, T. Nakai, K. Matsuo, C. Kato, T. Moriya and T. Inui.*
Kyoto University, Kyoto, Japan; MITI, Tsukuba, Japan and Toyohashi Sozo College, Toyohashi, Japan.

***887.*** **The Effect of Subanesthetic Isoflurane on BOLD Signal Changes During a Visual Search Task.**
*C. Schwarzbauer and W. Heinke.*
Max-Planck-Institut für neuropsychologische Forschung and Universität Leipzig, Leipzig, Germany.

***888.*** **Functional Discrimination of Thalamic Nuclei Using BOLD Contrast at 1.5T.**
*M.J. Lowe, M. Dzemidzic, J.T. Lurito, V.P. Mathews and M.D. Phillips.*
Indiana University School of Medicine, Indianapolis, IN, USA.

***889.*** **Temporal Dissociation of Two Visual-Input Networks Using fMRI.**
*T. Kato, H. Liu, C. Neves and Y. Takayama.*
University of Minnesota, Minneapolis, MN, USA and Fukui Red Cross Hospital, Fukui, Japan.

***890.*** **A Functional MRI Study of the Parietal Eye Fields.**
*P.R. Brotchie, M. Lorenz, M. Lee, D.Y. Chen and W.G. Bradley Jr.*
Long Beach Memorial MRI Center, Long Beach, CA, USA.

***891.*** **Attentional Interactions Between Auditory and Visual Cortex.**
*K. Specht, N.J. Shah, K. Zilles and L. Jäncke.*
Research Centre, Jülich, Germany and Otto-von-Guericke University, Magdeburg, Germany.

***892.*** **The Effect of Autonomic Arousal On Selective Attention.**
*J.I. Tracy, F. Mohamed, S. Faro, R. Tiver, A. Pinus, D. Miller and J. Harvan.*
MCP Hahnemann University, Philadelphia, PA, USA.

***893.*** **Activation Related to Endogenous Attentional Shift: A Functional MRI Study.**
*C. Kato, K. Matsuo, M. Matsuzawa, T. Moriya, G.H. Glover and T. Nakai.*
Toyohashi Sozo College, Toyohashi, Japan; Juntendo University, Tokyo, Japan; MITI, Tsukuba, Japan and Stanford University, Stanford, CA, USA.

***894.*** **The Auditory Attention System during Dual listening Task Performance.**
*T. Nakai, K. Matsuo, C. Kato, S. Tanaka, G.H. Glover, T. Moriya and T. Okada.*
MITI, Tsukuba, Japan; Toyohashi Sozo College, Toyohashi, Japan; Kyoto University, Kyoto, Japan; Stanford University, Stanford, CA, USA and NIPS, Okazaki, Japan.

***895.*** **Pattern of Cortical Activation in Language Tasks Depends on Semantic Categories: An fMRI Study.**
*G. Fesl, J. Ilmberger and T.A. Yousry.*
Ludwig-Maximilians-University, Munich, Germany.

***896.*** **Functional MR Imaging of the Object-Naming Task.**
*M. Dzemidzic, J.T. Lurito, D.A. Kareken, A. Radnovich, J. Staser, M.J. Lowe, V.P. Mathews, M.D. Phillips, T.A. Winkler and W. Yang.*
Indiana University School of Medicine, Indianapolis, IN, USA.

***897.*** **Correspondence of Event-Related Potential Tomography and Functional Magnetic Resonance Imaging During Language Processing.**
*D. Vitacco, D. Brandeis, R. Pascual-Marqui and E. Martin.*
University Children's Hospital and University of Zürich, Zürich, Switzerland.

***898.*** **Picture-Word Matching as a Paradigm in Determining Regions of Language Processing: An fMRI Study.**
*D. Weniger, G.R. Crelier, H. Alkadhi and S.S. Kollias.*
University Hospital, Zurich, Switzerland.

***899.*** **Evidence of Right Hemisphere Engagement During the Production of Overt Emotional Prosody: An Event-Related fMRI Study.**
*J.M. Anderson, R.W. Briggs, B. Crosson, K.S. Gopinath, D. Gokcay, J.R. Sadek, L.J. Gonzalez Rothi, E.J. Auerbach, D.A. Soltysik and K.M. Heilman.*
University of Florida, Gainesville, FL, USA.

***900.*** **Possible Different Language Processing Strategy for Chinese Speakers.**
*J. Xiong, K.A. Stofer, Y. Pu, H-L. Liu, L.H. Tan, J-H. Gao and P.T. Fox.*
University of Texas Health Science Center, San Antonio, TX, USA and University of Hong Kong, Hong Kong.

***901.*** **The Temporal Response of Left Frontal Lobe during Chinese and English Word Generation by Native Chinese Speakers: An Event-Related fMRI Study.**
*Y. Pu, H.L. Liu, C.M. Feng, L.H. Tan, J. Xiong, J.A. Spinks, C.A. Perfetti, P.T. Fox and J-H. Gao.*
University of Texas Health Science Center, San Antonio, TX, USA; University of Hong Kong, Hong Kong and University of Pittsburgh, Pittsburgh, PA, USA.

***902.*** **Manipulo-Spatial Processing of the Ideographic Characters by Left-Handers - Functional Magnetic Resonance Imaging.**
*K. Matsuo, C. Kato, S. Tanaka, T. Moriya, G.H. Glover and T. Nakai.*
MITI, Tsukuba, Japan; Toyohashi Sozo College, Toyohashi, Japan; Kyoto University, Kyoto, Japan and Stanford University, Stanford, CA, USA.

***903.*** **Gender Differences in a Graded Visual Stimulation Paradigm for fMRI are Limited to Striate Visual Cortex.**
*C. Kaufmann, G.K. Elbel, C. Gössl, B. Pütz and D.P. Auer.*
Max-Planck-Institute of Psychiatry, Munich, Germany.

***904.*** **Real Time fMRI During the Formation of Novel Equivalence Relations.**
*K.D. Singh, N. Roberts, D.W. Dickins, P. Burns, J.J. Downs and R.P. Bentall.*
Liverpool University, Liverpool, UK.

***905.*** **Cortical Activation During the Mental Rotation Task; A Functional Magnetic Resonance Imaging (fMRI) Analysis.**
*C.J. Atherton, N.A. Thacker, E.C. Leek and A. Jackson.*
University of Manchester, Manchester, UK and University of Wales, Bangor, Wales, UK.

**906. Single-Trial Analysis and Whole-Brain Coverage in Functional MRI of a Mental Rotation Paradigm.**
*C. Windischberger, C. Lamm, H. Bauer and E. Moser.*
University of Vienna, Vienna, Austria.

**907. N-Back Task, Audiospatial Working Memory and Functional Magnetic Resonance Imaging.**
*S. Martinkauppi, P. Rämä, H.J. Aronen, A. Korvenoja and S. Carlson.*
Helsinki University Central Hospital and University of Helsinki, Helsinki, Finland and Kuopio University Hospital, Kuopio, Finland.

**908. fMRI of Human Visual Episodic Memory.**
*A.P. Wunderlich, M. Riepe, G. Groen, R. Tomczak and H-J. Brambs.*
Ulm University Clinic, Ulm, Germany.

**909. Both Long- and Short-Term Topographical Memory Recall Produces Activity of the Medial Temporal Lobe: A Functional Magnetic Resonance Study.**
*J.A. Nunn, I.D. Wilkinson, T. Spencer, R. Khiami, P.D. Griffiths and A. Mayes.*
University of Sheffield, Sheffield, UK.

**910. Patterns of Neural Activation During a Simple Continuous Performance Task.**
*R.J. Ogg, D.N. Allen, J.E. Kaufman and R.K. Mulhern.*
St. Jude Children's Research Hospital, Memphis, TN, USA.

**911. Brain fMRI Signal Changes in Response to Intraduodenal Infusion of Sweet Amino Acids in Awake Rats.**
*T. Kondoh, M. Smriga, T. Ono and K. Torii.*
Ajinomoto Co., Inc., Kawasaki, Japan and Toyama Medical and Pharmaceutical University, Sugitani, Toyama, Japan.

**912. Skin Conductance Measurements During Functional MRI.**
*A. Shastri, M. Lomarev, M.S. George and D.E. Bohning.*
Medical University of South Carolina, Charleston, SC, USA.

**913. Pharmacological Modulation of the Central Pain Response.**
*I. Tracey, G. Hicks, R. Rogers, S. Clare, C. Bountra, P. Barrington, D. Painter, A. Ploghaus, G. Peskett and P.M. Matthews.*
Oxford University and John Radcliffe Hospital, Oxford, UK; Cambridge University, Cambridge, UK and Glaxo Wellcome Research and Development, Greenford, UK.

**914. Common Areas of BOLD Signal Changes in Medial Prefrontal Cortex during Tasks Involving Pain or Attention.**
*U.N. Frankenstein, W. Richter and M.C. McIntyre.*
National Research Council of Canada, University of Manitoba and University of Winnipeg, Winnipeg, Manitoba, Canada.

**915. Functional Magnetic Resonance Imaging of Noxious Heat Pain.**
*P. Erhard, F. Weilke, U. Gamringer, A. Schikowski, M. Bäcker, H. Gräfin von Einsiedel, B. Conrad, M. Schwaiger and T.R. Tölle.*
Technische Universität, München, Germany.

**916. Randomized fMRI-Designs with Event-Related FLASH: a Technique for Monitoring Cerebral Pain Processing.**
*H. Meyer, K. Baudendistel, M. Bock, D. Kleinbö and L.R. Schad.*
Deutsches Krebsforschungszentrum (DKFZ), Heidelberg, Germany and Universität Mannheim, Mannheim, Germany.

**917. Selective Estrogen Receptor Modulator Effects on Brain Activation During Encoding.**
*S.A.R.B. Rombouts, M.A. Bierlaagh, F. Barkhof, M.P. Witter, D.J. Veltman, S.J.M. Neele, J.C. Netelenbos and P. Scheltens.*
University Hospital, Vrije Universiteit, Amsterdam, The Netherlands.

*918.* **BOLD fMRI Evaluation of Normal Female Sexual Arousal Response: Sites of Cerebral Activation Correlated with Subjective and Objective Measures of Arousal.**
*K.R. Maravilla, A.V. Deliganis, J. Heiman, D. Fisher, W. Carter, R. Weisskoff, L. Hackbert, P. Garland and D. Echelard.*
University of Washington, Seattle, WA, USA; Pfizer, Inc., Groton, CT, USA and Epix Medical, Boston, MA, USA.

*919.* **Coritcal Deactivation during Vestibular Galvanic Stimulation (fMRI).**
*S. Bense, T. Stephan, T.A. Yousry, T. Brandt and M. Dieterich.*
Klinikum Grosshadern, Ludwig-Maximilians University, Munich, Germany.

*920.* **Does Acupuncture Produce a BOLD-Signal? New Findings With fMRI On Stimulation of Acupoint GB 37.**
*A-C. Schulte, I. Gareus, A. Schreiber, M. Lacour and J. Hennig.*
University of Freiburg, Freiburg, Germany.

## fMRI: Animal Models

Hall C
Thursday: 13:30 – 15:30

*921.* **Preliminary Results of Simultaneous Electroencephalography and Functional Magnetic Resonance Imaging in Rat Brain During Sleep - Wakefulness.**
*M. Khubchandani, H.N. Mallick, V.M. Kumar and N.R. Jagannathan.*
All India Institute of Medical Sciences, New Delhi, India.

*922.* **Functional Magnetic Resonance Imaging Studies of the Rat Model of Parkinson's Disease.**
*G. Pelled, H. Bergman and G. Goelman.*
Hadassa Hebrew University Hospital and The Hebrew University, Jerusalem, Israel.

*923.* **fMRI of the Hypothalamus Following Glucose Administration in a Rat Model: Implications for Obesity and Diabetes Research.**
*S. Mahankali, Y. Liu, Y. Pu, P.T. Fox and J-H. Gao.*
University of Texas Health Science Center, San Antonio, TX, USA.

*924.* **Are fMRI and Optical Imaging Measuring the Same Thing: In the Rat?**
*J. Mayhew, Y. Zheng, D. Johnston, J. Berwick, P. Coffey and M. Paley.*
University of Sheffield, Sheffield, UK.

*925.* **Spatial Neuronal Activity Patterns Elicited by Different Odors in Rat Olfactory Bulb Studied with Functional MRI.**
*F. Xu, I. Kida, X. Yang, F. Hyder, C.A. Greer, G.M. Shepherd and R.G. Shulman.*
Yale Medical School, New Haven, CT, USA.

*926.* **Effect of Hematocrit on BOLD Signal Changes.**
*E.A. Stein, M.M. Maestas, A. Hudetz, K. Donahue, B. Ozel and A.S. Greene.*
Medical College of Wisconsin, Milwaukee, WI, USA.

*927.* **fMRI of the Normal and Ischemic Rat Brain by Mapping Transient Changes in Cerebral Blood Volume.**
*T. Reese, D. Bochelen, D. Baumann, A. Sauter and M. Rudin.*
Novartis Pharma Ltd, Basel, Switzerland.

*928.* **Design and Importance of a Continuous Physiologic Monitoring for fMRI in Rats at 7T and First Results with the Novel Anesthetic Sevoflurane.**
*G-K. Elbel, R. Kalisch, M. Czisch, R. Hipp and D.P. Auer.*
Max-Planck-Institute of Psychiatry and Technical University, Munich, Germany.

## fMRI Acquisition Methods

Hall C
Monday: 14:00 – 16:00

*929.* **Real-Time Quantification of $T_2$* Changes Using Multi-Echo fMRI.**
*G. Hagberg, I. Indovina, J.N. Sanes and S. Posse.*
Scientific Institute of Foundation Santa Lucia, Rome, Italy.

*930.* **Comparison of Different Single and Multi-Echo Methods for $T_2$* Measurements in the Human Brain During Rest, Visual and Motor Stimulation.**
*M. Klarhöfer, M. Barth and E. Moser.*
University of Vienna, Vienna, Austria.

*931.* **SENSE Imaging Using a Transmission Line Volume Phased Array.**
*F-H. Lin, P.J. Ledden, K.K. Kwong, J.W. Belliveau and L.L. Wald.*
Harvard-MIT Division of Health Sciences and Technology and Massachusetts General Hospital, Boston, MA, USA and Nova Medical Inc., Cambridge, MA, USA.

*932.* **Improved Functional Localization Accuracy Using Inversion Recovery BOLD fMRI.**
*C.Y. Tang, M. Tabert and Z.H. Cho.*
Mount Sinai School of Medicine, New York, NY, USA and University of California, Irvine, CA, USA.

*933.* **The Effect of Fat Saturation on Functional MRI Using EPI.**
*D.W. McRobbie and R.A. Quest.*
The Hammersmith Hospitals NHS Trust & Imperial College, Charing Cross Hospital, London, UK.

*934.* **Optimization of Block Design fMRI Experiments Using Different Strategies For Distibuted Sampling.**
*V. Venkatraman, M.W.L. Chee and J.C. Rajapakse.*
Singapore General Hospital and Nanyang Technological University, Singapore.

*935.* **Initial Experience with fMRI in Humans at 7 Tesla.**
*X. Hu, E. Yacoub, P. Andersen, T. Vaughan, G. Adriany, H. Merkle and K. Ugurbil.*
University of Minnesota, Minneapolis, MN, USA.

*936.* **Ambiguous BOLD Topology in High Resolution Partial Fourier GR-EPI.**
*P.R. Harvey, A.M.C. van Muiswinkel, P.J.M. Folkers and J.S. van den Brink.*
Philips Medical Systems, Best, The Netherlands.

*937.* **Multi Gradient Echo Acquisition Techniques for fMRI: Advantages of Bi-Exponential Modeling.**
*O. Speck, T. Ernst and L. Chang.*
Harbor-UCLA Medical Center, Torrance, CA, USA.

*938.* **Spectral-Domain fMRI Based on Multiple Asymmetric Spin-Echo EPI.**
*N-K. Chen, L. Li, C. Weiss, J.F. Disterhoft and A.M. Wyrwicz.*
Northwestern University, Evanston, IL, USA.

*939.* **3D Techniques in BOLD fMRI: Comparison of PRESTO and Standard EPI.**
*V. Denolin, P. Van Ham and T. Metens.*
Université Libre de Bruxelles, Brussels, Belgium.

***940.*** **Multi-Resolution Detection of Functional Activation: Percentage Enhancement and CNR.**
*S-S. Yoo, C.R.G. Guttmann and L.P. Panych.*
Brigham and Women's Hospital, Harvard Medical School and Harvard-MIT, Division of Health Science and Technology, Boston, MA, USA.

***941.*** **Investigating BOLD Signal Intensity Changes in fMRI of the Human Spinal Cord.**
*P.W. Stroman and L.N. Ryner.*
National Research Council Canada, Winnipeg, MB, Canada.

***942.*** **Investigation of Inflow Effects on fMRI at 3T.**
*C.J. Wiggins and D.G. Norris.*
Max-Planck-Institut fuer neuropsychologische Forschung, Leipzig, Germany.

***943.*** **3D Arterial Spin Tagging Studies of Cognitive Activation.**
*F.Q. Ye, T. Ellmore, K.F. Berman, J. Holt, K. St Lawrence, J. Duyn, J.A. Frank, D.R. Weinberger and A.C. McLaughlin.*
National Institutes of Health, Bethesda, MD, USA.

***944.*** **3D Measurement of Human Brain Function by Using 3D-One-Shot Dual-Frequency Amplitude-Modulated BURST Imaging.**
*H. Itagaki, H. Ochi, Y. Taniguchi and K. Tsukada.*
Hitachi, Ltd., Kokubunji, Tokyo, Japan.

***945.*** **Keyhole fMRI of the Auditory Cortex Using Pore Tone Stimuli.**
*T. Kaulisch, A. Brechmann, D. Stiller and H. Scheich.*
Leibniz Institute for Neurobiology, Magdeburg, Germany.

***946.*** **Assessing the Feasibility of Using LL-EPI and Gd-DTPA to Simultaneously Measure CBV and CBF.**
*S.T. Francis, J. Pears, A. Lindahl, P.A. Gowland and R.W. Bowtell.*
University of Nottingham, Nottingham, UK.

## Quantitative fMRI

Hall C
Monday: 14:00 – 16:00

***947.*** **Relation Between Cerebral Blood Flow and Metabolism Revisited by a Model of Oxygen Exchange.**
*R. Valabrègue, R. Costalat, J. Burger and J. Bittoun.*
Université Paris 6 and Université Paris-Sud, Hôpital de Bicêtre, Paris, France and Université d'Angers, Angers, France.

***948.*** **On the Nonlinear Relation Between BOLD and CBF.**
*T.T. Liu, W-M. Luh, E.C. Wong, P.A. Bandettini, T. Obata, L.R. Frank and R.B. Buxton.*
University of California, San Diego, CA, USA and National Institute of Mental Health, Bethesda, MD, USA.

***949.*** **Non-Linearity of Either the Neural-to-BOLD System or the Visual Stimulation-to-Neural System Demonstrated at 4.0 T.**
*B.M. Ances, E. Zarahn and J.A. Detre.*
University of Pennsylvania, Philadelphia PA, USA.

***950.*** **Perfusion and BOLD Functional MR at 1.5 T: Significance of Intravascular Contribution.**
*N. Fujita, H. Tanaka, N. Hirabuki, M. Takanashi and H. Nakamura.*
Osaka University Medical School, Osaka, Japan.

951. **Diffusion and MTC Weighted Multi-Echo EPI: Separation of Intra vs. Extravascular fMRI Signal Changes.**
*C. Janz, J. Kornmayer and J. Hennig.*
University of Freiburg, Freiburg, Germany.

952. **Differentiation of Intra- and Extra- Vascular Contributions in BOLD fMRI Using Inversion Recovery.**
*C.X. Tan, J.A. Frank and J.H. Duyn.*
National Institutes of Health, Bethesda, MD, USA.

953. **$^{1}$H MRS Study of BOLD Effects in Metabolites Reflecting Pure Extravascular Contribution from Microvasculature/Tissue in Human Visual Cortex at 4T.**
*W. Chen and X-H. Zhu.*
University of Minnesota School of Medicine, Minneapolis, MN, USA.

954. **MR Measurements of Regional Arterial and Venous Blood Volume Fractions in Intact Rat Brain.**
*T.Q. Duong and S-G. Kim.*
University of Minnesota School of Medicine, Minneapolis, MN, USA.

955. **Relationship Between CBF and Arterio-venous Relative CBV Changes During Hypercapnia in Rat Brain: $^{19}$F/$^{1}$H NMR Studies.**
*S-P. Lee, T.Q. Duong, C. Iadecola and S-G. Kim.*
University of Minnesota Medical School, Minneapolis, MN, USA.

956. **Perfusion Changes in Normal Brain Due to Breathing Carbogen and Oxygen: an MRI Study.**
*N.J Taylor, J.J. Stirling, L.A. Culver, R. Basra and H. Baddeley.*
Mount Vernon Hospital, Northwood, Middlesex, UK.

957. **An "Oxygen Paradox": The Influence of Inspired Gases in "BOLD" Functional Magnetic Resonance Neuroimaging.**
*J.R. Alger, M.A. Woo, M.S. Woo, M.M. Saeed, P. Yu, D. Gozal, T.G. Keens and R.M. Harper.*
University of California, Los Angeles, CA, USA.

958. **The Effect of Transient Hypercapnia on Task-Related Changes in Cerebral Blood Flow and Blood Oxygenation in Awake Normal Humans: A Functional Magnetic Resonance Imaging Study.**
*C. Schwarzbauer and M. Hoehn.*
Max-Planck-Institut für neuropsychologische Forschung, Leipzig, Germany and Max-Planck-Institut für neurologische Forschung, Köln, Germany.

959. **Relationship between Cerebral Blood Flow and Oxygenation during Graded Hypercapnia in the Human Cortex.**
*G. Krüger, A. Kastrup, T. Neumann-Haefelin and G.H. Glover.*
Stanford University School of Medicine, Stanford, CA, USA.

960. **Separation of CBF and BOLD Effects and Quantification of rCMRO$_2$ Change in fMRI Using FAIREST.**
*J. Wang, G-H. Jahng and S. Lai.*
University of Connecticut Health Center, Farmington, CT, USA.

961. **The Effect of Vasoactive Drugs on the BOLD Signal Change: Implications For Neuropharmacological fMRI.**
*K. Scheffler, E. Seifritz, J. Hennig, E.W. Radü and D. Bilecen.*
University of Freiburg, Freiburg, Germany and University of Basel, Basel, Switzerland.

962. **Neurogenic Control of Pharmacologically Induced Hemodynamic Changes.**
*Y.I. Chen, A.J-W. Chen, T.V. Nguyen, A.E. Talele and B.G. Jenkins.*
Massachusetts General Hospital, Charlestown, MA, USA.

***963.*** **Striatal fMRI Responsiveness to Dopaminergic Challenge: Dependence on Striatal Dopamine Receptor Levels.**
*R.M. Booze, U. Hasselrot, A.H. Andersen, Z. Zhang, R.G. Avison, M. Zhang, W.A. Cass and M.J. Avison.*
University of Kentucky School of Medicine, Lexington, KY, USA.

***964.*** **Modulation of Glutamatergic Activation by $GABA_A$ Facilitator in Conscious Rabbits by fMRI.**
*H. Zhang, B. Tom, Y.J. Shen and A.M. Wyrwicz.*
ENH Research Institute, Evanston, IL, USA.

***965.*** **BOLD Signal Change After Acetazolamide In Relation To Change in Total Cerebral Blood Flow.**
*J.R. Marstrand, E. Rostrup, S. Rosenbaum and H.B.W. Larsson.*
University Hospital, Hvidovre, Denmark.

***966.*** **Neuro-Glial Interactions During Insulin-Induced Hypoglycemia: A 3D-Localized $^{13}C$ NMR Study of *in vivo* Amino Acid Metabolism.**
*I-Y. Choi, P.J. Magistretti, K. Ugurbil and R. Gruetter.*
University of Minnesota, Minneapolis, MN, USA and Université de Lausanne, Lausanne, Switzerland.

***967.*** **Anesthetic Filters for Eliciting Specific Neurotransmitter Effects in Pharmacologic MRI.**
*Y.I. Chen, J.B. Mandeville, J.A. Marota, T.V. Nguyen, A.R. Green and B.G. Jenkins.*
Massachusetts General Hospital, Charlestown, MA, USA.

***968.*** **Localized Energetic Changes with Brain Activation from Anesthesia II: Relative-BOLD Changes at 7 Tesla.**
*F. Hyder, R.G. Shulman, D.L. Rothman and K.L. Behar.*
Yale University, New Haven, CT, USA.

***969.*** **Xenon-Hemoglobin Interaction in Human Blood.**
*J. Wolber, A. Cherubini, M.O. Leach and A. Bifone.*
The Institute of Cancer Research and The Royal Marsden NHS Trust, Sutton, Surrey, UK.

***970.*** **Linewidths of Hyperpolarized $^{129}Xe$ NMR Spectra in Human Blood at 1.5T.**
*J. Wolber, A. Cherubini, D. Santoro, G.S. Payne, M.O. Leach and A. Bifone.*
The Institute of Cancer Research and The Royal Marsden NHS Trust, Sutton, Surrey, UK.

***971.*** **Interpretations of Brain "Deactivation" and "Activation" for Functional MRI.**
*F. Hyder, R.P. Kennan, I. Kida, G.F. Mason, K.L. Behar and D.L. Rothman.*
Yale University, New Haven, CT, USA.

***972.*** **Mapping Functional Changes in $CMRO_2$ by Multi-Modal MRI at 7 Tesla.**
*F. Hyder, I. Kida, R.P. Kennan, K.L. Behar and D.L. Rothman.*
Yale University, New Haven, CT, USA.

***973.*** **BOLD Signal Decreases During Pain Correspond With Decreases in Perfusion.**
*U.N. Frankenstein, P. Strongman and M. McIntyre.*
National Research Council of Canada, University of Manitoba and University of Winnipeg, Winnipeg, Manitoba, Canada.

***974.*** **Mapping Spatial Distribution of $H_2{}^{17}O$ in Rat Brain by Two-Dimensional CSI With a Fourier-Series Window (FSW) Technique.**
*X-H. Zhu, H. Merkle, G. Gong, K. Ugurbil and W. Chen.*
University of Minnesota, School of Medicine, Minneapolis, MN, USA.

***975.*** **Indirect Measurement of Oxygenation Changes in the Visual Cortex during Neuronal Stimulation.**
*J.A. Pears, S.T. Francis, S.E. Butterworth, R.W. Bowtell and P.A. Gowland.*
University of Nottingham, Nottingham, UK.

*976.* **Intravascular Signal Loss from a Single Vessel: Applications to Venographic Imaging and fMRI.**
*Y-C. N. Cheng, Y-J. Yu and E.M. Haacke.*
The MRI Institute for Biomedical Research, Brentwood, MO, USA; Case Western Reserve University, Cleveland, OH, USA and Washington University, St. Louis, MO, USA.

## fMRI: Spatial and Temporal Characteristics

Hall C
Tuesday: 13:30 – 15:30

*977.* **Physiological Modeling of BOLD Hemodynamics.**
*A. Vazquez and D. Noll.*
University of Michigan Ann Arbor, MI, USA.

*978.* **Mapping Human Ocular Dominance Columns with High-Field (4T) Functional Magnetic Resonance Imaging.**
*K. Cheng, R.A. Waggoner and K. Tanaka.*
RIKEN Brain Science Institute and Japan Science and Technology Corporation, Saitama, Japan.

*979.* **Spread of Hemo-Dynamic Signals in Draining Veins Beyond the Regions of Electrical Activation.**
*A. Shmuel, X. Hu, K. Ugurbil and A. Grinvald.*
The Weizmann Institute of Science, Rehovot, Israel and University of Minnesota, Minneapolis, MN, USA.

*980.* **Simultaneous CBF and BOLD fMRI of the Cat Visual Cortex: Comparison of Spatial Specificity at Sub-Millimeter Resolution.**
*T.Q. Duong, D-S. Kim and S-G. Kim.*
University of Minnesota School of Medicine, Minneapolis, MN, USA.

*981.* **Differences in Spatial Extent of Activation: BOLD vs. CBF (FAIR).**
*M.L. Lipton, C.A. Branch, H. Hrabe, D.P. Lewis and J.A. Helpern.*
Albert Einstein College of Medicine, Bronx, NY, USA; Nathan S. Kline Institute, Orangeburg, NY, USA and New York University School of Medicine, New York, NY, USA.

*982.* **A Model of Temporal and Spatial Variability of fMRI Activation Delays.**
*Z.S. Saad, E.A. DeYoe and K.M. Ropella.*
Marquette University and Medical College of Wisconsin, Milwaukee, WI, USA.

*983.* **The Brain as a Black-Box?: ER-fMRI Latency Estimation of Interleaved Response to Short Visual, Auditory, and Motor Stimuli.**
*V.D. Calhoun and G. Pearlson.*
Johns Hopkins University and University of Maryland, Baltimore, MD, USA.

*984.* **Dependence of the fMRI Time Course of the Hemodynamic Response Function in Visual Cortex on Global Cerebral Blood Flow.**
*S. Posse, B. Elghahwagi and L.J. Kemna.*
Research Center Jülich GmbH, Jülich, Germany.

*985.* **Response of BOLD Signal in Human V1 Area with Varied Stimulus Duration: An Event-Related fMRI Study.**
*X. Zhang, K. Kashikura, A. Kashikura and I. Kanno.*
Japan Science and Technology Corporation (JST) and Akita Research Institute of Brain and Blood Vessels, Akita, Japan.

*986.* **An Event-Related fMRI Study Revealing Hyperoxia Modified Activation-Induced Hemodynamic Response in Human V1.**
*K. Kashikura, A. Kashikura, X. Zhang, J.B. Kershaw and I. Kanno.*
Japan Science and Technology Corporation (JST) and Akita Research Institute of Brain and Blood Vessels, Akita, Japan.

*987.* **Assessment of Linearity of Perfusion and BOLD Response Functions in Event-Related Functional MRI.**
*Y. Yang, W. Engelien, H. Pan, S. Xu, E. Stern and D.A. Silbersweig.*
Cornell University Medical College and Memorial Sloan-Kettering Cancer Center., New York, NY, USA.

*988.* **Non-Linearities in Event-Related BOLD fMRI Using Very Short Stimulus Duration - A Study with High Temporal Resolution and Voxel Specific Analysis.**
*J. Pfeuffer, P-F. van de Moortele, G. Adriany, W.F. Auffermann, K. Ugurbil and X. Hu.*
University of Minnesota Medical School, Minneapolis, MN, USA.

*989.* **BOLD Overshoots at Task-Switching Points in Supplementary Motor Area.**
*T. Obata, T.T. Liu, K.L. Miller, W-M. Luh, E.C. Wong, L.R. Frank and R.B. Buxton.*
University of California, San Diego, CA, USA.

*990.* **Decoupling of the Hemodynamic Delay from the Task-Induced Delay in fMRI.**
*B.B. Biswal, A.P. Pathak, B.D. Ward, J.L. Ulmer, K.M. Donahue and A.G. Hudetz.*
Medical College of Wisconsin, Milwaukee, WI, USA.

*991.* **Observation of the Initial "Dip" in fMRI Signal in Human Visual Cortex at 7 Tesla.**
*E. Yacoub, T. Vaughn, G. Adriany, P. Andersen, H. Merkle, K. Ugurbil and X. Hu.*
University of Minnesota, Minneapolis, MN, USA.

*992.* **Detection of the Early Decrease in fMRI in the Motor Area.**
*E. Yacoub and X. Hu.*
University of Minnesota School of Medicine, Minneapolis, MN, USA.

*993.* **A Model of the Negative Early Response BOLD Signal in Functional MRI.**
*S. Banakar and M. Singh.*
University of Southern California, Los Angeles, CA, USA.

*994.* **Field Dependence of the Early Negative and the Late Positive BOLD Response at 4.7T and 9.4T.**
*T.Q. Duong, D-S. Kim and S-G. Kim.*
University of Minnesota, Minneapolis, MN, USA.

*995.* **Probing Neural Events by fMRI at the Neural Time Scale of Milliseconds.**
*S. Ogawa, T-M. Lee, R. Stepnoski and W. Chen.*
Bell Laboratories, Lucent Technologies, Murray Hill, NJ, USA and University of Minnesota, Minneapolis, MN, USA.

*996.* **The Effect of Stimulus Presentation Rate on the Activity of Primary Somatosensory Cortex; an fMRI Study.**
*M. Takanashi, K. Abe, T. Yanagihara, Y. Oshiro, Y. Watanabe, H. Tanaka, N. Hirabuki, H. Nakamura and N. Fujita.*
Osaka University Graduate School of Medicine, Osaka Japan.

*997.* **Classification of fMRI Signal Changes at 3 Tesla.**
*M. Barth, M. Klarhöfer and E. Moser.*
University Hospital of Vienna and University of Vienna, Vienna, Austria.

*998.* **Stimulus-Dependence and Independence of the BOLD Response in Human V1 and MT.**
*R.A. Waggoner, K. Cheng and K. Tanaka.*
RIKEN Brain Science Institute and Japan Science and Technology Corporation, Wako-shi, Japan.

***999.*** **Temporal Correlations in Low Frequency BOLD Fluctuations Reveal Functional Networks.**
*M.J. Lowe, M. Dzemidzic, J.T. Lurito, V.P. Mathews and M.D. Phillips.*
Indiana University School of Medicine, Indianapolis, IN, USA.

***1000.*** **The Effects of Respiration Patterns on EPI Time Courses.**
*C. Windischberger, H. Langenberger, T. Sycha, L. Schmetterer and E. Moser.*
University of Vienna, Vienna, Austria.

## $pCO_2$, Perfusion, and Motion Effects on fMRI

Hall C
Thursday: 13:30 – 15:30

***1001.*** **Perfusion Imaging Using FLASH and Slice Selective Inversion: Effective Contrast to Noise in Functional MRI.**
*C. Preibisch and A. Haase.*
Universität Würzburg, Würzburg, Germany.

***1002.*** **Blood Flow Measurements in a Vein Draining the Motor Cortex during Periodic Pressing with the Finger with Graded Force.**
*L. Lamalle, C. Delon-Martin, R. Massarelli, H. Reutenauer, O. Monitgon, C. Segebarth and M. Décorps.*
CHU A. Michallon, Grenoble, France.

***1003.*** **A Simple, Effective Method for Controlling End Tidal $PCO_2$ for MRI Mapping of Cerebrovascular Reactivity.**
*A. Vesely, H. Sasano, G. Volgyesi, J. Tesler, L. Fedorko, J. Grynspan, A. Crawley, D.J. Mikulis and J.A. Fisher.*
University of Toronto, Toronto, Ontario, Canada.

***1004.*** **Widespread Respiration-Correlated Signal Changes in BOLD fMRI of Resting Brain.**
*L.N. Ryner, R. Baumgartner, R. Somorjai and W. Richter.*
National Research Council Canada, Winnipeg, Manitoba, Canada.

***1005.*** **False Activation on BOLD fMRI Caused by Low-Amplitude Motion Weakly Correlated to Stimulus.**
*A.S. Field, Y-F. Yen, J.H. Burdete and A.D. Elster.*
Wake Forest University School of Medicine, Winston-Salem, NC, USA.

***1006.*** **Analysis of Physical Mechanisms of Respiration-Induced fMRI Signal Changes.**
*J. Bodurka, X. Zhao and S-J. Li.*
Medical College of Wisconsin, Milwaukee, WI, USA and University School of Medical Sciences, Bydgoszcz, Poland.

## Cells, Body Fluids and Others

Hall C
Wednesday: 13:30 – 15:30

***1007.*** **Magnetically-Oriented Bicelles as an *in vitro* Tool to Investigate the Residual Dipolar Coupling of Creatine and Phosphocreatine Protons in Skeletal Muscle.**
*S.J. De Vilder, M.J. Kruiskamp, R. Wechselberger, M. Czisch and K. Nicolay.*
University Medical Centre Utrecht and Utrecht University, Utrecht, The Netherlands.

***1008.*** **Human Blood Exhibits Gaussian Relaxation Behavior.**
*W.M. Spees, D.A. Yablonskiy, M.C. Oswood and J.J.H. Ackerman.*
Washington University, St. Louis, MO, USA.

***1009.*** **Comparison of [U-$^{13}$C] Propionate and [U-$^{13}$C] Alanine as Tracers of Hepatic Gluconeogenesis and Krebs Cycle Fluxes.**
*L. Suvunrungsi, J.G. Jones, A. Dean Sherry, L. Cao and C.R. Malloy.*
University of Texas Southwestern Medical Center, Dallas, TX, USA and University of Texas Dallas, Richardson, TX, USA.

***1010.*** **$^{13}$C NMR Analysis of Long Chain Fatty Acid Oxidation in the Rat Liver After a Fatty Meal: Comparison of Glutamate and b - Hydroxybutyrate Spectra.**
*C.R. Malloy, J.C. Cohen, M.J. Bennett, C.J. Storey, A.D. Sherry and J.G. Jones.*
University of Texas Southwestern Medical Center, Childrens Medical Center and Dallas VA Medical Center, Dallas, TX, USA.

***1011.*** **Rapid Isotopomer Analysis: Advantages of J Resolved HSQC Over Direct $^{13}$C Observation.**
*S.C. Burgess, E.E. Babcock, R.A. Carvalho, C.R. Malloy and A.D. Sherry.*
University of Texas, Southwestern Medical Center, Dallas, TX, USA and University of Texas at Dallas, Richardson, TX, USA.

***1012.*** **Determination of the Compartment Size of the Visible NMR Lipid Signal in Iodoacetamide-Treated C6 Cells.**
*Y. Pérez, H. Lahrech, M.E. Cabañas, R. Barnadas, M. Sabés, C. Rémy, M. Décorps and C. Arús.*
Universitat Autònoma, Barcelona, Spain and CHU de Grenoble, Grenoble, France.

***1013.*** **Impact of Exogenous Alanine on Osmoregulatory Response and Pyruvate Compartmentation in Glial Cells: Difference in Primary Astrocytes and Glioma Cells.**
*C. Zwingmann, C. Richter-Landsberg and D. Leibfritz.*
Universität Bremen, Bremen, Germany and Universität Oldenburg, Oldenburg Germany.

***1014.*** **Cell Mass Perfusion in a Fixed Bed Bioreactor, Monitored by Dynamic Contrast-Enhanced MRI.**
*P.E. Thelwall and K.M. Brindle.*
University of Cambridge, Cambridge, UK.

***1015.*** **Metabolic Profiles of Thymoma Cell Lines Vary with Resistance to Dexamethasone-Induced Apoptosis. A $^{31}$P NMR Study of Cell Extracts.**
*N.W. Lutz, M.E. Tome, M.M. Briehl and N.R. Aiken.*
University of Arizona, Tuczon, AZ, USA.

***1016.*** **Alterations in Choline Compounds - A Marker for the Malignant Phenotype in Human Prostate Cancer Cells.**
*E. Ackerstaff, B.R. Pflug, J.B. Nelson and Z.M. Bhujwalla.*
The Johns Hopkins University School of Medicine and Triad Technology Center, Baltimore, MD, USA and University of Pittsburgh, Pittsburgh, PA, USA.

***1017.*** **NMR Spectroscopic Studies on Mitochondrial Genome Depleted Cervical Carcinoma Cells.**
*K. Natarajan, R. Delsite, D. Artemov, K.K. Singh and Z.M. Bhujwalla.*
The Johns Hopkins University School of Medicine, Baltimore, MD, USA.

***1018.*** **Regulation of Glucose Transport and GLUTs Expression in the Course of Breast Cancer Differentiation.**
*D. Rivenzon-Segal, E. Rushkin and H. Degani.*
Weizmann Institute of Science, Rehovot, Israel.

***1019.*** **Diffusion Weighted Proton MRS: Applications to Cancer Cell Metabolism and Oncologic Pharmacology.**
*Y. Mardor, O. Kaplan, M. Sterin, J. Ruiz-Cabello, E. Ash, I. Ringel and J.S. Cohen.*
Sheba Medical Center, Tel Hashomer, Israel; Hebrew University, Jerusalem, Israel; Complutense University, Madrid, Spain; Tufts University, Boston, MA, USA and Tel-Aviv Medical Center, Tel-Aviv, Israel.

***1020.*** **Cyclooxygenase Inhibition and its Role in the $^{1}$H NMR Phospholipid Profiles of Human Mammary Epithelial Cells.**
*K. Natarajan, N. Mori, D. Artemov and Z.M. Bhujwalla.*
The Johns Hopkins University School of Medicine, Baltimore, MD, USA.

***1021.*** **Muscle Metabolites, Detected in Urine, Reflect Disease Activity in Juvenile Dermatomyositis (JDM).**
*Y-L. Chung, L. Rider, J. Bell, L. Zemel, R. Rennebohm, M. Passo, P. White, S. George, I. Katona, F. Miller and D. Scott.*
JDM Disease Activity Collaborative Study Group.

***1022.*** **Halocarbon-Induced Damage Studied by $^{1}$H, $^{13}$C and $^{31}$P NMR of Liver Extracts.**
*M. Brauer.*
University of Guelph, Guelph, Ontario, Canada.

***1023.*** **$^{1}$H NMR Studies of the Biochemical Effects of Gaseous Oxygen Persufflation in the Rat Liver at Hypothermia.**
*P-W. So, A.L. Busza and B.J. Fuller.*
Hammersmith Hospital, and Royal Free & University College London Medical School, London, UK.

***1024.*** **The Effects of Moderate Hypothermia on Liver and Intestine Metabolism Following Intestinal Ischemia and Reperfusion: *In Vitro* $^{1}$H and $^{31}$P Magnetic Resonance Spectroscopy Study.**
*P. Vejchapipat, S.R. Williams, E. Proctor, L. Spitz and A. Pierro.*
University College London Medical School, London, UK and University of Manchester, Manchester, UK.

## Tumor Animal Models: MRI and MRS

Hall C
Wednesday: 13:30 – 15:30

***1025.*** **Diffusion Weighted MR Imaging Improves Prostate Tumor Detection in Transgenic Mice: A Comparison of $T_2$ and Apparent Diffusion Coefficients in Normal Prostate and Tumor.**
*S-K. Song, Z. Qu, J. Milbrandt, E.M. Garabedian, J.I. Gordon and J.J.H. Ackerman.*
Washington University, St. Louis, MO, USA.

***1026.*** **HGF/SF-Induced Hemodynamic Activity in Breast Tumor Tissue: A New MRI Diagnostic and Prognostic Tool.**
*R. Abramovitch, T. Kushnir, G. Tsarfaty, M. Shaharabany, R. Ron, J. Horev, M. Ravid, I. Itzchak and I. Tsarfaty.*
Sheba Medical Center, Tel-Hashomer, Israel; Tel Aviv University, Tel Aviv, Israel and fBIT LTD, Tel-Hashomer Israel.

***1027.*** **Validiation of TmDOTP$^{5-}$ as an *In Vivo* $^{23}$Na NMR Shift Reagent in 9L Gliosarcoma.**
*P.M. Winter, H. Poptani and N. Bansal.*
University of Pennsylvania, Philadelphia, PA, USA.

***1028.*** **Characterisation of the Development of Hepatic Tumours in an Experimental Animal Model Using *In Vivo* Image-guided $^{1}$H-MRS.**
*L.M. Foley, R.A. Towner, P. Russell and D.M. Painter.*
James Cook University, Townsville, Queensland, Australia and Royal Prince Alfred Hospital, Sydney, New South Wales, Australia.

***1029.*** **$^{1}$H Magnetic Resonance Spectroscopic Imaging of Extracellular pH in an Intracerebral Glioma.**
*M.L. Garcia-Martin, G. Hérigault, C. Rémy, R. Farion, P. Ballesteros, J.A. Coles, S. Cerdan and A. Ziegler.*
Instituto de Investigaciones Biomédicas, Madrid, Spain and Centre Hospitalier Universitaire, Grenoble, France.

***1030.*** **Evaluation of a and g-folate isomers of Gd-DO3A-APA-folate in Folate-Receptor Positive KB Cells and Implanted Tumors: Unexpected Binding Affinity for the a-isomer.**
*P. Wedeking, K. Ramalingam, R. Pillai, T. Arunachalam, K. Linder, J. Johnstone, S. Eaton, R.E. Wager, R. Shukla, A.D. Nunn and M.F. Tweedle.*
Bracco Research USA, Princeton, NJ, USA.

***1031.*** **Enhancement of Hyperglycemia-Induced Acidification by Meta-Iodobenzylguanidine: Differential Response in Human Melanoma Xenografts and Normal Tissues.**
*R. Zhou, N. Bansal, D.B. Leeper and J.D. Glickson.*
University of Pennsylvania and Thomas Jefferson University, Philadelphia, PA, USA.

***1032.*** **Drug Targeting: Monitoring of a Drug-Carrier System by Means of Metabolic Fluorine-19 NMR Imaging.**
*M.E. Bellemann, A. Schlicker, H. Sinn, G. Brix and P. Peschke.*
University of Applied Sciences, Jena, Germany and German Cancer Research Center (dkfz), Heidelberg, Germany.

***1033.*** **$^{19}$F NMR As a Tool to Measure the Efficiency of Adenoviral CD Gene Transfer. *In Vitro* and *In Vivo* Monitoring of 5-FC to 5-FU Conversion.**
*P. Kiss, A. Gustin, D. Buchsbaum, T. Simor, L. Lenard, S. Vickers and G.A. Elgavish.*
University of Alabama, Birmingham, AL, USA.

***1034.*** **MRI Assessment of Chemoembolization of Liver Tumors in a Rabbit Model.**
*D. Artemov, C. Magee, S. Abraham, Z. Bhujwalla and J.F. Geschwind.*
Johns Hopkins University School of Medicine, Baltimore, MD, USA.

***1035.*** **Phosphomonoester Levels in Drug Resistant and Drug Sensitive Human Breast Cancer Xenografts via Fully-Relaxed $^{31}$P MRS.**
*D.L. Morse, N. Raghunand, B. Baggett, R.J. Gillies and N.R. Aiken.*
University of Arizona Cancer Center, Tucson, AZ, USA.

***1036.*** **Validation of a Snapshot FLASH Protocol for Rapid Assessment of Contrast Enhancement to Monitor Tumour Therapy.**
*B. Morgan, A. Jivan, M.A. Horsfield, M. Buechert, J. Hennig and G.R. Cherryman.*
Univerity of Leicester, Leicester, UK and University of Freiburg, Freiburg, Germany.

***1037.*** **$^{1}$H Metabolic Response of the CWR22 Prostate Tumor Xenograft Following 20 Gy Radiation Studied by BASSALE SI.**
*J.P. Dyke, C. Matei, Y. Chen, D.C. Shungu, J.A. Koutcher and K.L. Zakian.*
Memorial Sloan-Kettering Cancer Center and Columbia University, New York, NY, USA.

***1038.*** **Cyclophosphamide Treatment of RIF-1 Tumors: Early Detection of therapeutic Response by $T_2$ and $T_1$r MRI.**
*H. Poptani, U. Duvvuri, L.N. Desbarats, M. Feldman, R. Reddy, J.S. Leigh and J.D. Glickson.*
University of Pennsylvania, Philadelphia, PA, USA.

***1039.*** **Regional Tumor Tissue $pO_2$ and Blood $sO_2$: Comparison of $^{19}$F MR EPI and Frequency Domain NIR Spectroscopy.**
*Y. Song, X. Jiang, D. Zhao, A. Constantinescu, H. Liu and R.P. Mason.*
University of Texas Southwestern Medical Center, Dallas, TX, USA.

***1040.*** **Tumor Oximetry: Comparison of $^{19}$F MR EPI (FREDOM) and the Fiber-Optic OxyLite™.**
*R.P. Mason, D. Zhao, A. Constantinescu and A. Obeid.*
University of Texas Southwestern Medical Center, Dallas, TX, USA and Oxford Optronix, Oxford, UK.

*1041.* **$^{19}$F MRS Measurement of Tumour Pharmacokinetics of SR4554, a 2-Nitroimidazole Hypoxia Probe.**
*B.M. Seddon, R.J. Maxwell, D.J. Honess, R. Grimshaw, F. Raynaud and P. Workman.*
Institute of Cancer Research, Sutton, Surrey, UK and Gray Laboratory Cancer Research Trust, Northwood, Middlesex, UK.

*1042.* **On the Correlation of FLOOD/MGRE Imaging and Dynamic Contrast Agent Imaging With Dimeglumine Gadopentetate (Magnevist).**
*D.J.O. McIntyre, S.P. Robinson and J.R. Griffiths.*
St George's Hospital, London, UK.

*1043.* **100% $N_2$ Breathing Causes Vascular Collapse in Some Subcutaneous Tumors.**
*F.A. Howe, S.P. Robinson and J.R. Griffiths.*
St George's Hospital Medical School, London, UK.

*1044.* **Measurement of Spectrally Inhomogeneous BOLD Contrast Changes Using High Spectral and Spatial Resolution (HiSS) MRI.**
*H.A. Al-Hallaq, M.A. Zamora, A. Farrel and G.S. Karczmar.*
University of Chicago, Chicago, IL, USA.

*1045.* **Effects of Glucose on BOLD Contrast in Tumors During Normoxia and Hyperoxia.**
*G.S. Karczmar, H.A. Al-Hallaq and M.A. Zamora.*
University of Chicago, Chicago, IL, USA.

*1046.* **Relative Roles of $O_2$ and $CO_2$ in the Carbogen-Enhanced-Uptake of Ifosfamide into Tumours - an in Vivo $^{31}$P MRS Study.**
*L.M. Rodrigues, S.P. Robinson, P.M.J. McSheehy, M. Stubbs and J.R. Griffiths.*
St. George's Hospital Medical School, London, UK.

*1047.* **An MR Imaging and Spectroscopic Comparison *In Vivo* of Mouse Hepa-1 Wild-Type Tumors and Tumors Deficient in Hypoxia-Inducible-Factor-1b (HIF-1b).**
*J.R. Griffiths, P.M.J. McSheehy, S.P. Robinson, H. Troy, D. Jackson, M. Stubbs, P.J. Ratcliffe and A. Harris.*
St. George's Hospital Medical School, London, UK; AstraZeneca, Cheshire, UK and John Radcliffe Hospital, Oxford, UK.

*1048.* **Comparison of $T_1$ and $T_2$* Enhancement in MNU Chemically-Induced Mammary Carcinomas After Administration of the Blood Pool Agent NC100150 Injection.**
*D.J.O. McIntyre, S.P. Robinson, K. Tarlo and J.R. Griffiths.*
St George's Hospital Medical School, London, UK and Nycomed Imaging, Wayne, PA, USA.

*1049.* **Dynamic MRI of Osteosarcoma Xenografts: The Effect of an Intratumoural Hyaluronidase Injection on the Tumour Water Diffusion and Blood Volume.**
*M.H. Hjelstuen, O. Haraldseth, C. Davies, I.S. Gribbestad, A. Bjørnerud and C. Brekken.*
SINTEF Unimed and The Norwegian University of Science and Technology, Trondheim, Norway and Nycomed Imaging AS, Oslo, Norway.

*1050.* **Visualization of Subcutaneous Lymphatics by Contrast Enhanced MRI.**
*H. Dafni, B. Shechter and M. Neeman.*
The Weizmann Institute of Science, Rehovot, Israel.

*1051.* **Tracking the Interstitial Movement of a Macromolecular Contrast Agent.**
*D. Artemov, M. Solaiyappan, M. Neeman and Z.M. Bhujwalla.*
The Johns Hopkins University School of Medicine, Baltimore, MD, USA and The Weizmann Institute of Science, Rehovot, Israel.

*1052.* **The Reptation Mechanism in Tumor Imaging.**
*E.E. Uzgiris and A. Bogdanov, Jr.*
General Electric Research & Development, Schenectady, NY, USA and Massachusetts General Hospital, Charlestown, MA, USA.

*1053.* **Selective Thrombosis of Tumor Vessels for Cancer Therapy: The Induced Blood Coagulation and Lysis Measured by MRI.**
*M-Y. Su, H. Yu, M.K. Samoszuk and O. Nalcioglu.*
University of California, Irvine, CA, USA and Quest Diagnostics Inc., CA, USA.

*1054.* **MRI Macromolecular Contrast Agents as Indicators of Tumor Starvation.**
*K. Beravs, T. Ivanu[1]a, G. Ser[1]a, M. Čemažar, V. Jevtič and F. Demsar.*
Institute Jožef Stefan, University of Ljubljana, Institute of Oncology and Medical Center, University of Ljubljana, Ljubljana, Slovenia.

*1055.* **Is There an Association Between Systemic VEGF and Permeability In Locally Advanced Rectal Adenocarcinoma? Initial Observations.**
*A.S.K. Dzik-Jurasz, M. George, A. Padhani, R.I. Swift, M.O. Leach and I.J. Rowland.*
Royal Marsden NHS Trust, Sutton, UK and Mayday University Hospital, Surrey, UK.

*1056.* **Use of Dynamic MRI to Assess Effect of Combretastatin A4 Phosphate (CA4P) on Tumour and Normal Tissue Blood Flow in Rats and Humans.**
*S.M. Galbraith, N.J. Taylor, R. Maxwell, G.J.S. Rustin, H. Baddeley, I. Wilson, V. Prise and G. Tozer.*
Mount Vernon Hospital and Gray Laboratory, Northwood, Middlesex, UK.

*1057.* **Assessment of the Relative Cerebral Blood Volumes in Various Brain Tumors by Using CBV Mapping.**
*J-J. Seo, E.H. Ko, H-K. Kang, G-W. Jeong, H-J. Kim, J-G. Park and Y-H. Kim.*
Chonnam University Hospital, Kwang-Ju, Korea.

*1058.* **Abnormal Retinal Angiogenesis is Strongly Associated with a Subnormal MRI Panretinal Oxygenation Response: Effect of 28% Supplemental Oxygen Treatment.**
*B.A. Berkowitz and W. Zhang.*
Wayne State University School of Medicine, Detroit, MI, USA.

*1059.* **Examination of vx2-Tumors Using a 2-Pool Model With Proton Exchange and Dynamic Gd-DTPA Enahanced MRI.**
*M.D. Noseworthy, X. Qi, J.A. Stainsby and G.A. Wright.*
University of Toronto and Sunnybrook and Women's College Health Sciences Centre, Toronto, Ontario, Canada.

*1060.* **WITHDRAWN.**

*1061.* **Accurate Measurement of Absolute Fractional Blood Volume for the Evaluation of Tumor Angiogenesis.**
*Y.R. Kim and K.M. Donahue.*
Medical College of Wisconsin, Milwaukee, WI, USA.

*1062.* **Application of a Blood Pool Agent NC100150 for Tumor Characterization: The Optimal Pulse Sequence and Dose Accumulative Effects.**
*M-Y. Su and O. Nalcioglu.*
University of California, Irvine, CA, USA.

*1063.* **Combined Proton Spectroscopic and Vascular Imaging of Prostate Cancer Models.**
*Z.M. Bhujwalla and D. Artemov.*
Johns Hopkins University School of Medicine, Baltimore, MD, USA.

*1064.* **CBF and CBV are Mismatched in Rat Model of Human Glioma.**
*S.D. Packard, T. Ichikawa, J.B. Mandeville, E.A. Chiocca, B.R. Rosen and J.J.A. Marota.*
Massachusetts General Hospital, Charlestown, MA, USA.

*1065.* **Magnetic Resonance Imaging of Tumor Permeability and Blood Volume: Non-Invasive Markers for the Efficacy of PTK 787 on Tumor Vasculature.**
*M. Rudin, D. Baumann, C.R. Schnell and J.M. Wood.*
Novartis Pharma AG, Basel, Switzerland.

# MR Spectroscopy of Brain: Animal Models

Hall C
Tuesday: 13:30 – 15:30

***1066.*** **Can Cross Relaxation Between Solid and Water Protons Account for $T_2$ Relaxation Times in Brain?**
*I.M. Vavasour and A.L. MacKay.*
University of British Columbia Hospital, Vancouver, BC, Canada.

***1067.*** **Quantitative Analysis of Human and Macaque Brain Metabolites Using 3 Tesla System.**
*N. Hattori, N. Inoue, S. Yoshikubo, M. Umeda, M. Fukunaga, C. Tanaka, S. Naruse, T. Sawada and R.T. Engelhardt.*
BF Research Institute, Osaka, Japan; Meiji University of Oriental Medicine and Kyoto Prefectural University of Medicine, Kyoto, Japan and GE Yokogawa Medical Systems, Tokyo, Japan.

***1068.*** **Localized $^{23}$Na-NMR Spectroscopy of the Rat Brain Using Shift Reagent: Measuring Cerebral Blood Volume Changes During Hypercapnia.**
*I. Ronen, H. Merkle and S-G. Kim.*
University of Minnesota, Minneapolis, MN, USA.

***1069.*** **Spatially Resolved $^{13}$C Turnover in Rat Brain at 7 Tesla with ICED PEPSI.**
*F. Hyder, R. Renken, K.L. Behar and D.L. Rothman.*
Yale University, New Haven, CT, USA and University of Groningen, Groningen, The Netherlands.

***1070.*** **Cerebral Metabolic Maps by $^{1}$H[$^{13}$C] NMR at 7 Tesla.**
*F. Hyder, P. Brown, T.W. Nixon and K.L. Behar.*
Yale University, New Haven, CT, USA.

***1071.*** **Proton Localized 2D Spectroscopy in the Rat Brain at 7T.**
*F. Delmas, B. Gillet, B-T. Doan, J-C. Beloeil, P. Méric and J-L. Correze.*
ICSN-CNRS, Gif sur Yvette, France and CHU Villemin, Paris, France.

***1072.*** **Detection of Mobile Lipids Following Cerebral Infarction by 1D and 2D Proton MR Spectroscopy in a Rat Brain Slice Model.**
*G.D. Graham, W. Ahmed, G.A. Rosenberg and C.C. Gasparovic.*
University of New Mexico School of Medicine and Albuquerque VA Medical Center, Albuquerque, NM, USA.

***1073.*** **Lactate and NAA Imaging - Predictors of Tissue Recovery After Thrombolytic Stroke Intervention. A Spectroscopic Imaging Study In Rat Brain.**
*C. Franke, G. Brinker, F. Pillekamp and M. Hoehn.*
Max-Planck-Institute for Neurological Research, Cologne, Germany.

***1074.*** **Postmortem Stability of $^{1}$H MRS Metabolites in Rat Brain.**
*C.C. Cloak, L. Chang, T. Ernst and R.E. Poland.*
Harbor-UCLA Medical Center, Torrance, CA, USA and Cedars-Sinai Medical Center, Los Angeles, CA, USA.

***1075.*** **Choline Metabolism and Betaine Synthesis in Rat Brain.**
*R. Katz-Brull, A.R. Koudinov, M. Segal and H. Degani.*
Weizmann Institute of Science, Rehovot, Israel.

***1076.*** **Brain Metabolite Levels Are Altered in a Rat Model of Autism: An *In Vivo* $^{1}$H MRS Study.**
*A. Tudorica, F. Johnston, D. Kahne, H. Li, T. Button, C. Geronimo, P. Whitaker-Azmitia and W. Huang.*
State University of New York, Stony Brook, NY, USA.

***1077.*** **Studies of Thiamine Deficient Rat Brains with *in vivo* and *in vitro* Proton NMR Spectroscopy.**
*H. Lee, G. Holburn, P.R. Martin and R. Price.*
Vanderbilt University Medical Center, Nashville, TN, USA.

***1078.*** **Maternal Glycemic Control in Diabetic Pregnancy: its Effect on Cerebral Glucose Metabolism in the Fetus.**
*S. Haber and A. Lapidot.*
Weizmann Institute of Science, Rehovot, Israel.

***1079.*** **Effects of Acute and Chronic Nicotine on $^{1}$H MRS in the Anterior Cingulate.**
*T.J. Ross, E. Schnieder, R. Prost, S-J. Li, R.C. Risinger, B.J. Salmeron, A.S. Bloom and E.A. Stein.*
Medical College of Wisconsin, Milwaukee, WI, USA and Pfizer Central Research, Groton, CT, USA.

***1080.*** **Behavioural Deficits Correlate with MRS Changes in Mice.**
*A.M. Blamire, A. Vincent, R. Deacon, S. Pendlebury, C. Salmon, H. Johannsen-Berg, B. Rajagopalan, J. Stein and P. Styles.*
University of Oxford, Oxford, UK.

***1081.*** **Oral Cortisol and Psychosocial Stress Differently Alter Brain Metabolism in Tree Shrews.**
*T. Michaelis, G. de Biurrun, T. Watanabe, E. Fuchs and J. Frahm.*
Biomedizinische NMR Forschungs GmbH and Deutsches Primatenzentrum, Göttingen, Germany.

***1082.*** **Effects of Antipsychotic Drugs on Metabolite Ratios in Rat Brain *In Vivo*.**
*D.M. Lindquist, R.M. Hawk, C.N. Karson and R.A. Komoroski.*
University of Arkansas at Little Rock; Central Arkansas Veterans Healthcare System and University of Arkansas for Medical Sciences, Little Rock, AR, USA.

***1083.*** **$^{19}$F NMR Study of Trifluoperazine Crossing Blood-Brain-Barrier Due to P-Glycoprotein Modulation.**
*P. Wang, A. Aszalos and J.A. Vick.*
Howard University, Washington, DC, USA and Food and Drug Administration, Laurel, MD, USA.

***1084.*** **Metabolic Investigation of Neuronal Dysfunction Induced by 3-Nitropropionic Acid in Rats and Primates.**
*C. Dautry, F. Vaufrey, E. Brouillet, N. Bizat, F. Condé, P. Hantraye and G. Bloch.*
SHFJ, DRM, CEA, Orsay, France.

***1085.*** **Impact of Acute Reversible Hydrocephalus in Guinea Pigs: A Proton MRI/MRS Study.**
*S. Yamada, G. McComb, J-H. Hwang, M. Shibata, S. Bluml and B.D. Ross.*
Rudi Schulte Research Institute, Santa Barbara, CA, USA; Huntington Medical Research Institutes, Pasadena, CA, USA; Children's Hospital of Los Angeles and University of Southern California, Los Angeles, CA, USA.

***1086.*** **The Sequential Proton MRS and Diffusion Studies of Kaolin-Induced Hydrocephalic Cat Brain.**
*Y. Chang, Y.S. Kim, M.J. Kim, S.K. Hwang, B.S. Han and D.S. Kang.*
Kyungpook National University Hospital, Taegu, Korea.

***1087.*** **Effects of Deep Hypothermic Circulatory Arrest on Brain Metabolism Monitored by *In Vivo* $^{1}$H and $^{31}$P Magnetic Resonance Spectroscopy in a Feline Model.**
*M.G. Song, S.J. Choo, K.H. Lim, H.C. Ha, I.C. Choi, S.H. Park, J.W. Lee, H. Song, J.H. Lee and T.H. Lim.*
Asan Medical Center, University of Ulsan College of Medicine and Asan Institute for Life Sciences, Seoul, Korea.

***1088.*** **Cerebral Glucose Metabolism in a Transgenic Animal Model of ALS as Detected by *In Vivo* $^{13}$C MRS.**
*E.H.G.K. Küstermann, O. Andreassen, F. Beal and B.G. Jenkins.*
Massachusetts General Hospital and Harvard Medical School, Boston, MA, USA and University of Nottingham, Nottingham, UK.

***1089.*** **MRI/MRS of a Mouse Model for Canavan Disease.**
*M. Quast, J. Wei, E.L. Ezell, P.L. Rady, K.A. Platt, H.B. Skinner, G.A. Campbell, K. Matalon, J. Ceci, S.K. Tyring, M. Nehls, S. Szucs and R. Matalon.*
The University of Texas Medical Branch, Galveston, TX, USA.

***1090.*** ***In Vivo* $^{1}$H MR Spectroscopic Analysis of Apoptosis in Hypoxic-Ischemic Newborn Rats.**
*K-S. Kim, S-J. Park, K.H. Lim, E-J. Kim, J.H. Lee and S-Y. Pi.*
Asan Medical Center, University of Ulsan College of Medicine and Asan Institute for Life Sciences, Seoul, Korea.

***1091.*** **Decreased Cerebral *N*-Acetylaspartate Correlates with Reduced Brain Water Apparent Diffusion Coefficient During Delayed Energy Failure in the Newborn Piglet.**
*J.S Thornton, M. Wylezinska, R.J. Ordidge, K. Brooks, E.B. Cady, M. Clemence, Q. Nguyen, M. Noone, F.E. O'Brien, N. Parker, Y. Sakata, M.W. Sellwood, R. Springett and J.S. Wyatt.*
University College London, London, UK.

***1092.*** **Proton $T_2$ Relaxation Measurements of Cerebral Metabaolites in a Newborn Piglet Hypoxia-Ischemia Model.**
*C.M.P.C.D. Peeters, K.P.J. Braun, F. Groenendaal and K. Nicolay.*
Wilhelmina Children's Hospital and University of Utrecht, Utrecht, the Netherlands.

***1093.*** **Investigation of Hypoxic Ischemic Injured Newborn Rat Brain by *In Vivo* $^{1}$H MR Spectroscopy.**
*S-Y. Pi, K-S. Kim, J-H. Yoon, H-S. Yoon, K.H. Lim, E-J. Kim and J.H. Lee.*
Asan Medical Center, University of Ulsan College of Medicine and Asan Institute for Life Sciences, Seoul, Korea.

***1094.*** **[3-$^{13}$C]Lactate Metabolism in the Rat Brain: An *Ex-Vivo* Study.**
*A-K. Bouzier, E. Thiaudière, M. Biran, P. Canioni and M. Merle.*
Université Victor Segalen, Bordeaux, France.

***1095.*** **Fast $^{13}$C-Glucose Metabolite Mapping in Rat Brain Using $^{1}$H Echo Planar Spectroscopic Imaging Technique.**
*S. Morikawa, T. Inubushi, H. Ishii and T. Sawada.*
Shiga University of Medical Science, Shiga, Japan.

## MR Imaging of Brain Tumors

Hall C
Tuesday: 13:30 – 15:30

***1096.*** **Glioma Grading With Dynamic MRI.**
*L. Lüdemann, W-G. Grieger and C. Zimmer.*
Charité, Berlin, Germany.

***1097.*** **Fast $T_1$ r =NMR Imaging and Relaxometry of Brain Tumors in Patients at 1.5 T.**
*S. Sammet, M. Bock, H-P. Schlemmer and P. Bachert.*
Deutsches Krebsforschungszentrum (dkfz), Heidelberg, Germany.

***1098.*** **Oxygen Induced MR Signal Changes in Brain Tumor Imaging.**
*C. Losert, M. Peller, P. Schneider and M.F. Reiser.*
Ludwig Maximilian University, Munich, Germany.

***1099.*** **Evaluation of Hemodynamics of Meningioma by Dynamic MRI.**
*S. Nakamura, S. Takahashi, K. Kusunoki, Y. Oka, K. Sadamoto, H. Miki, J. Ikezoe and K. Nagasawa.*
Washokai Sadamoto Hospital and Ehime University, Ehime, Japan and GE-Yokogawa Medical System, Tokyo, Japan.

***1100.*** **The Correlation of Relative Magnetization Transfer Contrast and Relative Diffusion Weighted Contrast with Malignant Activity of Primary Brain Tumors as Assessed by Dynamic MRI.**
*J.M. Gomori, G. Golan, F. Bokstein, F. Gul-Aksoy and T. Siegal.*
Hadassah University Hospital, Jerusalem, Israel.

***1101.*** **Contrast-Enhanced Fast Fluid-Attenuated Inversion Recovery (FLAIR) MR Imaging in Brain Tumor.**
*C.K. Kim, D.G. Na, H.S. Byun, W.J. Ryoo and H.K. Yoon.*
Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea.

***1102.*** **Diffusion-Weighted MR Imaging of Rim-Enhancing Lesions in the Brain.**
*Y.H. Kim, D.G. Na, J.W. Ryoo and H.S. Byun.*
Samsung Medical Center, Sungkyungkwan University School of Medicine, Seoul, Korea.

***1103.*** **Intravenous Gadolinium Does Not Alter the Apparent Diffusion Coefficient: A Study in Enhancing Brain Tumors.**
*C. Morriss and J. Haselgrove.*
Children's Hospital of Philadelphia, University of Pennsylvania, Philadelphia, PA, USA.

***1104.*** **Can MRI and CT Together with the Clinical Data Reliably Predict the Malignanacy of Brain Gliomas? A Study of 229 Biopsy-Proven Cases.**
*J. Vymazal, T. Chytka, J. Novotný Jr. and R. Liščák*
Hospital Na Homolce, Prague, The Czech Republic.

***1105.*** **Magnetization Transfer MR Imaging is More Close to Histopathology than Conventional MR Imaging in Intercranial Tuberculomas.**
*R.K. Gupta, N. Husain, M.K. Kathuria, S. Datta, R.K.S. Rathore and M. Husain.*
Sanjay Gandhi Post-Graduate Institute of Medical Sciences and KG Medical College, Lucknow, Kanpur, India and Indian Institute of Technology, Kanpur, India.

## MR Spectroscopy of Brain Tumors

Hall C
Tuesday: 13:30 – 15:30

***1106.*** **Effect of MRS on Clinical Decision Making in Brain Tumor Management.**
*A. Lin, A. Mamelak and B.D. Ross.*
Huntington Medical Research Institute and Huntington Memorial Hospital, Pasadena, CA, USA.

***1107.*** **The Effect of Gd-DTPA on $T_1$ Weighted Choline Signal In Human Brain Tumours.**
*P.S. Murphy, A. Dzik-Jurasz, M.O. Leach and I. Rowland.*
The Institute of Cancer Research and The Royal Marsden NHS Trust, Sutton, Surrey, UK.

***1108.*** **$^1$H MRSI, rCBV, and ADC in Human Brain Tumors: A Correlation with Image-Guided Biopsies.**
*M. Hanna, S. Noworolski, R. Henry, A. Bollen, M. Day, T. McKnight, M. McDermott, M. Berger, W. Dillon, S. Nelson and D. Vigneron.*
University of California, San Francisco, CA, USA.

***1109.*** **Multi-Slice Proton Spectroscopic Imaging of Cerebral Gliomas in Untreated Patients.**
*D.O. Hearshen, T. Mikkelsen, D. Peck, S. Patel and L.N. Scarpace.*
Henry Ford Health System, Detroit, MI, USA.

***1110.*** **Regional Discrepancy of Apparent Diffusion Coefficient in Cerebral Gliomas: Correlation with Tumor rCBV and CSI.**
*W-C. Wu, M-L. Wu, C-W. Ko, C-Y. Chen and H-W. Chung.*
National Taiwan University and Tri-Service General Hospital, Taipei, Taiwan, ROC.

***1111.*** **Prospective Evaluation of Intracranial Cystic Mass Lesions with *in vivo* Proton MR Spectroscopy.**
*A. Shukla-Dave, R.K. Gupta, R. Roy, D.K. Chhabra, N. Husain, L. Paul and M. Husain.*
Sanjay Gandhi Post-Graduate Institute of Medical Sciences, KG Medical College and CDRI, Lucknow, India.

***1112.*** **Assessment and Comparison of $^{1}$H-MRSI Metabolite Ratios within the $T_2$-Hyperintensity of Patients with Recurrent Gliomas of Different Grades and Cell Types.**
*T.R. McKnight, S.G. Patel, W.P. Dillon and S.J. Nelson.*
University of California, San Francisco, CA, USA.

***1113.*** **Preoperative Differentiation of Benign from Malignant Cerebral Glioma Using Perfusion EPI and CSI: Preliminary Results.**
*C-W. Ko, W-C. Wu, M-L. Wu, C-Y. Chen and H-W. Chung.*
National Taiwan University and Tri-Service General Hospital, Taipei, Taiwan, ROC.

***1114.*** **Three-Dimensional Diffusion, Perfusion and H1 -Spectroscopy Measures in Gliomas.**
*I. Catalaa, R. Henry, M. Hanna, T. Graves, S. Nelson and D. Vigneron.*
University of California, San Francisco, CA, USA.

***1115.*** **Tumor Choline-to-Creatine MRS Signal Ratio is a Statistical Survival Predictor in Glioblastoma Multiforme Following Radiation Therapy.**
*J.R. Alger, J.H. Harreld, D. Giunzioni and T.F. Cloughesy.*
University of California, Los Angeles, CA, USA.

***1116.*** **Assessment of Tumor Response to Chemotherapy by Longitudinal Multislice $^{1}$H MRSI, MRI and Clinical Examinations.**
*M.A. Bania, C. Balmaceda, X. Mao, R.L. DeLaPaz and D.C. Shungu.*
Columbia University, New York, NY, USA.

***1117.*** **An Early Increase in Choline in Proton Spectroscopic Imaging May Precede a Favorable Chemotherapy Effect in Glioma Patients.**
*L. Kankaanranta, K. Vuori, A-M. Häkkinen, H. Mäenpää, A. Brander, H. Joensuu and N. Lundbom.*
Helsinki University Central Hospital, Helsinki, Finland.

***1118.*** **Serial Evaluation of Gliomas Using a Multimodal Magnetic Resonance Approach: A Case Study of Patients in the Marimastat Phase II Clinical Trial.**
*J.I. Lee, E.E Graves, S.J. Nelson, D.B. Vigneron and W.P. Dillon.*
University of California, San Francisco, CA, USA.

***1119.*** ***In vivo*** **Temperature Measurements in Brain Tumors Using Localised Proton Spectroscopy.**
*R. Jayasundar.*
All India Institute of Medical Sciences, New Delhi, India.

# MR Imaging of the Head and Neck

Hall C
Tuesday: 13:30 – 15:30

*1120.* **Kinematic MRI Using Short TR Fast Recovery Single Shot Fast Spin Echo (FRSSFSE) in Analyzing Swallowing.**
*S. Isogai, Y. Takehara, H. Isoda, H. Masunaga, N. Kodaira, H. Sakahara, H. Kabasawa and A. Nozaki.*
Hamamatsu University School of Medicine, Hamamatsu, Japan and GE Yokogawa Medical Systems, Tokyo, Japan.

*1121.* **MRI of Tongue Movements during Stimulation of the Hypoglossal Nerve and its Branches.**
*M.J. Brennick, T.P. Trouard, A.F. Gmitro and R.F. Fregosi.*
University of Arizona, Tucson, AZ, USA.

*1122.* **Effects of Carbogen Breathing on Tissue Oxygenation and Perfusion in Head and Neck Tumors as Measured by MRI.**
*M. Rijpkema, J. Kaanders, F. Joosten, B. van der Sanden, A. van der Kogel and A. Heerschap.*
University Hospital, Nijmegen, The Netherlands.

*1123.* **Diffusion-Weighted MR Imaging of the Head and Neck: Value of Differentiating Between Benign and Malignant Lesions; Preliminary Observation.**
*M. Nakatsu, Y. Miki, N. Kazawa, S. Kubo and J. Konishi.*
Kyoto University Hospital, Kyoto, Japan.

*1124.* **Functional MR Imaging of the Eustachian Tube.**
*G.A. Krombach, C.C. Nolte-Ernsting, E. Di Martino, A. Prescher, G. Adam and R.W. Günther.*
University of Technology (RWTH), Aachen, Germany.

*1125.* **High-Resolution MR Imaging of Enlarged Endolymphatic Duct and Sac Syndrome Using 3D-FastASE: Volume and Signal-Intensity Measurement of the Endolymphatic Duct and Sac, and Area Measurement of the Cochlear Modiolus.**
*S. Naganawa, T. Koshikawa, E. Iwayama, H. Fukatsu, T. Ishiguchi, T. Ishigaki, T. Nakashima and N. Ichinose.*
Nagoya University School of Medicine, Nagoya, Japan and Toshiba Nasu Works, Tochigi, Japan.

*1126.* **Differentiation of the Fluid Compartments of the Cochlea *in vivo* Using Magnetic Resonance Imaging at 1.5 T.**
*D. Niyazov, S. Sinha, J. Andrews and R. Lufkin.*
UCLA School of Medicine, Los Angeles, CA, USA.

*1127.* **MRI and MTI Study of the Optic Nerve, Brain and Cervical Cord in Patients with Leber Hereditary Optic Neuropathy.**
*M. Inglese, M. Rovaris, S. Bianchi, G.L. Mancardi, A. Ghezzi, F. Salvi, P. Cortelli and M. Filippi.*
H San Raffaele, Milan, Italy.

*1128.* **MR Imaging Evaultion of the Lacrimal Gland Enlargement in Patients with Sjogren Syndrome.**
*H. Tonami, M. Matoba, H. Yokota, I. Yamamoto, M. Masaki and S. Sugai.*
Kanazawa Medical University, Ishikawa, Japan.

*1129.* **High Resolution MR Imaging of the Orbit Using Surface Coils and Automated Intensity Non-Uniformity Correction.**
*E.A. Vokurka, N.A. Watson, Y. Watson, A. Jackson and N.A. Thacker.*
University of Manchester, Manchester, UK.

# MR Spectroscopy of Brain

Hall C
Wednesday: 13:30 – 15:30

*1130.* **Assessing the Age-Dependent Profile in the Frontal and Centrum Semiovale Regions of Healthy Normal Controls Using *In Vivo* $^{31}$P MRS.**
*J.A. Stanley, N.J. Minshew, M.S. Keshavan, K. Panchalingam, McClure and J.W. Pettegrew.*
University of Pittsburgh, Pittsburgh, PA, USA.

*1131.* **Metabolite Content in Cerebral Grey and White Matter Studied with Short-Echo Time $^{1}$H-MRSI.**
*M.A. McLean, F.G. Woermann, P.A. Bartlett, G.J. Barker and J.S. Duncan.*
National Society for Epilepsy Bucks, Chalfont St. Peter, UK and University College London, London, UK.

*1132.* **Cerebral Metabolite Changes Across the Menstrual Cycle in Women with PMDD and Controls. A Preliminary Report.**
*K. Yue, N. Rasgon, M.A. Thomas, B. Guze, L. Fairbanks, J. Curran and A. Rapkin.*
University of California, Los Angeles, CA, USA.

*1133.* **$^{1}$H Chemical Shift Imaging Demonstration of Coherent Change in Brain Metabolism in Healthy Elderly Women Reexamined After Four Years.**
*P.E. Sijens, T. den Heijer, A. Hofman, M.M.B. Breteler and M. Oudkerk.*
University Hospital Rotterdam and Erasmus University Medical School, Rotterdam, The Netherlands.

*1134.* **Observation of Label Accumulation at Glutamate/Flutamine $C_{1,2,3,4}$ and $HCO_{3-}$ in Human Brain After Intravenous 1-$^{13}$C Labeled Glucose Infusion.**
*S. Blüml, A. Moreno, J-H. Hwang and B.D. Ross.*
Huntington Medical Research Institutes, Pasadena, CA, USA and Rudi Schulte Research Institutes, Santa Barbara, CA, USA.

*1135.* **Detection of 4-Phenylbutyrate in the Human Brain by *In Vivo* Proton MR Spectroscopy.**
*P.B. Barker, D. Artemov, G.V. Raymond, A. Horská and H.W. Moser.*
Johns Hopkins University and Kennedy-Krieger Institute, Baltimore, MD, USA.

*1136.* **Dynamic Modeling of Compartmental Brain Lactate Response to Metabolic Challenge: A Feasibility Study.**
*S.D. Friedman, S.R. Dager, T. Richards, H. Petropoulos and S. Posse.*
University of Washington School of Medicine, Seattle, WA, USA; University of New Mexico, Albuquerque, NM, USA and Center for MR Research, Jülich, Germany.

*1137.* **Increased Brain Choline Level Observed After Choline Bitartrate Ingestion.**
*Y. Ke, N. Lange, P.F. Renshaw, S.M. Babb, M.Q. Yang, M. Kaufman, D.A. Yurgelun-Todd, A.L. Stoll and B.M. Cohen.*
McLean Hospital, Harvard Medical School, Belmont, MA, USA.

*1138.* **$^{1}$H MRS, MRI and Neuropsychological Testing of Patients with Traumatic Brain Injury at Long Elapsed Time since Injury.**
*E. Brief, R. Vernon-Wilkinson, A.L. MacKay, A. Scamvougeras, H. Feldman and B. Forster.*
University of British Columbia, Vancouver Hospital and Health Sciences Centre, Vancouver, British Columbia, Canada.

*1139.* **Altered Metabolite Profile In Normal Appearing Brain Following Traumatic Brain Injury: A Phosphorus MRS Study.**
*M.R. Garnett, R.G. Corkill, T.A.D. Cadoux-Hudson, A.M. Blamire, B. Rajagopalan, J.D. Young and P. Styles.*
University of Oxford and Oxford Radcliffe Hospitals, Oxford, UK.

*1140.* **Evaluation of the Traumatic Brain Injured Patients in Correlation with Functional Status in Rehabilitation Medicine by Localized $^{1}$H MR Spectroscopy.**
*S.J. Yoon, J.H. Lee, S.T. Kim and M.H. Chun.*
Asan Medical Center, University of Ulsan College of Medicine and Asan Institute for Life Sciences, Seoul, Korea.

*1141.* **Changes in the $^{1}$H MR Spectra of Epileptogenic Lesions Treated with the Leksell Gamma Knife (LGK). Results from a Three Year Period.**
*M. Hájek, M. Dezortová, R. Liščák, J. Vymazal and V. Vladyka.*
Homolka Hospital, Prague, Czech Republic.

*1142.* **$^{1}$H-MRS and Diffusion-Weighted Imaging Correlated to Behavioral Studies in Huntington's Disease.**
*F.A. Barrios, A.O. Rodriguez, R. Rojas, J. Fernández, M. Alonso, G. Reynoso and J. Sánchez-Cortazar.*
UNAM, Queretaro, Mexico; ABC Hospital and INNN, SSA, Mexico City, Mexico.

*1143.* **Hippocampal $^{1}$H-MRSI in Ecstacy Users.**
*T. Obergriesser, G. Ende, D.F. Braus, W. Weber-Fahr and F.A. Henn.*
Central Institute of Mental Health, Mannheim, Germany.

*1144.* **Intracranial Tuberculomas: Atypical MRI and MRS Findings.**
*R.P. Tripathi, S.S. Kumaran, S. Gupta, S. Khushu, A.K. Gupta and A.K. Balwant.*
Institute of Nuclear Medicine and Allied Sciences (INMAS), Delhi, India.

*1145.* **Utility of Single Voxel MR Spectroscopy of Cerebral Lesions in AIDs.**
*P. Corr, A. Moodley, V. Patel and A. Bhigee.*
Wentworth Hospital & University of Natal, Durban, South Africa.

*1146.* **Proton MRSI in HIV+ Patients; Effect of Highly Active Anti-Retroviral Therapy.**
*P.B. Barker, A. Horská, N. Sacktor, J.C. McArthur and M.G. Pomper.*
Johns Hopkins University, Baltimore, MD, USA.

*1147.* **High Resolution $^{1}$H NMR Analysis of Cerebrospinal Fluid: Applications to Diseases Affecting the Brain.**
*H. Parkes, G. Guillet, E. Thompson, R. Surtees and D. Gadian.*
University College London Medical School, London, UK; Ecole Polytechnique, Paris, France and University College London, London, UK.

## MR Spectroscopy of Epilepsy

Hall C
Wednesday: 13:30 – 15:30

*1148.* ***In Vivo*** **Drug Monitoring of Anticonvulsants in The Human Brain Using Proton MRS.**
*J. Braun, S. Seyfert, J. Bernarding, K-J. Wolf and T. Tolxdorff.*
University Hospital Benjamin Franklin, Free University of Berlin, Berlin, Germany.

*1149.* **Cerebral GABA in Childhood Generalized Epilepsy.**
*E.J. Novotny, Jr., F. Hyder, G. Mason and D.L. Rothman.*
Yale University School of Medicine, New Haven, CT, USA.

*1150.* **Proton Spectroscopic Imaging in Frontoparietal Epilepsy Detects Pathology with Spatial and Metabolic Variation.**
*N. Lundbom, E. Gaily, K. Vuori, R. Paetau, E. Liukkonen, L. Valanne, A-M. Häkkinen and M-L. Granström.*
Hospital of Children and Adolescents and Helsinki University Central Hospital, Helsinki, Finland.

*1151.* **MRI, $^{1}$H-MRS and fMRI Findings in a Patient During and After Prolonged Non-Convulsive Seizure.**
*F. Lazeyras, I. Zimine, O. Blanke, J. Delavelle, N. de Tribolet and M. Seeck.*
University Hospital of Geneva, Geneva, Switzerland.

*1152.* **Quantitative Evaluation of Changes in High Energy Phosphates in the Hippocampi of Patients with Temporal Lobe Epilepsy.**
*H.P. Hetherington, J.W. Pan, A. Williamson, N. Delanorelle, O.A.C. Petroff and D.D. Spencer.*
Brookhaven National Laboratory, Upton, NY, USA and Yale University, New Haven, CT, USA.

*1153.* **Comparison of Volumetry and Proton MRS in Hippocampi of Children with History of Febrile Convulsion and/or Temporal Lobe Epilepsy.**
*W-C. Wu, M-L. Wu, C-Y. Chen and H-W. Chung.*
National Taiwan University and Tri-Service General Hospital, Taipei, Taiwan, ROC.

*1154.* **Lateralization Ability of Single Voxel H-1 MR Spectroscopy in Hippocampal Sclerosis: Comparison with MRI and PET.**
*S.W. Park, K.H. Chang, H.D. Kim, I.C. Song, C.K. Chung, S.K. Lee, D.S. Lee and M.H. Han.*
Seoul National University College of Medicine, Seoul, Korea.

## MR Spectroscopy of Stroke

Hall C
Wednesday: 13:30 – 15:30

*1155.* **Evidence of Metabolic Alterations in Tissue Surrounding DWI Hyperintensities Using MRS in Subcortal Acute Strokes.**
*M. Labelle and Y. Boulanger.*
Hôpital Saint-Luc du CHUM, Montréal, Québec, Canada.

*1156.* **Metabolic Changes in the Ischemic Penumbra After Carotid Endarterectomy in Stroke Patients by Localized *In Vivo* Proton Magnetic Resonance Spectroscopy ($^{1}$H-MRS).**
*G.E. Kim, Y.P. Cho, S-T. Kim and J.H. Lee.*
Asan Medical Center, University of Ulsan College of Medicine and Asan Institute for Life Sciences, Seoul, Korea.

*1157.* **Cerebral Metabolic Improvement in Patients With Hemispheric Ischemia and an Occlusion of the ICA.**
*D.R. Rutgers, C.J.M. Klijn, L.J. Kappelle and J. van der Grond.*
University Medical Center, Utrecht, The Netherlands.

*1158.* **Tissue Viability by Sodium MRI in Critical Care Stroke Patients with Potential for Malignant Middle Cerebral Artery Syndrome.**
*K.R. Thulborn, J. Snyder, S. Goldstein, A. Kassam, H. Yonas, D. Davis and A. Gisbert.*
University of Pittsburgh, Pittsburgh, PA, USA.

## MR Spectroscopy of Brain Disorders

Hall C
Monday: 14:00 – 16:00

*1159.* **Metabolic Alternations in Patients with Levodopa-Treated Parkinson's Disease by *In Vivo* $^{1}$H MRS.**
*B-Y. Choe, H-M. Baik, M-C. Kim, B-C. Son, S-H. Ha, B-S. Kim, E-N. Kim, T-S. Suh, H-K. Lee and K-S. Shinn.*
Catholic University Medical College, Seoul, Korea.

*1160.* **Metabolic Changes in Parkinson's Disease After Stereotactic Functional Neurosurgery by Follow-Up $^{1}$H MRS.**
*H-M. Baik, B-Y. Choe, M-C. Kim, B-C. Son, S-H. Ha, B-S. Kim, E-N. Kim, T-S. Suh, H-K. Lee and K-S. Shinn.*
Catholic University Medical College, Seoul, Korea.

*1161.* **Short-TE $^{1}$H MRS of the Substantia Nigra and Quantitative MRI in Idiopathic Parkinson's Disease.**
*J. O'Neill, W.J. Marks, N. Schuff, R. Feiwell and M.W. Weiner.*
DVA Medical Center and University of California, San Francisco, CA, USA.

*1162.* **Metabolic Concentration of Temporal Lobe in Patients with Alcoholic Dementia by *in vivo* Proton MRS.**
*T. Fujimoto, T. Uchida, T. Matsumoto, K. Nakamura, Y. Iwamitsu, M. Ohmine and H. Akimoto.*
South Japan Health Science Centre, Fujimoto Hospital, Miyakonojo, Japan.

*1163.* **Effect of Abstinence from Alcohol on the "Broad" Phospholipid Signal in $^{31}$P ISIS Spectra.**
*M.R. Estilaei, G.B. Matson, G. Fein and D.J. Meyerhoff.*
DVA Medical Center, University of California, San Francisco, CA, USA.

*1164.* **Effects of Chronic Alcohol Use on "Broad" Phospholipid Signal Component in Brain Using $^{31}$P MRSI.**
*M.R. Estilaei, G.B. Matson, G. Fein and D.J. Meyerhoff.*
DVA Medical Center, University of California, San Francisco, CA, USA.

*1165.* **$^{1}$H MRS in the Brain of Light and Heavy Drinkers: Alcohol and Neurons.**
*H. Goldman, M. Tolou-Shams, G. Salas, G. Fein and D.J. Meyerhoff.*
DVA Medical Center, University of California, San Francisco, CA,USA.

*1166.* **Effects on the Human Cerebral Metabolism by Aortic Dissection Surgery Performed Under Deep Hypothermic Circulatory Arrest by Localized $^{1}$H MR Spectroscopy.**
*M.G. Song, S.J. Choo, S.T. Kim, I.C. Choi, J.W. Lee, H. Song, J.B. Park, J.O. Kim, J.H. Lee and T-H. Lim.*
Asan Medical Center, University of Ulsan College of Medicine and Asan Institute for Life Sciences, Seoul, Korea.

*1167.* **Recovery of Brain Choline Level in Treated Cushing's Patients as Monitored by Proton Magnetic Resonance Spectroscopy.**
*A. Khiat, C. Bard, A. Lacroix and Y. Boulanger.*
CHUM, Montréal, Québec, Canada.

*1168.* ***In vivo* $^{31}$P-MRS Demonstrates a Tissue Specific Distribution of the Biochemical Expression of 3460 Leber's Hereditary Optic Neuropathy Mitochondrial DNA Mutation.**
*R. Lodi, P. Montagna, S. Iotti, V. Carelli, M.L. Valentino, P. Barboni and B. Barbiroli.*
Universita' di Bologna, Bologna, Italy.

*1169.* **Cerebral Metabolic Abnormalities and Cognitive Function Impairment in Chronic Obstructive Pulmonary Disease Detected by Localized $^{1}$H MR Spectroscopy.**
*T.S. Shim, S.J. Kim, C-M. Lim, S.D. Lee, Y. Koh, W.S. Kim, D.S. Kim, W.D. Kim, S.Y. Kim, S-T. Kim, J.H. Lee and T-H. Lim.*
Asan Medical Center, University of Ulsan College of Medicine and Asan Institute for Life Sciences, Seoul, Korea.

*1170.* **Recovery of *N*-Acetyl Aspartate in Acute Disseminated Encephalomyelitis.**
*A. Bizzi, T.J. Passe, T.O. Crawford, A.M. Ulug, R.N. Bryan and P.B. Barker.*
Johns Hopkins University, Baltimore, MD, USA.

*1171.* **Cerebral Metabolic Abnormalities in Children with Hydrocephalus by Localized $^{1}$H MR Spectroscopy.**
*Y.S. Ra, J.H. Shin, S.T. Kim, J.H. Lee and B.D. Kwun.*
Asan Medical Center, University of Ulsan College of Medicine and Asan Institute for Life Sciences, Seoul, Korea.

*1172.* **Differential Effects of Clozapine and Haloperidol on Motor Functioning, Parkinsonism, and Frontal Brain Chemistry in Schizophrenia: A Proton MR Spectroscopy Study.**
*R.E. Jung, L. Rowland, J. Bustillo, J. Lauriello, H. Petropoulos, B. Hart and W.M. Brooks.*
Clinical & Magnetic Resonance Research Center, Albuquerque, NM, USA.

*1173.* **Detection of Presymtomatic Huntington's Disease By Short Echo Elliptical Excitation CSI at 0.5 Tesla.**
*R. Prost, N. Reynolds, L. Mark and S. Li.*
Medical College of Wisconsin, Milwaukee, WI, USA.

*1174.* **Double Blind Trial of $^{1}$H MRS Monitoring Antiretroviral Therapy.**
*A. Lin, T. Grossman, K. Shriner, M. Friedman, C.H. Nguy, J.F. Ling, S. Bluml and B.D. Ross.*
Huntington Medical Research Institutes, Pasadena, CA, USA; Rudi-Schulte Research Institute, Santa Barbara, CA, USA and Huntington Memorial Hospital, Pasadena, CA, USA.

*1175.* **Complete Absence of Creatine in the Adult Brain.**
*T. Thiel, R.A. Sälke-Kellermann, J. Hennig and E. Martin.*
University of Freiburg, Freiburg, Germany and University Children's Hospital, Zurich, Switzerland.

*1176.* **Effect of Change in Diffusion of Water and Metabolites on Pathological Status in the Human Brain Measured by Pulse-gating Diffusion Proton MRS.**
*M. Harada, S. Hisaoka, K. Yoneda, T. Okada, M. Takeuti, H. Nishitani, M. Uno, K. Mori and T. Matsuda.*
University of Tokushima, Tokushima, Japan and GE Yokogawa Medical Systems, Tokyo, Japan.

## MR Imaging of Brain – White Matter

Hall C
Wednesday: 13:30 – 15:30

*1177.* **Fractional Anisotropy Revisited: The Impact of Intrinsic Regional Differences in Diffusion Anisotropy on the Assessment of MS Lesions.**
*R. Bammer, M. Augustin, T. Seifert, S. Strasser-Fuchs, R. Stollberger, F. Ebner, K.V. Toyka, H.P. Hartung and F. Fazekas.*
Karl-Franzens University, Graz, Austria and Ludwig-Maximilians University, Würzburg, Germany.

*1178.* **Magnetization Transfer Ratios in Inflammatory Brain Disease.**
*P.J. Gareau, S.J. Karlik, B.K. Rutt and J.R. Mitchell.*
The John P. Robarts Research Institute, London, Ontario, Canada.

*1179.* **Neuropsychological Impairment in Multiple Sclerosis Correlates with $T_1$ Hypointense Lesions Demonstrated on 3D-High Resolution $T_1$ Weighted MRI.**
*D.M. Moriarty, A. Blackshaw, P.R. Talbot, H.L. Griffiths, J.S. Snowden, V.F. Hillier and A. Jackson.*
University of Manchester, Manchester, UK.

*1180.* **Systematic Comparison of Atrophy Between Relapsing-Remitting and Secondary-Progressive MS.**
*F. Barkhof, L. Bergers, S.A.R.B. Rombouts, P. Scheltens, R.C.H. Lazeron and C.H. Polman.*
Vrije Universiteit Academic Hospital, Amsterdam, The Netherlands.

*1181.* **Stability and Consistency of Automatic Registration of Serial MR Studies in MS.**
*M.J. Quist, I.L. Tan, R.A. van Schijndel and F. Barkhof.*
Philips Medical System, Best, the Netherlands and Vrije Universiteit, Amsterdam, the Netherlands.

*1182.* **Histogram Analysis of ADC, Fractional Anisotrophy, and Magnetization Transfer Within Normal Appearing White Matter in Multiple Sclerosis Patients: Comparison to Normal Controls and Correlations to Clinical Disability.**
*M. Hedehus, G. Tsukada, B. Betts, A. Langer-Gould and S.W. Atlas.*
Stanford University, Stanford, CA, USA.

*1183.* **Differences in $T_1$ Distributions Between Normal Volunteers and MS Patients Identified by Bayesian Decomposition Relaxographic Imaging.**
*M.F. Ochs, R.S. Stoyanova, T.R. Brown, W.D. Rooney, X. Li, J-H. Lee and C.S. Springer.*
Fox Chase Cancer Center, Philadelphia, PA, USA; Brookhaven National Laboratory, Upton NY, USA and State University of New York, Stony Brook, NY, USA.

*1184.* **Are MTR or $T_2$ Histograms More Sensitive for MS Detection?**
*A.M. Smith, R.J. Demeure, T. Duprez, C.J.M. Sindic, Q.X. Yang and S. Tan.*
Université catholique de Louvain, Brussels, Belgium; Pennsylvania State University, Hershey, PA, USA and GE Medical Systems, Milwaukee, WI, USA.

*1185.* **Quantitative Magnetization Transfer Imaging in Relapsing Multiple Sclerosis.**
*S. Ropele, S. Strasser-Fuchs, M. Augustin, R. Stollberger, C. Enzinger, K. Toyka, H.P. Hartung and F. Fazekas.*
Karl-Franzens University, Graz, Austria and Julius-Maximilian University, Würzburg, Germany.

*1186.* **Brain Atrophy Parameters in Multiple Sclerosis: Relation to Disability.**
*N.F. Kalkers, E. Bergers, C.H. Polman and F. Barkhof.*
Free University Hospital, Amsterdam, The Netherlands.

*1187.* **Improved Interobserver Agreement for Visual Detection of Active $T_2$ Lesion on Serial MR Scan in MS, Using Image Registration Based on a Mutual Information Algorithm.**
*I.L. Tan, R.A. van Schijndel, F. Fazekas, M. Filippi, P. Freitag, D.H. Miller, T. Yousry, P.J.M. Pouwels, H.J. Ader, M. Quist and F. Barkhof.*
Vrije Universiteit Academic Hospital, Amsterdam, the Netherlands; Karl-Franz University, Graz, Austria ; San Rafaele Hospital, Milan, Italy; Kantonsspittal, Basel, Switzerland; Institute of Neurology, London, UK; Klinikum Grosshadern, Munich, Germany and Philips Medical Systems, Best, Netherlands.

*1188.* **Variability of Brain Atrophy Estimates in Multiple Sclerosis.**
*C.R.G. Guttmann, S.K. Warfield, A. Guimond, R. Kikinis, M.S. Albert, F.A. Jolesz and H.L. Weiner.*
Brigham and Women's Hospital, Massachusetts General Hospital and Harvard Medical School, Boston, MA, USA.

*1189.* **Tissue Characterization in Relapsing-Remitting and Secondary-Progressive MS Via Magnetization Transfer Ratio.**
*Y. Ge, R.I. Grossman, J.K. Udupa, J.S. Babb, L.G. Nyúl and J.C. McGowan.*
University of Pennsylvania Medical Center, Philadelphia, PA, USA.

*1190.* **The Effect of Demyelination on $T_1$, $T_2$ Relaxation and Magnetization Transfer in White Matter.**
*G.J. Stanisz, M.J. Bronskill and R.M. Henkelman.*
University of Toronto and Sunnybrook and Women's College Health Sciences Centre, Toronto, Ontario, Canada.

*1191.* **Magnetization Transfer Imaging to Monitor Disease Evolution in Multiple Sclerosis.**
*M. Rovaris, M. Inglese, G. Iannucci, G. Comi and M. Filippi.*
H. San Raffaele, Milan, Italy.

*1192.* **A Weekly Magnetization Trasnfer and Diffusion Weighted Imaging Study of Multiple Sclerosis Lesions and NAWM.**
*M.A. Rocca, M. Cercignani, G. Iannucci and M. Filippi.*
Scientific Institute H. San Raffaele, University of Milan, Milan, Italy.

*1193.* **Detection of Brain Volume Changes in Multiple Sclerosis: Sensitivity and Reproducibility of Different Methodologies.**
*M. Rovaris, M. Inglese, M.P. Sormani, G. Santuccio, G. Comi and M. Filippi.*
H. San Raffaele, Milan, Italy.

*1194.* **Regional Diffusion Tensor and Magnetization Transfer Measurements within Normal Appearing White Matter in Multiple Sclerosis Patients: Comparison to Normal Controls and Correlations to Clinical Disability.**
*G. Tsukada, M. Hedehus, B. Betts, A. Langer-Gould and S.W. Atlas.*
Stanford University, Stanford, CA, USA

*1195.* **Anatomic Distribution of MS Lesions in the Posterior Fossa.**
*M.A. Rocca, T.A. Yousry, I. Yousry, G. Iannucci, F. Then Bergh and M. Filippi.*
Scientific Institute H San Raffaele, Milan, Italy and Klinikum Grosshadern, Munich, Germany.

*1196.* **The Prognostic Value of MRI and MTI Findings at Presentation in Patients with Clinically Isolated Syndromes Suggestive of MS.**
*G. Iannucci, M. Rovaris, C. Tortorella, M.P. Sormani, G. Comi and M. Filippi.*
Scientific Institute H San Raffaele, University of Milan, Milan, Italy.

*1197.* **A Study of the Relationship Between Magnetisation Transfer Ratio and $T_1$ Relaxation Time in Multiple Sclerosis Lesions and Normal Appearing White Matter.**
*C.M.B. Griffin, G.J.M. Parker, G.J. Barker, A.J. Thompson and D.H. Miller.*
Institute of Neurology, London, UK.

*1198.* **Magnetization Transfer Analysis of White Matter in Asymptomatic Insulin-Dependent Diabetes Mellitus.**
*M. Zhang, N. Erdag, A.M. Jacobson and J.N. Suojanen.*
Beth Israel Deaconess Medical Center & Joslin Diabetes Center, Harvard Medical School, Boston, MA, USA.

*1199.* **Quantitative Imaging of Hypomyelination in Patients with Smith-Lemli-Opitz Syndrome Using Magnetization Transfer Histogram Analysis.**
*N. Richert, F. Porter, J. Ostuni, G. Vezina, N. Nwokoro and J. Frank.*
National Institutes of Health, Bethesda MD, USA and Children's National Medical Center, Washington DC., USA.

*1200.* **Utility of DWI, Tensor Imaging, and MR Spectroscopy in HIV Patients with Normal Brain MR Scans.**
*A.M. Ulug, C.G. Filippi, E. Ryan, S.J. Ferrando and W. Van Gorp.*
New York Presbyterian Hospital-Weill Medical College of Cornell University, New York, NY, USA.

*1201.* **Direction-Weighted Relative Anisotropy Maps for Improved Nerve Fiber Visualization.**
*S-W. Sun, S-K. Song, W.C. Chu and C. Chang.*
Academia Sinica and National Yang-Ming University, Taipei, Taiwan, ROC and Washington University, St. Louis, MO, USA.

*1202.* **Imaging the Corticospinal Tract by Diffusion Weighted Magnetic Resonance Imaging in Patients with Brain Tumors.**
*T. Inoue, H. Shimizu, T. Kumabe, T. Yoshimoto and H. Kabasawa.*
Tohoku University School of Medicine and Kohnan Hospital, Sendai, Japan and GE Yokogawa Medical Systems, Tokyo, Japan.

## MR Imaging of Brain – Vascular

Hall C
Thursday: 13:30 – 15:30

*1203.* **Serial Measurements of the Apparent Diffusion Coefficient in Human Stroke on Five Time Points over Three Months.**
*S. Liu, J.O. Karonen, Y. Liu, R. Vanninen, K. Partanen, M. Könönen, P. Vainio and H.J. Aronen.*
Kuopio University Hospital and University of Kuopio, Kuopio, Finland and Helsinki University Central Hospital, Helsinki, Finland.

*1204.* **Diffusion-Weighted MRI in the Acute Stage of Transient Ischemic Attacks.**
*H. Shimizu, T. Inoue, T. Yoshimoto, H. Kabasawa and T. Tsukamoto.*
Kohnan Hospital and Tohoku University School of Medicine, Sendai, Japan and GE Yokogawa Medical Systems, Tokyo, Japan.

*1205.* **Successful Reperfusion in Human Stroke after Extended Periods of Ischemia: Patient Selection and Treatment Monitoring Using Diffusion/Pefusion MRI.**
*P.B. Barker, A.E. Hillis and R.J. Wityk.*
Johns Hopkins University, Baltimore, MD, USA.

*1206.* **Intralesional Heterogeneity of the Time Course of the Apparent Diffusion Coefficient In Patients With Large Territorial Cerebral Infarction.**
*A. Gass, S. Behrens, J. Hirsch, O. Sedlaczek, M.G. Hennerici and J. Gaa.*
Klinikum Mannheim, University of Heidelberg, Mannheim, Germany.

*1207.* **Absolute Quantification of Cerebral Blood Flow in Stroke Patients, Impact on Development of Infarction.**
*S. Hunsche, P. Oelkers, D. Sauner, W.G. Schreiber, K. Ringel, S. Boor, K. Brühl, J. Gawehn and P. Stoeter.*
Johannes Gutenberg-University, Mainz, Germany and Institute of Neurology, London, UK.

*1208.* **Visualisation of Hemodynamic Compromise - Comparison of Patients with Acute MCA Stroke and High Grade Carotid Artery Stenosis.**
*A. Gass, S. Behrens, J. Hirsch, O. Sedlaczek, J. Gaa and M.G. Hennerici.*
Klinikum Mannheim, University of Heidelberg, Mannheim, Germany.

*1209.* **Diffusion-weighted MRI in the Follow-up of Intra-arterial Thrombolysis in Human Arterial Stroke.**
*K. Lövblad, M. Taleb, M. El-Koussy, F. Stepper, C. Bassetti, L. Remonda, B.I. O'Callaghan and G. Schroth.*
Inselspital, University of Bern, Bern, Switzerland.

*1210.* **Detection of Hemorrhagic Transformation of Embolic Stroke With and Without rt-PA Intervention Using MRI in Rat.**
*Q. Jiang, R.L. Zhang, Z.G. Zhang, R.A. Knight, J.R. Ewing, P. Jiang, Q.J. Li and M. Chopp.*
Henry Ford Hospital, Detroit, MI, USA and Oakland University, Rochester, MI, USA.

*1211.* **Scattered Infarct Pattern on Diffusion-Weighted Magnetic Resonance Imaging in Acute Ischemic Stroke.**
*H-C. Koennecke, J. Bernarding, J. Braun, R. Nohr, S. Leistner, A. Faulstich, C. Hofmeister and P. Marx.*
Medical Center Benjamin Franklin, Free University of Berlin, Berlin, Germany.

*1212.* **Diffusion And Perfusion Based Predictive Model To Estimate Stroke Evolution: Program to Aid the Validation of Potential Drug Therapies.**
*S.E. Rose, F. Chen, J.B. Chalk, A.L. Janke, F.O. Zelaya, W. Strugnell, D.M. Doddrell and J. Semple.*
University of Queensland and Princess Alexandra Hospital, Brisbane, Australia; Maudsley Hospital, London, UK and SmithKline Beecham Pharmaceuticals, UK.

*1213.* **Clinical Application of Quantitative Continuous Arterial Spin Labeling (CASL) Imaging to Patients with Acute and Sub-Acute Stroke.**
*H. Kimura, H. Kado, Y. Koshimoto, H. Uemasu, S. Muramoto, H. Yamada, Y. Kawamura, Y. Yonekura and H. Itoh.*
Fukui Medical University, Fukui, Japan.

*1214.* **Cerebral Infarction: Time Course of Gadopentetate Enhancement on $T_1$WI and Its Relation to Cerebral Reperfusion.**
*I-J. Huang, Y-J. Liu, F-N. Wang, C-Y. Chen and H-W. Chung.*
National Taiwan University and Tri-Service General Hospital, Taipei, Taiwan, ROC.

*1215.* **Perfusion MR Imaging and SPECT in Symptomatic Carotid Artery Occlusion: Correlative Assessment of Hemodynamic Parameters.**
*J.H. Kim, T. Shin, K.H. Kang, S.J. Lee, J.H. Kim and P.Y. Choi.*
Gyeongsang National University, Chinju, South Korea.

*1216.* **Assessment of Borderzone Vasodilatory Response Before and After Carotid Endarterectomy.**
*M. Wiart, Y. Berthezène, P. Adeleine, A. Baskurt, P. Trouillas, JC Froment and N. Nighoghossian.*
CREATIS, UFR Laënnec, University Claude Bernard and Cerebro-vascular Disease and Ataxia Research Center, Lyon, France.

*1217.* **Cerebral Hemodynamic Parameters, Assessed with MRA Quantitative Flow and $^{1}$H MRS, in TMB Patients, TIA Patients and Control Subjects.**
*D.R. Rutgers, R.C.J.M. Donders, L.J. Kappelle and J. van der Grond.*
University Medical Center, Utrecht, The Netherlands.

*1218.* **Adaptation of the Circle of Willis after Carotid Endarterectomy.**
*J. van der Grond, D.R. Rutgers, R. Kuit and B. Hillen.*
University Medical Center, Utrecht, the Netherlands.

*1219.* **Metabolic Alterations in Patients with ICA Obstructions Correlate with the Clinical Etiology Rather than with Cerebropetal Flow.**
*J. van der Grond, D.R. Rutgers, K.J. van Everdingen, C.J.M. Klijn and L.J. Kappelle.*
University Medical Center, Utrecht, the Netherlands.

*1220.* **The Assessment of Tissue Status After Surgical Revascularisation in Children with Moyamoya Disease Using MR Diffusion and Perfusion Imaging.**
*F. Calamante, F.J. Kirkham, M. Bynevelt, D.G. Gadian and A. Connelly.*
University College London Medical School and Great Ormond St. Hospital for Children, London, UK.

*1221.* **Investigation of Cerebral Blood Flow Before and After Embolisation in Patients with Arteriovenous Malformation.**
*S. Hunsche, J. Gawehn, K. Brühl, K. Ringel, W.G. Schreiber, S. Boor and P. Stoeter.*
Johannes Gutenberg-University, Mainz, Germany.

*1222.* **Detection of Abnormalities Using Magnetization Transfer Ratios in Normal-Appearing White Matter on Conventional MR Images in Patients with Occlusive Cerebro-Vascular Disease: Comparison with Positron Emmission Tomography Data.**
*H. Kado, H. Kimura, T. Tsuchida, Y. Kawamura, Y. Yonekura and H. Itoh.*
Fukui Medical University, Fukui, Japan.

*1223.* **Cerebral Perfusion Abnormalities in Abstinent Cocaine Abusers: A Perfusion MRI and SPECT Study.**
*T. Ernst, L. Chang, G. Oropilla, A. Gustavson and O. Speck.*
Harbor-UCLA Medical Center, Torrance, CA, USA.

*1224.* **A Magnetization Transfer Imaging Study of Individuals with CADASIL.**
*G. Iannucci, M. Dichgans, M. Rovaris, R. Brüning, T. Gasser, T.A. Yousry and M. Filippi.*
H San Raffaele, Milan, Italy and Klinikum Grosshadern, University, Munich, Germany.

*1225.* **Diffusion-Weighted MRI in Human Cerebral Venous Thrombosis.**
*K. Lövblad, J. Schneider, M. El-Koussy, F. Stepper, C. Bassetti, L. Remonda, B.I. O'Callaghan and G. Schroth.*
Inselspital, University of Bern, Bern, Switzerland.

# Carotid and Brain MR Angiography

Hall C
Wednesday: 13:30 – 15:30

*1226.* **Initial Results from a Multi-Center Carotid Imaging Trial: Contrast-Enhanced MRA vs. X-ray DSA.**
*F.R. Korosec, T.J. Carroll, T.M. Grist, C.A. Mistretta and P.A. Turski.*
University of Wisconsin, Madison, WI, USA.

*1227.* **High Resolution Contrast-Enhanced MRA of Carotid Arteries Using a Head/Neck Array Combined Coil on A 1.5T Cardiovascular MR Scanner.**
*Y. Liu, R.K. Breger, T.K. Foo, P. Licato, T. Hollrith and J. Blechinger.*
St. Luke's Medical Center and GE Medical Systems, Milwaukee, WI, USA.

*1228.* **2D Projection MRA of Aortic Arch with Single Dose Gadolinium.**
*B. Redd, Y. Wang, R. Watts, R. Zimmerman, L. Heier, M. Deck, C. Fillipi, Q. Dong and M.R. Prince.*
New York Presbyterian Hospital, Weill Medical College of Cornell University, New York, NY, USA.

*1229.* **Comparing First-Pass Gd-Enhanced & TOF MRA with Conventional Catheter Angiography and Ultrasound in the Evaluation of Carotid Stenosis.**
*M. Johnson, I.D. Wilkinson, J. Wattam, G.S. Venables and P.D. Griffiths.*
University of Sheffield and Royal Hallamshire Hospital, Sheffield, UK.

*1230.* **What is the Cause of Signal Inhomogeneity at the Carotid Bifurcation? *In-vivo* and *In-vitro* study.**
*K-W. Chung, T-S. Chung, J-Y. Joo and J-K. An.*
Yonsei University College of Medicine, Seoul, Korea.

*1231.* **Influence of Patient and Imaging Factors on Spatial Resolution of High Resolution 3D Gd-MRA of the Carotid Arteries.**
*J.K. Kim, M.S. Sussman, Y. Huang, D. Westman, R.I. Farb, J.M. Pauly, D.G. Nishimura and G.A. Wright.*
Sunnybrook & Women's College Health Science Centre and University of Toronto, Toronto, ON, Canada and Stanford University, Stanford, CA, USA.

*1232.* **Investigation of Saturation Phenomenon for Intracranial 3D Magnetization Transfer TOF MRA on Volunteers with Metal.**
*N. Ohnari, N. Ichinose, M. Miyazaki, K. Kumamoto and H. Nakata.*
University of Occupational and Environmental Health School of Medicine, Fukuoka, Japan; Toshiba Medical Systems Division, Tochigi, Japan and Toshiba Medical Systems Co., Ltd., Fukuoka, Japan.

*1233.* **Flow Quantification in High-Flow Extra-Intracranial or Intra-Intracranial Bypass with MR-Angiography.**
*L.M.P. Ramos, T.W. Polder, C.A.J. Broere, A. van der Zwan and C.A.F. Tulleken.*
University Medical Center, Utrecht, The Netherlands.

*1234.* **High Resolution Contrast Enhanced MR Angiography for Screening Cerebral Aneurysm: Comparison with Conventional TOF-MRA.**
*K-W. Chung, T-S. Chung, Y-J. Lee, G. Laub and D. Chien.*
Yonesei University School of Medicine, Seoul, Korea and Siemens, Erlangen, Germany.

*1235.* **Assessing the Adequacy of MRA for Planning Intacranial Aneurysm Clipping Surgery.**
*C. Hutchings, H. Buswell, B.E. Chapman, J.S. Tsuruda, R. Schmidt and D.L. Parker.*
University of Utah, Salt Lake City, UT, USA.

*1236.* **Nidus Volume Measurements in Patients with Arteriovenous Malformations: Comparison of Three MR Scanning Techniques with DSA.**
*E.A. Moore, A.D. Waldman, P. Nikolopoulos, J.P. Grieve and H.R. Jager.*
National Hospital for Neurology & Neurosurgery, London, UK.

*1237.* **The Spetzler Grading of Cerebral Arteriovenous Malformations on MR DSA Compared to Conventional Catheter Angiography.**
*N. Hoggard, I.D. Wilkinson, D.J. Warren and P.D. Griffiths.*
University of Sheffield, Sheffield, UK.

*1238.* **Does Contrast Enhancement Improve the Assessment of Cerebral Arteriovenous Malformations when Using SLINKY MRA?**
*N. Hoggard, I.D. Wilkinson, D.J. Warren and P.D. Griffiths.*
University of Sheffield, Sheffield, UK.

*1239.* **Gadolinium-Enhanced "Black-Blood" $T_1$-Weighted Fast Spin-Echo MR Imaging of the Brain.**
*Y. Amano, R. Takagi, K. Takahama, T. Matsumoto, M. Amano, T. Tsuchihashi and T. Kumazaki.*
Nippon Medical School, Tokyo, Japan.

*1240.* **Blinded Quantitative Analysis of MRAs in Children with Sickle Cell Disease: Evidence of Improved Cerebrovascular Patency Following Therapy.**
*R.G. Steen and K.J. Helton.*
St. Jude Children's Research Hospital, Memphis, TN, USA.

*1241.* **Improved Phase Processing for Enhanced Visualization of Veins in the Brain Using HRBV Imaging.**
*Y. Yu, E.M. Haacke and J.R. Reichenbach.*
Washington University and MRI Institute for Biomedical Research, St. Louis, MO, USA and Friedrich-Schiller University, Jena, Germany.

## MR Imaging of Neuropsychiatric Disorders, Head Trauma, and Stroke-Vascular

Hall C
Tuesday: 13:30 – 15:30

*1242.* **Reliability of Assessing Atrophy in Sytemic Lupus Erythematosus.**
*M.A. Barlow, H. Petropoulos, D. Kilgore, L.L. Zamora, B.L. Hart, W.L. Sibbitt Jr and W.M. Brooks.*
University of New Mexico, Albuquerque, NM, USA.

*1243.* **Correlation of Volumetric Magnetization Transfer Imaging (MTI) with Clinical Functioning in Neuropsychiatric Systemic Lupus Erythematosus (NPSLE).**
*G.P.T. Bosma, M.A. van Buchem, M.J. Rood, N. van Nierop, E.L.E.M. Bollen, H.A.M. Middelkoop and T.W.J. Huizinga.*
Leiden University Medical Center, Leiden, The Netherlands.

*1244.* **Comparison of ADC Histograms of Patients with Neuropsychiatric Systemic Lupus Erthematosus and Healthy Volunteers.**
*G.P.T. Bosma, M.A. van Buchem, M.J. Rood, S.P. Mooijaart and T.W.J. Huizinga.*
Leiden University Medical Center, Leiden, The Netherlands.

*1245.* **Basal Ganglia MR Relaxometry and Volumetry in Obsessive-Compulsive Disorder.**
*V. Herynek, B.D. Greenberg, J. Giedd, J. Vymazal, G. Corá-Locatelli, J. Keel, A. Harman, R.A. Brooks and D.L. Murphy.*
National Institutes of Health, Bethesda, MD, USA and Hospital Na Homolce, Prague, Czech Republic.

*1246.* **Locating White Matter Lesions in Late Life Depression: An MRI Morphometry and Statistical Mapping (SPM) Approach.**
*J.R. MacFall, R. Krishnan and M.E. Payne.*
Duke University, Durham, NC, USA.

*1247.* **Volumetric Asymmetries in Late-Onset Mood Disorders.**
*A. Kumar, W. Bilker, H. Lavretsky and G. Gottlieb.*
University of California, Los Angeles, CA, USA; University of Pennsylvania School of Medicine, Philadelphia, PA, USA and Harvard Medical School, Boston, MA, USA.

*1248.* **Schizotypal Traits in Relation to Cerebellar Volume and Asymmetry: A High-Resolution 3D Magnetic Resonance Imaging Study.**
*B.K. Puri, A.J. Richardson, J.M. Allsop, C.J. Higgins, C.M. Calvin and N. Saeed.*
Imperial College School of Medicine and Hammersmith Hospital, London, UK.

*1249.* **Gender Effects on Regional Cerebral Blood Flow Abnormalities on Perfusion MRI in Abstinent Methamphetamine Users.**
*L. Chang, T. Ernst, O. Speck, M. DeSilva, H. Petal and E. Miller.*
UCLA School of Medicine and Harbor-UCLA Medical Center., Torrance, CA, USA.

*1250.* **Diffusion-Weighted MRI Indicates that Both Vasogenic and Cytotoxic Edema Contribute to Human Brain Contusion.**
*T. Ebisu, C. Tanaka, M. Umeda, M. Fukunaga, I. Aoki, Y. Watanabe, Y. Someya and S. Naruse.*
Meiji College of Oriental Medicine, Kyoto and Kyoto Prefectural University of Medicine, Kyoto, Japan.

*1251.* **Effects of Traumatic Brain Injury and Mild Hypovolemic Systemic Hypotension on Cerebral Vascular and Tissue Characteristics: A Magnetic Resonance Imaging Study.**
*J.P. Williams, D.S. DeWitt, M.J. Quast, T.A. Kent and D.S. Prough.*
The University of Texas Medical Branch, Galveston, TX, USA.

*1252.* **Brain Changes Following Cardiopulmonary Bypass Graft Surgery Detected By Serially Registered MRI.**
*A. Oatridge, A. Kohn, N. Saeed, J.V. Hajnal, B.K. Puri, P.L.C. Smith, K.M. Taylor and G.M. Bydder.*
Hammersmith Hospital, London, UK.

*1253.* **Clinical Stroke Imaging at 3 T.**
*R. Frayne, R.J. Sevick, A.M. Demchuk, P.A. Barber, M.D. Hill, A. Cole-Haskayne, S. Curtis and A.M. Buchan.*
University of Calgary, Calgary, AB, Canada.

*1254.* **Quantitative Perfusion Weighted Imaging Compared with Pre- and Post-Acetazolamide Xe-133 SPECT IN Cervical Occlusive Disease.**
*K. Kikuchi, K. Murase, H. Miki, T. Kikuchi, Y. Sugawara and J. Ikezoe.*
Ehime University School of Medicine, Ehime, Japan.

*1255.* **Nitric Oxide Mediates Hypoxia Induced Cerebral Vasodilation in Humans.**
*A. Spilt, M.A. van Buchem, A.H.M. van Mil, E.L.E.M. Bollen, R.G.J. Westendorp and G.J. Blauw.*
Leiden University Medical Center, Leiden, The Netherlands.

*1256.* **Magnetic Resonance Imaging Finding of Generalized Tonic Clonic Seizure Induced Transient Brain Changes.**
*J-A. Kim, J.I. Chung, P.H. Yoon, D.I. Kim and T-S. Chung.*
Yonsei University, Seoul, Korea.

*1257.* **Studies of Cortical Excitability and Connectivity With Combined TMS, EEG, and MRI.**
*S. Komssi, M. Kesäniemi, L. Soinne, V. Nikouline, M. Ollikainen, R.O. Roine, J. Huttunen, H.J. Aronen and R.J. Ilmoniemi.*
Helsinki University Central Hospital, Helsinki, Finland.

*1258.* **Estimation of Regional Brain Iron Content in Restless Leg Syndrome.**
*P.B. Barker, R.P. Allen and C.J. Earley.*
Johns Hopkins University, Baltimore, MD, USA.

# MR Imaging of Aging and Degenerative Brain Diseases

Hall C
Monday: 14:00 – 16:00

*1259.* **Diffusion Weighted Imaging (DWI) in Normal Aging, Mild Cognitive Impairment (MCI) and Probable Alzheimer's Disase (AD).**
*K. Kantarci, R.C. Petersen, Y.C. Xu, N.G. Campeau and C.R. Jack, Jr.*
Mayo Clinic, Rochester, MN, USA.

*1260.* **Magnetization Transfer Ratio and Mean Diffusivity Histograms from Brain White and Gray Matter. A Normatiave Data-Base Spanning Six Decades of Life.**
*G. Iannucci, M. Cercignani, M. Bozzali and M. Filippi.*
Scientific Institute H San Raffaele, University of Milan, Milan, Italy.

*1261.* **Amyloid-b Precursor Protein (APP) Influences Ischemic Brain Lesion as Seen by MRI in APP Knock-Out and APP Overexpressing Mice.**
*P.R. Allegrini, M. Rudin, D. Ekatodramis, C. Sturchler-Pierrat, M. Staufenbiel, B. Sommer and Ch. Wiessner.*
Novartis Pharma Ltd, Basel, Switzerland.

*1262.* **Quantitative MRI Differences Between Alzheimer's Disease Without and With Lacunar Infarcts.**
*Y.Y. Hsu, N. Schuff, D. Amend, A.T. Du, D. Norman, H. Chui, W.J. Jagust and M.W. Weiner.*
Chang Gung Memorial Hospital, Taipei, Taiwan; University of California, San Francisco, CA, USA; University of Southern California, Los Angeles, CA, USA and University of California, Davis, CA, USA.

*1263.* **MR Imaging and Behavior Studies of Transgenic Mice Overexpressing V717F b-Amyloid Precursor Protein.**
*P.N. Venkatasubramanian, C. Weiss, L. Li, J. Disterhoft, K.S. Chen and A.M. Wyrwicz.*
ENH Research Institute, Evanston, IL, USA; Northwestern University Medical School, Chicago, IL, USA and Elan Pharmaceuticals, S. San Francisco, CA, USA.

*1264.* **Megnetic Resonance Imaging of Brain Iron Deposition in Patients With Idiopathic Parkinson's Disease Using the PRIME Sequence.**
*J.M. Graham, M.N. Paley, N. Hoggard, P.D. Griffiths and R.A. Grunewald.*
Royal Hallamshire Hospital, Sheffield, UK.

*1265.* **MRI Microscopy of Human Aged and Alzheimer's Disease Brain Samples.**
*M. Dhenain, N. Privat, C. Duyckaerts and R.E. Jacobs.*
California Institute of Technology, Pasadena, CA, USA and Hôpital de la Salpêtrière, Paris, France.

*1266.* **Unbiased Detection of Atrophy in Mild to Moderate Alzheimer's Disease.**
*S.A.R.B. Rombouts, F. Barkhof and P. Scheltens.*
Vrije Universiteit, Amsterdam, The Netherlands.

*1267.* **Frequency of $T_2$ Signal Hyperintensities in Young Patients with Alzheimer's, Frontotemporal and Vascular Dementias.**
*A. Jackson, A.R. Varma, R. Laitt, J.J. Lloyd, K.J. Carson, J.S. Snowden and D. Neary.*
University of Manchester and Manchester Royal Infirmary, Central Manchester Healthcare Trust, Manchester, UK.

*1268.* **Quantitative Diffusion MR Imaging of Patients with Parkinson's Disease.**
*O. Haraldseth, B. Ernholm, G. Torheim, G. Nilsen and J. Aasly.*
Norwegian University of Science and Technology and University Hospital, Trondheim, Norway.

*1269.* **Evaluation of Whole Brain Atrophy in Alzheimer's Disease with Automated Magnetic Resonance Brain Segmentation and Volumetry.**
*M. Matsui, H. Kitagaki, N. Hirono, M. Yasuda, K. Ishii, S. Sakamoto and E. Mori.*
Hyogo Institute for Aging Brain and Cognitive Disorders, Himeji, Japan.

*1270.* **Volumetric Magnetization Transfer Analysis in the Elderly.**
*A. Spilt and M.A. van Buchem.*
Leiden University Medical Center, Leiden, The Netherlands.

*1271.* **Pre-Operative Diffusion Weighted Imaging and Proton Spectroscopy of the Periventricular White Matter Can Distinguish Between Good and Poor Outcome From Surgery In Normal Pressure Hydrocephalus.**
*R.G. Corkill, M.R. Garnett, A.M. Blamire, B. Rajagopalan, T.A.D. Cadoux-Hudson and P. Styles.*
University of Oxford and Radcliffe Infirmary, Oxford, UK.

*1272.* **Reproducibility of MR Perfusion Imaging with GdDTPA: Effect of Ginko Biloba.**
*P.B. Barker and D.M. Yousem.*
Johns Hopkins University, Baltimore, MD, USA.

*1273.* **Cerebellar Volume in Humans Correlates with Associative Learning in the Eyeblink Classical Conditioning Delay Paradigm.**
*S. Lemieux, G. Goldenberg, M. Downey-Lamb, O. Boyko and D. Woodruff-Pak.*
Temple University and Rotman Research Institute of Baycrest Centre for Geriartric Care, Philadephia, PA, USA.

## MR Imaging of Brain: Pharmacological Effects in Animals

Hall C
Tuesday: 13:30 – 15:30

*1274.* **Evaluation of Treatment Response to Yeast Cytosine Deaminase Gene Therapy with Diffusion MRI.**
*L.D. Stegman, A. Rehemtulla, T.L. Chenevert and B.D. Ross.*
University of Michigan Medical School, Ann Arbor, MI, USA.

*1275.* **Contrast Enhanced Magnetic Resonance Imaging of Kainate Brain Injury.**
*R. Frangež, M. Kosec, F. Demsar and K. Beravs.*
University of Ljubljana and Institute" Jožef Stefan", Ljubljana, Slovenia.

*1276.* **An Assessment of Soman-Induced Status Epilepticus.**
*Y.A. Bhagat, A. Obenaus, M.G. Hamilton and E.J. Kendall.*
University of Saskatchewan, Saskatoon, Saskatchewan, Canada.

*1277.* **Characterization of Cerebral Blood Flow during Anesthesia with Fentanyl, Isoflurane, or Pentobarbital in Normal Rats.**
*K.S. Hendrich, P.M. Kochanek, J.A. Melick, K.D. Statler, D.S. Williams, D.W. Marion and C. Ho.*
Carnegie Mellon University and University of Pittsburgh, Pittsburgh, PA, USA.

*1278.* **Development of a Novel Neonatal *in vivo* Model of Neuronal Injury Relevant to Cerebral Ischemia, Using Ouabain, a $Na^+/K^+$-ATPase Inhibitor.**
*W.B. Veldhuis, M. van der Stelt, G.A. Veldink, J.F.G. Vliegenthart, P.R. Bär and K. Nicolay.*
University Medical Center Utrecht and Utrecht University, Utrecht, The Netherlands.

*1279.* **Measurement of Changes in CBF in MPTP-Treated and 7-NI Protected Rats Using FAIR Technique.**
*Y-L. Pan, B-C. Shyu and C. Chang.*
Academia Sinica, Taipei, Taiwan, Republic of China.

*1280.* **Detection of Widespread Alterations in Brain Diffusion Following Focal Striatal Injection of the Inflammatory Cytokine TNF-a.**
*N.R. Sibson, D.C. Anthony, A.M. Blamire, B. Rajagopalan, V.H. Perry and P. Styles.*
John Radcliffe Hospital and University of Oxford, Oxford, UK and University of Southampton, Southampton, UK.

*1281.* **Neuroprotective Effects of FK506 on Experimental Focal Ischemia Quantitatively Assessed by Diffusion-weighted MRI.**
*T. Ebisu, K. Katsuta, A. Fujikawa, L. Aoki, M. Umeda, S. Naruse and C. Tanaka.*
Meiji College of Oriental Medicine and Kyoto Prefectural University of Medicine, Kyoto, Japan and Fujisawa Pharmaceutical Co., Ltd, Osaka, Japan.

*1282.* **Neuroprotection by Tetrahydrocannabinol in an *in vivo* Excitotoxicity-Model as Studied by Diffsion-Weighted and $T_2$-Weighted MRI.**
*M. van der Stelt, W.B. Veldhuis, P.R. Bär, G.A. Veldink, J.F.G. Vliegenthart and K. Nicolay.*
Utrecht University and University Medical Center Utrecht, The Netherlands.

## MR Imaging of Brain Hypoxia and Ischemia: Animal Models

Hall C
Tuesday: 13:30 – 15:30

*1283.* **$CO_2$ Reactivity During Transient Focal Cerebral Ischemia: A Perfusion-Weighted MRI Investigation in Rat Brain.**
*C. Franke, L. Olah, W. Schwindt and M. Hoehn.*
Max-Planck-Institute for Neurological Research, Cologne, Germany.

*1284.* **MRI Detection of Subacute Hemorrhagic Transformation in the Rat Suture Occlusion Model.**
*T. Neumann-Haefelin, A. Kastrup, M. Yenari, T. Ringer, A. de Crespigny and M.E. Moseley.*
Stanford University, Stanford, CA, USA.

*1285.* **Serial MRI after Transient Focal Cerebral Ischemia in Rats: Dynamics of Tissue Injury, Blood-Brain-Barrier Damage and Edema Formation.**
*T. Neumann-Haefelin, A. Kastrup, M. Yenari, A. de Crespigny and M.E. Moseley.*
Stanford University, Stanford, CA, USA.

*1286.* **Rapid Response of Cerebral $T_1$ Upon Global Ischemia in Rat.**
*M.I. Kettunen, N. Kuhmonen and R.A. Kauppinen.*
University of Kuopio, Kuopio, Finland.

*1287.* **MR-Angiography Reveals Hemodynamic Variability in Experimental Stroke.**
*M. Liu, M. Besselmann, M. Diedenhofen, C. Franke and M. Hoehn.*
Max-Planck-Institute for Neurological Research, Cologne, Germany and Wuhan Institute of Physics, Wuhan, China.

*1288.* ***In Vivo* Correlation of ADC and $T_2$ in Normal and Ischaemic Rat Brain and Trigeminal Nerve.**
*M.D. Does and J.C. Gore.*
Yale University School of Medicine, New Haven, CT, USA.

*1289.* **Temporal Study of Rat Brain Following Ischemia/Reperfusion by Quantitative $T_2$-Weighted MRI and Diffusion-Weighted MRI.**
*S-W. Sun, W-M. Cheung, W-C. Chu, T-N. Lin and C. Chang.*
Academia Sinica and National Yang-Ming University, Taipei, Taiwan, Republic of China.

*1290.* **Comparison of Cerebral Tissue Water $T_2$ and Apparent Diffusion Coefficient Following Transient Hypoxia-Ischaemia in Neonatal Piglet Brain.**
*Q. Nguyen, J.S. Thornton, R.J. Ordidge, K. Brooks, E.B. Cady, M. Clemence, M. Noone, F.E. O'Brien, N. Parker, Y. Sakata, M.W. Sellwood, R. Springett, M. Wylezinska and J.S. Wyatt.*
University College London, London, UK.

*1291.* **Quantitative Measurements of Cerebral Blood Volume Under Hypercapnia, Hypoxemic Hypoxia, Hemorrhagic Hypotension and Hemodilution in Rats Using Magnetic Resonance Imaging.**
*A. Celik and W. Lin.*
University of North Carolina, Chapel Hill, NC, USA and Washington University, St. Louis, MO, USA.

*1292.* **Critical Dependence of Long-Term Outcome on Initial Reperfusion after Cardiac Arrest.**
*Y. Xu, S. Liachenko, P. Tang and R.L. Hamilton.*
University of Pittsburgh School of Medicine, Pittsburgh, PA, USA.

*1293.* **Secondary Deterioration of ADC in Transient Focal Cerebral Ischemia in Rats.**
*S. Wecker, L. Oláh and M. Hoehn.*
Max-Planck-Institute for Neurological Research, Cologne, Germany.

*1294.* **Slow ADC Lesion Volume Development in a Model of Microsphere Induced Embolic Stroke.**
*O. Mayzel-Oreg, T. Omae, M. Kazemi, F. Li, M. Fisher, Y. Cohen and C.H. Sotak.*
Worcester Polytechnic Institute, Worcester, MA, USA; Tel-Aviv University, Tel-Aviv, Israel and Umass Memorial Health Care and University of Massachusetts Medical School, Worcester, MA, USA.

*1295.* **Continuous Mapping of Cerebral Perfusion during Resuscitation after Global Ischemia.**
*S. Liachenko, P. Tang, R.L. Hamilton and Y. Xu.*
University of Pittsburgh School of Medicine, Pittsburgh, PA, USA.

*1296.* **Human Copper-Zinc Superoxide Dismutase Transgenic Mice Exhibi t Attenuated Apparent Diffusion Coefficient Changes during Reperfusion Following Focal Cerebral Ischemia.**
*Y. Kokubo, G.B. Matson, T.C. Hill, N. Derugin, A. Mancuso and P.R. Weinstein.*
University of California, San Francisco and Veterans Affairs Medical Center, San Francisco, CA, USA.

*1297.* **Sex-Linked Differences in Susceptibility to Brain Ischemia and Cerebrovascular Response to Anoxia in Rats.**
*N. Miyasaka, F. Tanabe, T. Haku, T. Kubota and T. Aso.*
Tokyo Medical and Dental University, Tokyo, Japan.

*1298.* **Histopathologic Correlates of Biphasic ADC Reduction after Cerebral Hypoxia-Ischemia.**
*N. Miyasaka, T. Kuroiwa, F.Y. Zhao, T. Nagaoka, H. Akimoto, F. Tanabe and T. Aso.*
Tokyo Medical and Dental University, Tokyo, Japan.

*1299.* **Persistent Perfusion Deficit following Focal Cerebral Ischemia in Hyperglycemic Rats.**
*J. Wei, N. Hien and M.J. Quast.*
The University of Texas Medical Branch, Galveston, TX, USA.

*1300.* **Impaired Autoregulation with Hyperglycemia.**
*J.A. Helpern, C.A. Branch, N. Huang and L. Hernandez.*
Nathan S. Kline Institute, Orangeburg, NY, USA; New York University School of Medicine, New York, NY, USA and Albert Einstein College of Medicine, Bronx, NY, USA.

*1301.* **Combined Microdialysis and MRI in a Hyperglycemic Rat MCAO Model.**
*J. Wei and M.J. Quast.*
The University of Texas Medical Branch, Galveston, TX, USA.

*1302.* **Loss of Vasoreactivity as an Early Indicator of Pathology on the Brain of Canine: Measurements with MRI by Vasodilator Challenging.**
*M-Y. Su, H. Yu, J-Y. Chiou, B. Muggenburg, R. Lee and O. Nalcioglu.*
University of California, Irvine, CA, USA and Lovelace Respiratory Research Institute and VA Hospital, Albuquerque, NM, USA.

*1303.* **Measurements of Vascular Charcateristics in the Brain of Canine: Comparison of $T_1$ and $T_2$ Weighted Imaging Techniques.**
*M-Y. Su, H. Yu, J-Y. Chiou, B. Muggenburg, R. Lee and O. Nalcioglu.*
University of California, Irvine, CA, USA and Lovelace Respiratory Research Institute and VA Hospital Hospital, Albuquerque NM, USA.

## Interventional MRI: Mixed

Hall C
Tuesday: 13:30 – 15:30

*1304.* **Investigation of Image Artifacts of a Carbon Needle for Interventional MRI.**
*J.R. Reichenbach, S. Wurdinger, S.O.R. Pfleiderer and W.A. Kaiser.*
Friedrich-Schiller Universität, Jena, Germany.

*1305.* **A Study of the Use of Overhauser Enhancement to Assist Needle Placement During Interventional MRI.**
*G. Ehnholm, K. Golman, E. Vahala, I. Leunbach, M. Ylihautala and I. Young.*
Picker Nordstar, Helsinki, Finland; Nycomed Innovation, Malmo, Sweden and Hammersmith Hospital, London, UK.

*1306.* **An MR Compatible Endoscope with Interchangeable Inductively-Coupled Receiver Coil and Tip Tracking Facility.**
*D.J. Gilderdale, D.J. Larkman, G.A. Coutts, A.D. Williams and N.M. deSouza.*
Hammersmith Hospital, London, UK.

*1307.* **Active Marker of Catheters for MRI Guided Interventions.**
*F. Toennissen, A. Melzer, F. Götz, M. Busch and R. Seibel.*
Mediport Simag GmbH, Berlin, Germany; University of Applied Science Gelsenkirchen, Germany and Institute of Diagnostic and Interventional Radiology, Mülheim/Ruhr, Germany.

*1308.* **Real-Time Passive Catheter Tracking on a Clinical MR Scanner.**
*O. Unal, R. Omary, W.F. Block, F.R. Korosec, C.A. Mistretta, T.M. Grist and C.M. Strother.*
University of Wisconsin-Madison, Madison, WI, USA.

*1309.* **Real-Time MRI-Guided Passive Catheter Tracking Using Gadolinium-Filled Catheters.**
*R.A. Omary, O. Unal, D.S. Koscielski, R. Frayne, F.R. Korosec, C.A. Mistretta, C.M. Strother and T.M. Grist.*
University of Wisconsin Hospital & Clinics, Madison, WI, USA.

*1310.* **Tracking of Susceptibility-Based Devices in 2D Subtraction Images.**
*R. van der Weide, C.J.G. Bakker and M.A. Viergever.*
University Hospital, Utrecht, The Netherlands.

*1311.* **Direct Visualization of Susceptibility-Based Devices in Relation to the Vasculature.**
*C. Bos, C.J.G. Bakker and M.A. Viergever.*
University Medical Center, Utrecht, Netherlands.

*1312.* **A Loopless Helical Intravascular MR Imaging Antenna.**
*A.C. Lardo, E.R. McVeigh, H.R. Halperin and E. Atalar.*
Johns Hopkins School of Medicine, Baltimore, MD, USA and National Institutes of Health, Bethesda, MD, USA.

*1313.* **Intracoronary High-Resolution MR Imaging Using a Loopless Antenna: An Initial *In Vivo* Study.**
*X. Yang, J-M. Serfaty, H.H. Quick, A.W. Heldman, K.A. Shunk, P. Karmarkar and E. Atalar.*
Johns Hopkins Medical Institutions, Baltimore, MD, USA.

*1314.* **New Concept of Vena Cava Filters with Signal Enhancement in Magnetic Resonance Imaging.**
*A. Melzer, G. Schaefers, F. Toennissen and M. Busch.*
University of Applied Sciences, Gelsenkirchen, Germany; Mediport Simag GmbH, Berlin, Germany and Institute of Diagnostic and Interventional Radiology, Mülheim/Ruhr, Germany.

*1315.* **MR-Guided Placement of a Vena Cava Filter in a Pig.**
*L.W. Bartels, C. Bos, R. van der Weide, H.F.M. Smits, C.J.G. Bakker and M.A. Viergever.*
University Hospital Utrecht, Utrecht, The Netherlands.

*1316.* **Coil Embolisation of Renal Arteries Under Real-Time MR Control Exploiting Radial K-Space Filling: *In Vivo* Animal Experiments.**
*A. Bücker, G. Adam, J. Neuerburg, A. Glowinski, V. Rasche, T. Schaeffter, J.J. van Vaals and R.W. Günther.*
University of Aachen, Aachen, Germany and Philips Research Laboratories, Hamburg Germany.

*1317.* **Signal Enhancement of Stents in Magnetic Resonance Imaging.**
*A. Melzer, M. Busch, F. Toennissen, T. Bertsch and R. Seibel.*
University of Applied Sciences, Gelsenkirchen, Germany; Mediport Simag GmbH, Berlin, Germany and Institute of Diagnostic and Interventional Radiology, Mülheim/Ruhr, Germany.

*1318.* **Non-Invasive Evaluation of Hemodynamic Properties of Synthetic Grafts by a New MRI Technique in the Femoro-Popliteal Segment.**
*H.D. Sorensen, S. Oyre, J. Rickers, W.P. Paaske and E.M. Pedersen.*
Aarhus University Hospital, Aarhus, Denmark.

*1319.* ***In Vitro* Evaluation of Iliac Artery Stent Artifacts in 3-D Magnetic Resonance Angiography.**
*D. Maintz, H. Kugel, P. Landwehr, F. Schellhammer and K. Lackner.*
University of Cologne, School of Medicine, Cologne, Germany.

*1320.* **Stent MR-Compatibility of the Second Kind: *In Vitro* Test of 23 Stents Concerning their Possibility to Determine Patency by MRA.**
*A. Bücker, J.M.A. Meyer, K. Schürmann, A. Rübben, J.J. van Vaals and R.W. Günther.*
University of Aachen, Aachen, Germany and Philips Medical Systems, Best, The Netherlands.

*1321.* **Improved Localization of Devices Equipped with Resonant Fiducial Markers Using a Spin Echo Technique.**
*S. Weiss and T. Schaeffter.*
Philips Research Laboratories, Hamburg, Germany.

*1322.* **Optimization of a Resonant Circuit as Fiducial Marker for a Catheter Tip Localization.**
*S. Weiss, H. Richter and K.M. Lüdeke.*
Philips Research Laboratories, Hamburg, Germany.

*1323.* **Percutaneous MR-Guided High-Dose-Rate Brachytherapy of Liver Metastasis.**
*S. Schamp, J. Kettenbach, B. Pokrajac, P. Mayer, C. Fellner, A. Fransson, W. Scheitauer, W. Schima, W. Seitz, R. Pötter and J. Lammer.*
University Hospital of Vienna, Vienna, Austria.

*1324.* **Percutaneous MR Guided Lumbar Discectomy: Imaging Requirements for Visualization of the Lumbar Anatomy and the Disc Forceps.**
*G. Ahlbaeumer, Y. Geoffroy, J-F. Roy, P. Montminy and C. Moisan.*
Centre Hospitalier Universitaire de Québec, Québec City, Québec, Canada and General Electric Medical Systems, Milwaukee, WI, USA.

*1325.* **Percutaneous MR Guided Lumbar Discectomy with Ceramic-Mouthed Forceps: MR Compatibility and Mechanical Testing in a Human Cadaver.**
*G. Ahlbaeumer, Y. Geoffroy, J-F. Roy, P. Montminy and C. Moisan.*
Centre Hospitalier Universitaire de Québec, Québec City, Québec, Canada and General Electric Medical Systems, Milwaukee, WI, USA.

*1326.* **MR-guided Breast Interventions in a Vertical Open 0.5 T MR System - Wire Localization and Percutaneous High Speed Cut Biopsies.**
*J.P. Schneider, T. Schulz, F. Schmidt, S. Rüger, S. Leinung, L.C. Horn and T. Kahn.*
University of Leipzig, Leipzig, Germany.

*1327.* **A New MR Based Needle Trajectory Guidance Scheme for Neurobiopsy at 1.5T.**
*H. Liu, W.A. Hall and C.L. Truwit.*
University of Minnesota, Minneapolis, MN, USA.

*1328.* **Integrated Surgical Navigation in an Intraoperative MRI-System.**
*A. Nabavi, D. Gering, V. Mehta, D. Kacher, R.S. Pergolizzi, R.B. Schwartz, N. Hata, E. Woodard, P.E. Stieg, R. Kikinis, W.E.L. Grimson, P.M.L. Black and F. Jolesz.*
Brigham and Women's Hospital, Harvard Medical School, Boston, MA, USA and Massachusetts Institute of Technology, Cambridge, MA, USA.

*1329.* **"Brain Shift" in the Intraoperative MRI.**
*A. Nabavi, D. Gering, M. Ferrant, M. Kaus, D. Kacher, R.S. Pergolizzi, V. Mehta, W. Wells, S. Timoner, C.T. Mamisch, M. Das, S. Bonitz, N. Hata, S. Warfield, C.F. Westin, P. Everet, P.E. Stieg, R. Kikinis, W.E.L. Grimson, P.M.L. Black and F.Jolesz.*
Brigham and Women's Hospital, Harvard Medical School, Boston MA, USA and Massachusetts Institute of Technology, Cambridge, MA, USA.

*1330.* **Motion Robust Imaging for Continuous Intraoperative MRI.**
*D.F. Kacher, S.E. Maier, H. Mamata, Y. Mamata, A. Nabavi and F.A. Jolesz.*
Brigham and Women's Hospital, Harvard Medical School, Boston, MA, USA.

*1331.* **Improved Coil Designs for Neurosurgical Guidance with Open-Concept MR Systems.**
*C.A. White, M.J. Bronskill, W. Kucharczyk and N.B. Konyer.*
Sunnybrook and Women's College Health Sciences Centre and University of Toronto, Toronto, Ontario, Canada.

*1332.* **Real-Time MR-Fluoroscopic Guidance of Interventional Procedures Using a Closed Short Bore System.**
*K.U. Wentz, R. Rüth, C.A. von Weymarn, J. Froehlich, R. Altermatt, C. Bader and C.L. Zollikofer.*
Cantonal Hospital, Winterthur, Switzerland.

*1333.* **On the Feasibility of Integrating a Flat-Panel X-Ray Fluoroscopy System into an Open MRI System.**
*R. Fahrig, K. Butts, J.A. Rowlands, R. Saunders, D.L. Ergun, J. Stanton, S. Kee, B.L. Daniel and N.J. Pelc.*
Stanford University, Stanford, CA, USA; Sunnybrook Health Sciences Center and University of Toronto, Toronto, Ontario, Canada; GE Medical Systems, Milwaukee, WI, USA and Lunar Corp., Madison, WI, USA.

## Interventional MRI: Thermometry

Hall C
Wednesday: 13:30 – 15:30

*1334.* **Non-Linear Temperature Response in Interleaved Spiral Gradient-Echo Temperature Imaging.**
*R.J. Stafford and J.D. Hazle.*
The University of Texas M.D. Anderson Cancer Center, Houston, TX, USA.

*1335.* **Interleaved Gradient-Echo Planar Imaging with Fat Suppression for MR Temperature Imaging.**
*R.J. Stafford and J.D. Hazle.*
The University of Texas M.D. Anderson Cancer Center, Houston, TX, USA.

***1336.*** **MRI Temperature Measurement for Hot Saline Injection Therapy - *In Vivo* Study.**
*S. Okuda, K. Kuroda, K. Oshio, R.V. Mulkern, V. Colucci, P.R. Morrison, O. Kainuma and F.A. Jolesz.*
Brigham and Womens' Hospital, Children's Hospital and Harvard Medical School, Boston MA, USA; Keio University, Tokyo, Japan and Chiba University, Chiba, Japan.

***1337.*** **3D MRI-Derived Thermometry and Dosimetry.**
*N. McDannold, F. Jolesz and K. Hynynen.*
Brigham and Women's Hospital, Boston MA, USA and Tufts University, Medford MA, USA.

***1338.*** **Control of MRI-Monitored Thermal Therapies Using 3D Optical Flow.**
*G.P. Zientara, N. Hata, D. Gering, R. Kikinis and F.A. Jolesz.*
Harvard Medical School and Brigham and Women's Hospital, Boston, MA, USA.

***1339.*** **Stabilized Temperature Mapping on a 0.3-T Open MRI System.**
*T. Takahashi, K. Komura, M. Dohi and J. Harada.*
Hitachi Medical Corp., Chiba, Japan and The Jikei University School of Medicine, Kashiwa Hospital, Chiba, Japan.

***1340.*** **Three Dimensional (3D) Temperature Imaging Using Water Proton Chemical Shift.**
*K. Kuroda, O. Kainuma, S. Okuda, M. Jinzaki, P.R. Morrison, D. Kacher, S.G. Silverman and F.A. Jolesz.*
Tokai University, Hiratsuka, Japan; Brigham and Women's Hospital, Harvard Medical School, Boston, MA, USA; Shimizu Kosei Hospital, Shimizu, Japan and Keio University, Tokyo, Japan.

***1341.*** **Deformation of Breast Tissue During Heating: MRI Observations of *Ex Vivo* Radio Frequency Ablation.**
*B.L. Daniel and K. Butts.*
Stanford University, Stanford CA, USA.

***1342.*** **Comparison of Necrosis Specific Gd-Mesophorphyrin and High Dose Gd-DTPA for Monitoring of Laser-Induced Muscle Lesions During LITT.**
*C. Bremer, J. Bankert, W. Ebert, T. Filler and P. Reimer.*
Westfaelische Wilhems-University, Muenster, Germany and Schering AG, Berlin, Germany.

***1343.*** **Microwave Ablation, as a Feasible Tool for MRI-Guided Interstitial Hyperthermia.**
*S. Morikawa, T. Inubushi, Y. Kurumi and T. Tani.*
Shiga University of Medical Science, Shiga, Japan.

***1344.*** **Design of an MRI Compatible Phased Array Microwave Hyperthemia System.**
*B. Behnia, M. Suthar and A.G. Webb.*
University of Illinois, Urbana-Champaign, IL, USA.

***1345.*** **MR-Guided Feedback Control of Laser Thermal Therapy.**
*R.J. McNichols, A. Gowda and S.M. Wright.*
Bio Tex, Inc. and Texas A&M University, College Station, TX, USA.

***1346.*** ***In vivo* Temperature Measurements in Comparison with MR-Thermometry during Laser-Induced Interstitial Thermotherapy (LITT) of Liver Metastasis.**
*N. Hosten, R. Puls, R. Kreibig, W. Wlodarczyk, C. Stoszczynski, M. Hentschel and R. Felix.*
Humboldt University-Charité-Campus Virchow Klinikum, Berlin, Germany.

***1347.*** **Heat Induced Perfusion in Knee and its Effects on the MR Based Thermometry.**
*J. Vlad, W. Wlodarczyk, T. Lange, M. Hentschel, F. Müller, J. Farahati, P. Wust and R. Felix.*
Charité Campus Virchow Klinikum, Humboldt-Universität, Berlin, Germany.

***1348.*** **MR Imaging at 0.2 Tesla During Regional Hyperthermia.**
*M. Peller, R. Löffler, P. Turner, G. Futschik, A. Baur, S. Abdel-Rahman, M. Santl, R. Issels and M. Reiser.*
University of Munich, Munich, Germany; Siemens Medizintechnik, Erlangen, Germany; BSD Medical Corporation, Salt Lake City, UT, USA; Dr. Sennewald Medizintechnik, Munich, Germany and Clinical Corporation Group Hyperthermia, Munich, Germany.

*1349.* **Temperature-Induced Changes in Magnetic Susceptiblity in Local Hyperthermia: Correction of MR Thermometry.**
*R. Salomir, J.A. de Zwart, F.C. Vimeux, B. Quesson and C.T.W. Moonen.*
Université Victor Segalen, Bordeaux, France.

*1350.* **The Feasibility of Monitoring of Hyperthermia in Prostate With Chemical-Shift Based MRI Thermometry.**
*N. McDannold, R.V. Mulkern and K. Hynynen.*
Brigham and Women's Hospital and Children's Hospital, Boston MA, USA and Tufts University, Medford MA, USA.

*1351.* **Thermal Mapping with a Neural Network Approach for the Planning and Conduct of MR Guided Cryosurgeries.**
*N. Harrison, F. Larose, D. Laurendeau and C. Moisan.*
Laval University, Quebec City, Quebec, Canada and Centre Hospitalier Universitaire de Québec, Quebec City, Quebec, Canada.

*1352.* **Verification of 3D Temperature Map in Frozen Tissue.**
*E. Samset, T. Mala, I. Gladhaug, O. Soreide and E. Fosse.*
The National Hospital of Norway, University of Oslo, Oslo, Norway.

*1353.* **MR Guided Cryosurgery of Liver Tumors with MnDPDP: A Pilot Study.**
*G. Dionne, M. Dufour, J. Morin and C. Moisan.*
Quebec City University Hospital, Quebec City, Quebec, Canada.

*1354.* **Percutaneous MR-Guided Cryotherapy of the Canine Kidney.**
*J. Tacke, G. Adam, H. Borchers, E. Manegold, J. Vieten, S. Grobkortenhaus and R.W. Günther.*
University of Technology, Aachen, Germany.

*1355.* **MR Montioring of Focused Ultrasound Surgery (FUS) in a Breast Tissue Model - *in vivo* study.**
*C. Bohris, R. Rastert, J. Jenne, I. Simiantonakis, J. Spoo, M. Hlavac, P. Huber, G. Brix and J. Debus.*
German Cancer Research Center (dkfz), Heidelberg, Germany and Federal Office for Radiation Protection, Neuherberg, Germany.

*1356.* **Measurement of Spatial Heating Patterns for MR-Compatible Interstitial Ultrasound Heating Probes.**
*R. Chopra, S.F. Foster and M.J. Bronskill.*
Sunnybrook and Women's College Health Sciences Centre and University of Toronto, Toronto, Ontario, Canada.

*1357.* **MRI Thermal Dosimetry During Focused Ultrasound Surgery with Multiple Sonications.**
*K. Hynynen, N. McDannold, K. Mahoney and F.A. Jolesz.*
Brigham and Women's Hospital and Harvard Medical School, Boston, MA, USA and Tufts University, Medford MA, USA.

*1358.* **Thermal Dose Deposition with Focused Ultrasound Using a Spiral Heating Trajectory under MR Control.**
*F. Vimeux, J.A. de Zwart, R. Salomir, P. Lelong, J. Pergrale, N. Grenier and C.T.W. Moonen.*
Victor Segalen University, Bordeaux, France and LEP Philips, Limeil-Brévannes, France.

*1359.* **MR Guided FUS Hyperthermia: Automatic Temperature Control Based on a Physical Model of Energy Deposit and Heat Diffusion.**
*R. Salomir, J.A. de Zwart, F.C. Vimeux, N. Grenier, J. Palussière and C.T.W. Moonen.*
Université Victor Segalen and Institut Bergonié, Bordeaux, France.

*1360.* **MR Guided Focused Ultrasound Hyperthemia: $B_0$ Field Dynamic Perturbation Due to a Moving Transducer.**
*R. Salomir, B. Quesson, J.A. de Zwart, F.C. Vimeux and C.T.W. Moonen.*
Université Victor Segalen, Bordeaux, France.

*1361.* **MR Guided Focused Ultrasound Hyperthermia: Optimised Trajectory of the Focal Point Leading to a Uniform Temperature Profile in the Tissue.**
*R. Salomir, F.C. Vimeux, J.A. de Zwart, B. Quesson, J. Palussière, N. Grenier and C.T.W. Moonen.*
Université Victor Segalen, Bordeaux, France.

*1362.* **MR Guided Focused Ultrasound Thermal Therapy in a Canine Tumor Model.**
*J.D. Hazle, R.J. Stafford, M.J. Fenstermacher and R.E. Price.*
University of Texas M.D. Anderson Cancer Center, Houston, TX, USA.

*1363.* **MRI Guided Radiofrequency (RF) Ablation of the Femur in a Porcine Model.**
*A.J. Aschoff, J.S. Lewin, E.M. Merkle, S. Emancipator, M. Wendt and C.A Petersilge.*
University Hospitals, Case Western Reserve University, Cleveland, OH, USA.

*1364.* **How Does Alteration of Hepatic Blood Flow Affect Liver Perfusion and Radiofrequency Induced Thermal Lesion Size in Rabbits' Liver?**
*A.J. Aschoff, E.M. Merkle, V. Wong, Q. Zhang, J.L. Duerk and J.S. Lewin.*
University Hospitals, Case Western Reserve University, Cleveland, OH, USA.

*1365.* **Perfusion Modulated MRI Guided Radiofrequency (RF) Ablation of the Kidney in a Porcine Model.**
*A.J. Aschoff, A. Sulman, M. Martinez, J.L. Duerk, M.I. Resnick and J.S. Lewin.*
University Hospitals, Case Western Reserve University, Cleveland, OH, USA.

## MR Systems & Gradients

Hall C
Wednesday: 13:30 – 15:30

*1366.* **Planar Gradient Coil Design Considering Pole Pieces of the Permanent Magnet.**
*S.Y. Lee, M.H. Cho, C.H. Moon and H.W. Park.*
Kyunghee University and KAIST, Seoul, Korea.

*1367.* **A Bi-Convex Gradient Coil for Open MRI.**
*S.Y. Lee, M.H. Cho, C.H. Moon and H.W. Park.*
Kyunghee University and KAIST, Seoul, Korea.

*1368.* **Stream Function Optimization for Gradient Coil Design.**
*D. Tomasi.*
Universidad Nacional de General San Martin, Buenos Aires, Argentina.

*1369.* **Open Z-Gradient Designs for Magnetic Resonance Imaging.**
*S. Dodd, D.S. Williams and C. Ho.*
Carnegie Mellon University, Pittsburgh, PA, USA.

*1370.* **Multimodular Gradient Coil Set where Two Primary Coils Share a Single Common Shield.**
*L.S. Petropoulos.*
Picker Medical Systems, Cleveland, OH, USA.

*1371.* **Experimental Study of Gradient Coil Acoustic/Magnetic Frequency Response Functions on a 4T Whole Body Imager.**
*Y. Wu, C. Bowen, C.K. Mechefske and B.K. Rutt.*
The University of Western Ontario and John P. Robarts Research Institute, London, Ontario, Canada.

*1372.* **"Silent MRI System" by Interrupting the Vibrational Transmission Through the Air and Solid Structures.**
*A. Katsunuma, H. Takamori, T. Yoshida, H. Kawamoto, Y. Uosaki, M. Hanawa and K. Iinuma.*
Toshiba Nasu Works and Toshiba Medical Engineering, Tochigi, Japan.

*1373.* **Electromagnetic Criteria for Prepolarization Coils.**
*G. Scott, S. Conolly and A. Macovski.*
Stanford University, Stanford, CA, USA.

*1374.* **Compact, High-Field Symmetric and Asymmetric MRI Magnet Designs.**
*S. Crozier, H. Zhao and D.M. Doddrell.*
University of Queensland, Brisbane, Queensland, Australia.

*1375.* **A Method for the Rapid Calculation of Magnetic Forces in Superconducting MR Magnets.**
*C. Snape-Jenkinson, L.K. Forbes and S. Crozier.*
University of Queensland, Brisbane, Queensland, Australia.

*1376.* **Split Resistive Shimming of Low-Field Homogeneous Magnets.**
*S.M. Conolly, H. Xu, G.C. Scott and A. Macovski.*
Stanford University, Stanford, CA, USA.

*1377.* **Edge Cooling for Low-Field Homogeneous Magnets.**
*S.M. Conolly, H. Xu, G.C. Scott and A. Macovski.*
Stanford University, Stanford, CA, USA.

*1378.* **Determination of Shims Needed for Correction of Tissue Susceptibility Effects in fMRI.**
*A. Jesmanowicz, P. Starewicz and J.S. Hyde.*
Medical College of Wisconsin, Milwaukee, WI, USA and Resonance Research Inc., Billerica, MA, USA.

*1379.* **Genetic Algorithms as an Optimisation Technique in the Design of Whole Body MRI Systems.**
*N.R. Shaw, R.E. Ansorge, T.A. Carpenter, M.B. Grieve and L.D. Hall.*
University of Cambridge, Cambridge UK.

*1380.* **Development of a Desktop MR Microscope Using a Small Permanent Magnet.**
*K. Kose, T. Haishi, A. Nakanishi, S. Okada and T. Tsuzaki.*
University of Tsukuba, Tsukuba, Japan and Sumitomo Special Metals Co. LTD, Osaka, Japan.

*1381.* **Development of a Compact MR Microscope Using a 1.0 T Permanent Magnet.**
*T. Haishi, T. Uematsu, Y. Akita, Y. Matsuda and K. Kose.*
University of Tsukuba, Tsukuba, Japan.

*1382.* **600MHz MR Microscopic Imaging.**
*J.H. Yi, S.C. Lee, C.J. Cheong and S. Lee.*
College of Medicine, Konkuk University, Choongbuk, Korea; Korea Advanced Institute of Science and Technology, Seoul, Korea and Korea Basic Science Institute, Korea.

*1383.* **MR Microscopy of Mice at 1.0 Tesla.**
*T. Haishi, Y. Akita and K. Kose.*
University of Tsukuba, Tsukuba, Japan.

*1384.* **Design of Low Cost 3 Tesla Research System for Combined Optical and Functional MR Imaging.**
*M. Paley, J. McGinley, J.E. Mayhew, J. Martindale, P. Coffey, P. Redgrave, E. Whitby, E. van Beek, I.D. Wilkinson, G. Darwent, M. Port and P.D. Griffiths.*
University of Sheffield, Sheffield, UK.

*1385.* **Automatic Scan Prescription for Brain MRI.**
*T. Ernst, L. Itti and L. Chang.*
Harbor-UCLA Medical Center, Torrance, CA, USA.

*1386.* **MRI Signal Stability in a Phantom.**
*C.R. Michelich, G. McCarthy and J.R. MacFall.*
Duke University Medical Center, Durham, NC, USA.

*1387.* **Fatal Imaging and Spectroscopy at Zero Tesla.**
*M. Agic, R.E. Sonance, I.M. Aging, A. Nd, S. Pectros and C. Opy.*
Biomedizinische NMR Forschungs GmbH, Göttingen, Germany.

## RF Coils

Hall C
Monday: 14:00 – 16:00

*1388.* **The Coaxial Reentrant Cavity (ReCav) Coil for High Frequency Large Volume MRI/S.**
*B.L. Beck, H.R. Brooker and S.J. Blackband.*
University of Florida, Gainesville, FL, USA; The National High Magnetic Field Laboratory, Tallahassee, FL, USA and the University of South Florida, Tampa, FL, USA.

*1389.* **The Feasability of Transversal Volume Imaging in SMASH.**
*M. Nittka, M. Griswold, R. Heidemann and A. Haase.*
Universität Würzburg, Würzburg, Germany.

*1390.* **The Double Tuned $^{1}H$ $^{23}Na$ Crosscage Resonator for High Field NMR Microscopy.**
*T. Lanz, A. Weisser and A. Haase.*
Universität Würzburg and Rapid Biomedical, Würzburg, Germany.

*1391.* **$B_1$ Field Plots for a 3 Tesla Birdcage Coil: Concordance of Experimental and Theoretical Results.**
*M. Alecci, C.M. Collins, M.B. Smith and P. Jezzard.*
John Radcliffe Hospital, University of Oxford, Oxford, UK and Penn State College of Medicine, Hershey, PA, USA.

*1392.* **$B_1$ Field Profile Along the Birdcage Coil Axis and its RF Shield Dependence.**
*S. Li, Q. Liu, C.M. Collins, P.D. Haig, P.J. Delp and M.B. Smith.*
GE Medical Systems, Waukesha, WI, USA and Penn State College of Medicine, Hershey PA, USA.

*1393.* **A New 3.0T Hybrid-Spiral-Birdcage (HSB) Coil for Improved Homogeneity Along Z-Axis.**
*J.S. Pak, J. Kim, J-O. Lee, B-S. Park, S-P. Jung, K-J. Jung and J. Kim.*
KAIST and MEDISON Co. Ltd, Taejon, Korea.

*1394.* **A 4 Channel Head Coil for SENSE Imaging.**
*D.J. Herlihy, D.J. Larkman, H. Fujita, M. Burl and J.V. Hajnal.*
Hammersmith Hospital, London, UK and Picker International Inc., Cleveland, OH, USA.

*1395.* **A Four Port Drive Flat-Element Transmission-Line Coil for Brain Imaging at 3T.**
*P.J. Ledden, L.L. Wald and J.T. Vaughan.*
Nova Medical, Inc. Wakefield MA, USA; Massachusetts General Hospital, Charlestown, MA, USA and University of Minnesota, Minneapolis, MN, USA.

*1396.* **Use of a Transmission Line Resonator as a Volume Phased Array.**
*P.J. Ledden and L.L. Wald.*
Nova Medical, Inc. Wakefield, MA, USA and Massachusetts General Hospital, Charlestown, MA, USA.

*1397.* **An Efficient Model for Evaluating the Effects of Leg Current Distributions on Birdcage Coils.**
*D.K. Spence and S.M. Wright.*
Texas A&M University, College Station, TX, USA.

***1398.*** **A 4-Channel Volume Coil for Vertical Field MRI.**
*G.R. Duensing, U. Gotshal and D. Molyneaux.*
MRI Devices Corporation, Gainesville, FL, USA.

***1399.*** **"Millipede" Imaging Coil Design for High Field Micro Imaging Applications.**
*W.H. Wong and S. Sukumar.*
Varian NMR Systems, Palo Alto, CA, USA.

***1400.*** **High Resolution *in Vivo* Magnetic Resonance Imaging of the Skin and Comparison to High Frequency Ultrasound.**
*A. Liffers, M. Vogt, H. Ermert, C. Müller, A. Falk, L. Heuser and S. El Gammal.*
Ruhr-University, Bochum, Germany.

***1401.*** **Theoretical and Experimental Optimisation of the Dead Time of RF Coils.**
*M. Alecci, G. Placidi, D.J. Lurie and A. Sotgiu.*
Universita' dell'Aquila, L'Aquila, Italy and University of Aberdeen, Foresterhill, UK.

***1402.*** **Rigid Signal-to-Noise Analysis of Coupled MRI Coils Connected to Noisy Preamplifiers and the Effect of Coil Decoupling on Combined SNR.**
*A. Reykowski and J. Wang.*
Siemens Medical Engineering, Erlangen, Germany.

***1403.*** **Asymmetric Coil Sensitivity in Two-Coil Phased Array Due to Magnetic Interactions.**
*E. Ramsay, J. Bishop and D.B. Plewes.*
University of Toronto, Toronto, Ontario, Canada.

***1404.*** **Intrinsic RF Coil Isolation in a Gradient $B_1$-Field.**
*S.B. King, S.M. Varosi and G.R. Duensing.*
MRI Devices Corporation, Gainesville, FL, USA.

***1405.*** **RF Coil Sensitivity Estimation for Intensity Correction or Encoding.**
*D.F. Kacher, E. Gao, H.M. O'Leary, W.E. Kyriakos, J.P. Kaufhold, Q.Y. Ma, W.M. Wells and F.A. Jolesz.*
Brigham and Women's Hospital, Harvard Medical School, Boston, MA, USA; Hong Kong University, Hong Kong, China and Boston University, Boston, MA, USA.

***1406.*** **Zero Shared Resistance Between Coil Elements of a Phased Array?**
*S.B. King and G.R. Duensing.*
MRI Devices Corporation, Gainesville, FL, USA.

***1407.*** **Empirical Description of the SNR Pattern of Shaped Circular Surface Coils.**
*T. Prock, D.J. Collins and M.O. Leach.*
Institute of Cancer Research and Royal Marsden Hospital, Sutton, Surrey, UK.

***1408.*** **A Simple Two-Dimensional Model for Dielectric Resonance.**
*J. Tropp and J. Dahlke.*
GE Medical Systems, Fremont CA and Waukesha, WI, USA.

***1409.*** **Electromagnetic Analysis and Design of Magnetic Resonance Radio Frequency Coils Using the Finite-Difference Time-Domain Technique.**
*J.R. Hadley and D.L. Parker.*
University of Utah, Salt Lake City, UT, USA.

***1410.*** **FDTD Analysis of an MRI System Housed in a Screened Room.**
*H. Fujita, I.R. Young, R.S. Orton, W.M.A. Qureshi, M. Burl, M.A. Morich and J.V. Hajnal.*
Picker International Inc., Cleveland OH, USA; Marconi Research Centre, Chelmsford, UK and Hammersmith Hospital, London, UK.

*1411.* **High Temperature Superconducting RF Coil for MR Microscopy at 600 MHz.**
*D. Lee, S. Baek, H. Choi, K. Lee and J-T. Kim.*
Pai Chai University and Korea Research Institute of Standards and Science, Taejon, South Korea.

*1412.* **Simulation of the Sensitivity of HTS Coil and Coil Array for Head Imaging.**
*E. Gao, D.F. Kacher, K.C. Chan, Q.Y. Ma, F.A. Jolesz and E.S. Yang.*
Hong Kong University, Hong Kong, China and Brigham and Women's Hospital and Harvard Medical School, Boston, MA, USA.

*1413.* **Design & Testing of Superconducting Surface Coil Using MoM.**
*F. Jing, M.S. Chow, E.K. Chan, K.K. Wong, E. Gao, Q.Y. Ma and E.S. Yang.*
The University of Hong Kong, Hong Kong.

*1414.* **An Image-Based Stray RF Current Measurement Technique.**
*C.C. Guclu, K.C-H. Wu and S. Murawski.*
GE Medical Systems, Milwaukee, WI, USA.

*1415.* **Probe For $^{1}$H Decoupled $^{31}$P MRS of the Head and Neck Region.**
*D. Klomp, D. Collins, H. van den Boogert, A. Schwarz, M. Rijpkema, T. Prock, M. Leach and A. Heerschap.*
University Hospital Nijmegen, Nijmegen, The Netherlands and Royal Marsden Hospital, Sutton, Surrey, UK.

*1416.* **Rapidly Switchable RF Coil for $^{19}$F/$^{1}$H NMR Studies.**
*S-P. Lee, I-Y. Choi and S-G. Kim.*
University of Minnesota Medical School, Minneapolis, MN, USA.

*1417.* **A Flexible Dual Resonant $^{1}$H/$^{19}$F RF Coil for *In-Vivo* Magnetic Resonance Spectroscopy.**
*D.J. Collins, T. Prock and M.O. Leach.*
Institute of Cancer Research and Royal Marsden Hospital, Sutton, Surrey, UK.

*1418.* **Electrode Probes for Interventional MRI.**
*G.C. Scott, G.E. Gold, J.M. Pauly, P. Rivas and B.S. Hu.*
Stanford University, Stanford, CA, USA.

*1419.* **High Resolution MRI at 1.0 T: Using an Intravascular Receiver Coil.**
*J.T. Heverhagen, V. Matschl, M. Kalinowski, H. Alfke, K.J. Klose and H-J. Wagner.*
Philipps University and University Hospital, Marburg, Germany.

*1420.* **Calculation of SNR for 2- and 4- Coil Breast Arrays.**
*E. Ramsay, J. Bishop and D.P. Plewes.*
University of Toronto, Toronto, Ontario, Canada.

*1421.* **Comparison of Breast Coils.**
*E. Ramsay, N. Konyer, M.J. Bronskill and D.B. Plewes.*
University of Toronto, Toronto, Ontario, Canada.

*1422.* **Development of Breast STS Coil with Optimized RF Field Uniformity.**
*M-N. Kim, E-J. Kim, D-H. Kim, S-A. Shin and E-K. Jeong.*
Ewha Womans University and Yonsei University, Seoul, Korea.

*1423.* **fMRI on Primates with Custom Tailored RF Coils.**
*H. Merkle, M. Augath, T. Trinath, N. Logothetis and K. Ugurbil.*
The University of Minnesota Medical School, Minneapolis, MN, USA and Max Planck Institute for Biological Cybernetics, Tuebingen, Germany.

*1424.* **Effects of Coil Design on the Sensitivity of Functional MRI to Task Related Activation.**
*K. Arfanakis, D. Cordes, L. Latour, V.M. Haughton, M.A. Quigley and M.E. Meyerand.*
University of Wisconsin, Madison, WI, USA and IGC Medical Advances, Milwaukee, WI, USA.

*1425.* **RF Coil Optimization for 0.015 Tesla Very Low-Field Hyperpolarized Noble Gas MRI.**
*Y.J. Yang, M.S. Albert, K.H. Min, A.X. Zhang, A.K. Venkatesh, G.R. Gomez, D. Balamore, R.S. Hashoian, C-L. Chin and C.H. Oh.*
Korea University, Seoul, Korea; Brigham and Women's Hospital and Harvard Medical School, Boston, MA, USA; Nassau Community College, Garden City, NY, USA and Midwest RF, Hartland, WI, USA.

## RF Pulses

Hall C
Wednesday: 13:30 – 15:30

*1426.* **Genetic Programming Control of MR Systems: Optimisation of Pulse Sequence Elements.**
*H.F. Gray and R.J. Maxwell.*
City University, London, UK and Gray Laboratory Cancer Research Trust, Northwood, Middlesex, UK.

*1427.* **Similarities and Differences between FOCI Pulses and VERSE Transformed Hyperbolic Secant Pulses.**
*E.C. Wong and W-M. Luh.*
University of California, San Diego, CA, USA.

*1428.* **Optimization of RF Pulse Shape with Multiple Constraints.**
*D.R. Lee, S. Kim, C.B. Ahn and C.H. Oh.*
Korea University and Kwangwoon University, Seoul, Korea.

*1429.* **Presaturation of Irregular Spatial Structures With Two Dimensional Waveforms Corrected for $B_1$-Inhomogeneities.**
*C. Kiefer and U. Klose.*
University of Tübingen, Tübingen, Germany.

*1430.* **$T_2$ Selective Hyperbolic-Secant Pulses.**
*A. Raddi and U. Klose.*
University of Tübingen, Tübingen, Germany.

*1431.* **Implementation of Hybrid Basis Non-Fourier Spatial Encoding for Dynamic Adaptive MRI.**
*D. Mitsouras, A.V. Masurkar, L. Zhao, L.P. Panych, A. Edelman, F.A. Jolesz and G.P. Zientara.*
Harvard Medical School and Brigham and Women's Hospital, Boston, MA, USA and Massachusetts Institute of Technology, Cambridge, MA, USA.

## MR Imaging of Genitourinary and Body Oncology

Hall C
Monday: 14:00 – 16:00

*1432.* **MR Microscopy of Radical Prostatectomy Specimens in a 4T Whole-Body MRI Scanner: Comparison of $T_2$ and $T_1$r Weighting with Histology.**
*A.C. Wright, M. Feldman, U. Duvvuri, M. Rosen, R. Nadgir, J. Tomaszewski, F.W. Wehrli and M.D. Schnall.*
Hospital of the University of Pennsylvania, Philadelphia, PA, USA.

*1433.* **Potentials of Kinetic Parameters for Differentiation of Prostate Cancer and Peripheral Zone Using Dynamic MRI.**
*M. Engelbrecht, H.J. Huisman, J. Barentsz, G. Van Leenders, B. van der Sanden and J.J.M.C.H. de la Rosette.*
University Hospital, Nijmegen, The Netherlands.

*1434.* **The Use of Echo-Planar Imaging to Obtain ADC's for Different Tissues within the Prostate.**
*D.J. Tozer, P. Gibbs, G.P. Liney and L.W. Turnbull.*
Hull Royal Infirmary, Hull, UK.

*1435.* **Investigation of Anisotropy in the Prostate Using Echo Planar Diffusion Weighted Imaging.**
*D.J. Tozer, P. Gibbs and L.W. Turnbull.*
Hull Royal Infirmary, Hull, UK.

*1436.* **Comparison of Fast Recovery Fast Spin Echo and Conventional Fast Spin Echo for $T_2$ Weighted Imaging of the Prostate Gland.**
*D. Cheng, S. Thibodeau, S. Tan and C.M.C. Tempany.*
Brigham and Women's Hospital, Boston, MA, USA and GE Medical Systems, Fort Lee, NJ, USA.

*1437.* **Use of Dynamic Enhanced Magnetic Resonance Imaging (DEMRI) to Assess the Effects of Anti-Antiangiogenic Therapy on Tumour Associated Vasculature.**
*H. Marcos, J. Butman, S. Libutti, K. Kurdziel and P. Choyke.*
National Institutes of Health, Bethesda, MD, USA.

*1438.* **Uncertainty in the Measurement and Analysis of Tracer Kinetics Using Dynamic Contrast-Enhanced MRI.**
*D.L. Buckley.*
University of Florida, Gainesville, FL, USA.

*1439.* **Consensus Recommendation for Acquisition of Dynamic Contrasted-Enhanced MRI Data in Oncology.**
*J. Evelhoch, T. Brown, T. Chenevert, L. Clarke, B. Daniel, H. Degani, N. Hylton, M. Knopp, J. Koutcher, T-Y. Lee, N. Mayr, D. Sullivan, J. Taylor, P. Tofts and R. Weisskoff.*
Wayne State University, Detroit, MI, USA; Fox Chase Cancer Center, Philadelphia, PA, USA; University of Michigan, Ann Arbor, MI, USA; National Cancer Institute, Bethesda, MD, USA; Stanford University, Palo Alto, CA, USA; Weimann Institute, Rehovot, Israel; German Cancer Research Center, Heidelberg, Germany; Memorial Sloan-Kettering, New York, NY, USA; Robarts Research Institute, London, Onario, Canada; University of Iowa, Iowa City, IA, USA; St. Jude's Children's Research Hospital, Memphis, TN, USA; University College London, London, UK and EPIX Medical, Cambridge, MA, USA.

*1440.* ***In Vivo*** **Hyperpolarized $^{129}$Xe NMR Spectroscopy in Tumours.**
*J. Wolber, D.J.O. McIntyre, L. Rodrigues, J.R. Griffiths, M.O. Leach and A. Bifone.*
The Institute of Cancer Research, The Royal Marsden NHS Trust, Sutton, Surrey, UK and St. George's Hospital Medical School, London, UK.

*1441.* **Rectal Cancer: An Assessment of Tumoural ADC's by BURST Diffusion Weighted Imaging.**
*A.S.K. Dzik-Jurasz, J. Wolber, M. George, C. Domenig, R.I. Swift, M.O. Leach and S.J. Doran.*
The Institute of Cancer Research and the Royal Marsden NHS Trust, Sutton, Surrey, UK; University of Surrey, Guildford, Surrey, UK and Mayday University Hospital, Surrey, UK.

*1442.* **Thin-Section 3D Half-Fourier RARE Imaging for the Assessment of Extramural Infiltration of Rectal Cancer: A Comparison with 2D Half-Fourier RARE.**
*S. Nakano, Y. Toyama, Y. Mori, M. Ohkawa, F. Goda, Y. Yamashita and S. Sugiura.*
Kagawa Medical University, Kagawa, Japan; Toshiba Medical Inc. and Toshiba Nasu Works, Tochigi, Japan.

*1443.* **The Diagnostic Accuracy of MRI in Rectal Mucinous Carcinoma.**
*J.S. Park, M-J. Kim and S.I. Park.*
Yonsei University College of Medicine Seoul, Republic of Korea.

*1444.* **Scrotal Disorders: Evaluation of Testicular Enhancement Patterns with Dynamic Contrast-enhanced Subtraction MR Imaging.**
*M. Dohke, Y. Watanabe, A. Okumura, Y. Amoh, T. Hayashi, T. Yoshizako, M. Yasui, S. Nakashita, J. Nakanishi and Y. Dodo.*
Kurashiki Central Hospital, Kurashiki, Japan.

***1445.*** **Evaluation of Breath Hold Fast Recovery Fast Spin Echo in the Pelvis.**
*T. Masui, M. Katayama, S. Kobayashi, T. Ito, H. Sakahara and A. Nozaki.*
Seirei Hamamatsu General Hospital and Hamamatsu University School of Medicine, Hamamatsu, Japan and GE Yokogawa Medical System, Tokyo, Japan.

***1446.*** **Hypointense Ovarian Lesions on $T_2$-WI: MR-Pathologic Correlation Rare Pathologies, which are NOT Fibromas, Thecomas or Endometrial Cysts.**
*K. Matsuzaki, T. Okada, S. Yoshida and H. Nishitani.*
University of Tokushima, Tokushima, Japan.

***1447.*** **Fetal Gastrointestinal Imaging with MRI.**
*H. Shinmoto, K. Kashima, Y. Yuasa, A. Tanimoto, T. Yamashita and K. Hiramatsu.*
Keio University, Tokyo, Japan.

***1448.*** **Ultrafast Magnetic Resonance Imaging in the Fetal Central Nervous System.**
*E.H. Whitby, M.N. Paley, I.D. Wilkinson, N.P. Davies, A. Sprigg, N. Woodhouse and P.D. Griffiths.*
Royal Hallamshire Hospital and Jessop Hospital for Women, Sheffield, UK.

***1449.*** **The Shape of the Developing Foetal Cortex From MR Images.**
*A.D.C. Smith, P.G. Batchelor, D.L.G. Hill, A.F. Dean, T. Cox and D.J. Hawkes.*
The Guy's, King's & St. Thomas' School of Medicine, Guys Hospital; Institute of Psychiatry and Great Ormond Street Hospital for Children, London, UK.

***1450.*** **Uterine Arterial Embolization for Leiomyomas: Monitoring of Immediate and Late Volume and Perfusion Changes with MRI.**
*N.M. deSouza, A.D. Williams and D.J. Larkman.*
Imperial College School of Medicine, Hammersmith Hospital, London.

***1451.*** **Transgenic Mouse MRI of Polycystic Kidney Disease.**
*Y. Sun, J. Zhou, S. Shen, C. Stayner, J. Munasinghe, D. Burstein and M. Albert.*
Brigham and Women's Hospital and Beth Israel Deaconess Medical Center, Boston, MA, USA.

***1452.*** **MRI Evaluation of the Normal Renal Tract.**
*W. Jan, J. Goodey, R. Lund and S. Rankin.*
The Guy's King's and St. Thomas' Medical School and Guy's and St. Thomas' Hospital, London, UK.

***1453.*** **Moderately $T_2$-Weighted MR Urography Using Single Shot Fast Spin Echo Technique: Differentiation Between Benign and Malignant Urinary Obstructions.**
*M. Obuchi, H. Sugimoto, T. Takahara, T. Hayashi, K. Takizawa and M. Honda.*
Showa University Fujigaoka Hospital, Yokohama, Kanagawa, Japan and Kyorin University, Tokyo, Japan.

***1454.*** **Evaluation of Dynamic Contrast-Enhanced MRI in Detecting Renal Scarring on a Rat Injury Model.**
*D. Spielman, B. Wang, G. Luo and L. Shortliffe.*
Stanford University School of Medicine, Stanford, CA, USA.

***1455.*** **Excretory Magnetic Resonance Urography Using Breath-hold Three-Dimensional FISP.**
*J.M. Lee, W.K. Song and C.S. Kim.*
Chonbuk National University, Chonbuk, Korea.

***1456.*** **MR of Kidney's Transplant: Interest of a Dynamic "all-in-one" Approach.**
*N. Nicaise, T. Metens, L. De Pauw and C. Matos.*
Hôpital Erasme, Université Libre de Bruxelles, Brussels, Belgium.

# Gastrointestinal MR Imaging

Room Hal C.
Monday: 14:00 – 16:00

***1457.*** **Comparison of Breath-Holding GRASE Sequence with Respiratory-triggered Fast SE and Breath-Holding Fast SE Sequences in Detection of Focal Malignant Liver Lesions.**
*T. Yoshikawa, S. Hirota, Y. Ohno, K. Izaki, T. Fukuda, K. Sugimoto, S. Matsumoto and K. Sugimura.*
University of Kobe, Kobe, Japan.

***1458.*** **Differentiation between Hemangiomas and Cysts of the Liver with Single Shot Fast Spin Echo Image Using Short and Long TE.**
*S. Kiryu, M. Minami, M. Akahane, M. Miyazawa, Y. Okada, K. Ohtomo, H. Kabasawa, H. Satoh and Y. Takahashi.*
University of Tokyo and GE-Yokogawa Medical Systems, Tokyo, Japan.

***1459.*** **Detection and Characterization of Focal Liver Lesions: Usefulness of Multiple Arterial and Portal Venous Phase Images at Dynamic Gadolinium-Enhanced MR Imaging with Pathologic Correlation.**
*H.Y. Ye, Y.G. Gao, Y.Q. Cai, Y. Liang, G. Yu and X.L. Ji.*
PLA General Hospital, Beijing, China.

***1460.*** **Can a Dynamic Contrast Enhanced Fast 3D Sequence be Sufficient for Liver MR Imaging?**
*C.H. Coulam and K.C.P. Li.*
Stanford University Medical Center, Stanford, CA, USA.

***1461.*** **Mangafodipir Trisodium (Mn-DPDP) enhanced MR Imaging of Focal Nodular Hyperplasia of the Liver: Comparison With Dynamic Contrast-Enhanced MR imaging With Gd-DTPA.**
*S. Hirohashi, M. Taupitz, T. Kröncke, B. Hamm and H. Uchida.*
Humboldt-Universität, Berlin, Germany and Nara Medical University, Nara, Japan.

***1462.*** **Sequential Use of Gadolinium Chelate and Mangafodipir Trisodium for the Assessment of Focal Liver Lesions: Initial Observations.**
*D.R. Martin, R.C. Semelka, J-J. Chung and K. Wilber.*
University of North Carolina, Chapel Hill, NC, USA.

***1463.*** **Detection of Liver Lesions in Candidates for Liver Surgery: Comparison of Ferumoxide Enhanced MRI and Dual Phase Helical CT.**
*D.A. Bluemke, E.K. Paulson, M.A. Choti, K. Imam and P.A. Clavien.*
Johns Hopkins University School of Medicine, Baltimore, MD, USA and Duke University Medical Center, Durham, NC, USA.

***1464.*** **Time-to-Echo Optimization for Spin Echo Magnetic Resonance Imaging of Liver Metastases Using Superparamagnetic Iron Oxide Particles.**
*J.R. Alger, J.H. Harreld, J. Mintorovitch, S. Chen and D.S.K. Lu.*
University of California, Los Angeles, CA, USA and Berlex Laboratories, Inc., Wayne, NJ, USA.

***1465.*** **Peritumoral Hyperintense Rim Around Hepatic Metastases at Ferumoxides-Enhanced $T_1$-Weighted MR Imaging.**
*K. Ueda, S. Hirohashi, H. Uchida, S. Kitano, N. Marugami, H. Ohishi, S. Iwasaki, S. Makutani and K. Ide.*
Higashiosaka City General Hospital, Osaka, Japan and Nara Medical University, Nara, Japan.

***1466.*** **Assessment of Early and Late Radiation-Induced Hepatic Injury Using Superparamagnetic Iron Oxide-Enhanced MR Imaging.**
*H. Yoshioka, K. Mori, Y. Saida, Y. Itai and T. Okumura.*
University of Tsukuba, Tsukuba, Japan.

*1467.* **Superparamagnetic Iron Oxide (SPIO) Mediated Hepatic Signal Change in Patients With and Without Cirrhosis: Pulse Sequence Effects and Kupffer Cell (KC) Function.**
*A. Tanimoto, Y. Yuasa, H. Shinmoto, T. Kurata, T. Yamashita and S. Okuda.*
Keio University School of Medicine, Tokyo, Japan.

*1468.* **MR Imaging As the Sole Pre-Operative Imaging Modality for Living Related Liver Transplantation Donor Evaluation: Preliminary Results.**
*V.S. Lee, L. Teperman, P.M. Berman, F. Lombardo, P.M. Reuss, G.A. Krinsky and N.M. Rofsky.*
New York University, New York, NY, USA.

*1469.* **Pre-Operative Evaluation of Living Related Liver Donors with MRI Using High Resolution MR Angiography and TrueFisp.**
*J. Carr, M. Abecassis, A. Blei, G. Laub, O.P. Simonetti and J.P. Finn.*
Northwestern University Medical School and Siemens R&D, Chicago, IL, USA.

*1470.* **Effect of Gd-DTPA on Respiratory-Triggered Three-Dimensional Phase-Contrast Angiography of Portal Veins.**
*T. Yoshikawa, S. Hirota, Y. Ohno, T. Motohara, K. Izaki, T. Fukuda, K. Sugimoto, S. Matsumoto and K. Sugimura.*
University of Kobe, Kobe, Japan and Shimane Medical College, Shimane, Japan.

*1471.* **MR Angiography of the Portal Venous System: Evaluation with Fresh Blood Imaging (FBI) Using Breath-Hold, ECG-Synchronized 3D Half-Fourier FSE Technique.**
*K. Ito, K. Takano, S. Koike, K. Kishimoto, H. Okazaki, M. Okada, N. Matsunaga, S. Yamauchi, Y. Sano, M. Miyazaki, H. Kanazawa and C. Jo.*
Yamaguchi University School of Medicine, Ube, Yamaguchi, Japan and Toshiba Medical Engineering Center, Tochigi, Japan.

*1472.* **Inferior Phrenic Arteries: Depiction with Thin-Section Three-Dimensional Contrast-Enhanced Dynamic MR Imaging with Fat Suppression.**
*K. Ito, M-J. Kim, D.G. Mitchell and K. Honjo.*
Thomas Jefferson University Hospital, Philadelphia, PA, USA and Yamaguchi University School of Medicine, Ube, Yamaguchi, Japan.

*1473.* **Portal Venous Flow: Evaluation with a Single Breathhold ECG-Triggered 3D Half-Fourier FSE With a Selective IR Tagging Pulse.**
*K. Ito, S. Koike, K. Takano, H. Okazaki, M. Okada, K. Kishimoto, N. Matsunaga, S. Yamauchi, Y. Sano, M. Miyazaki, H. Kanazawa and C. Jo.*
Yamaguchi University School of Medicine, Ube, Yamaguchi, Japan and Toshiba Medical Engineering Center, Tochigi, Japan.

*1474.* **Dynamic contrast-enhanced MR Imaging of the Pancreas With Fat Saturation.**
*H. Trillaud, E. Dumont and N. Grenier.*
Victor Segalen University, Bordeaux, France and Philips Systèmes Médicaux, Paris, France.

*1475.* **MR Duct-Penetrating Sign on MR Cholangiopancreatography (MRCP): A Convenient Sign for Differentiating Inflammaotry Pancreatic Mass (IPM) from Pancreatic Malignancy.**
*T. Ichikawa, H. Haradome, H. Sou, J. Hachiya and T. Araki.*
Yamanashi Medical University, Yamanashi, Japan and Kyorin University, Tokyo, Japan.

*1476.* **Quantification of Pancreatic Exocrine Function Using Secretin Stimulate MRCP.**
*A.R. Gillams, S. Punwani, S. Smart and W.R. Lees.*
The Middlesex Hospital and University College London Medical School, London, UK.

*1477.* **MR Hydrometry to Assess Exocrine Function of the Pancreas: A Quantitative Approach.**
*J.T. Heverhagen, D. Müller, A. Battmann, N. Ishaque, D. Böhm, M. Katschinski, H-J. Wagner and K.J. Klose.*
Philipps University, University Hospital, Marburg, Germany and University of Bremen, Bremen, Germany.

*1478.* **Assessment of Pancreatic Function with MRI.**
*T. Masui, M. Katayama, S. Kobayashi, T. Ito, H. Sakahara and A. Nozaki.*
Seirei Hamamatsu General Hospital and Hamamatsu University School of Medicine, Hamamatsu, Japan and GE Yokogawa Medical Systems, Tokyo, Japan.

*1479.* **MR Pearl Sign: The Value of MR Cholangiopancreatography (MRCP) on Diagnosis of Adenomyomatosis of the Gallbladder.**
*H. Haradome, T. Ichikawa, H. Sou, T. Araki and J. Hachiya.*
Kyorin University, Tokyo, Japan and Yamanashi Medical University, Yamanashi, Japan.

*1480.* **Pigment GB Stones: MR Cholangiopancreatographic Evaluation with Emphasis on the Pitfalls.**
*M.R. Suh, M-G. Lee, M.H. Kim, S.G. Lee, H.K. Ha, P.N. Kim and Y.H. Auh.*
Asan Medical Center, University of Ulsan College of Medicine, Songpa-Gu, Seoul, Korea.

*1481.* **Intraductal Papillary-Mucinous Tumors of the Bile Duct: MR Cholangiopancreatographic Features and Pathologic Correlation.**
*M-G. Lee, B.K. Suh, D.H. Chung, M.H. Kim, S.G. Lee, H.K. Ha, P.N. Kim and Y.H. Auh.*
Asan Medical Center, University of Ulsan College of Medicine, Seoul, Korea.

*1482.* **Major Papilla: Depiction with Thin-Section Three-Dimensional Contrast-Enhanced Dynamic MR Imaging with Fat Suppression.**
*S. Koike, K. Ito, K. Takano, H. Okazaki, M. Yasui and N. Matsunaga.*
Yamaguchi University School of Medicine, Ube Yamaguchi, Japan.

*1483.* **Usefulness of Postprocess of 3D Volume Data Obtained with Dynamic Contrast 3DFSPGR Evaluations of Biliary Tracts with MIP and MinIP.**
*S. Kobayashi, T. Masui, M. Katayama, T. Ito, H. Sakahara and A. Nozaki.*
Seirei Hamamatsu General Hospital and Hamamatsu University School of Medicine, Hamamatsu, Japan and GE Yokogawa Medical Systems, Tokyo, Japan.

*1484.* **MRCP Using 3D Half-Fourier RARE: Value of Workstation and Comparison With 3D Spiral CT Cholangiography.**
*K. Ohgi, H. Yamamoto, H. Yokote, T. Higami, T. Furukawa, H. Akiyama, T. Ishikawa, D. Nezu, S. Kimura, K. Murata, M. Higashi, S. Takemoto and K. Gotoh.*
Japanese Red-Cross Medical Center, Tokyo, Japan; Kasukabe-Shuwa Hospital, Saitama, Japan; Kitazato-Institute Hospital, Tokyo, Japan and Toshiba Medical Inc., Tochigi, Japan.

*1485.* **The Use of Progressive Oblique Plane Imaging to Enhance Visualization of the Distal Common Bile Duct by MRCP.**
*E.P. Tamm and A. Kawashima.*
University of Texas at Houston Medical School, Houston, TX, USA.

*1486.* **Kinematic Evaluation of the Abdomen: Multiphase MR Hydrography and Multiphase-Multislice MR Imaging.**
*T. Masui, M. Katayama, S. Kobayashi, T. Ito, Y. Nakaya, M. Kajimura, H. Sakahara and A. Nozaki.*
Seirei Hamamatsu General Hospital and Hamamatsu University School of Medicine, Hamamatsu, Japan and GE Yokogawa Medical System, Tokyo, Japan.

*1487.* **Dimethicone as a Selective Contrast Agent for the GI Tract in Humans.**
*R. Schwarz and J. Seelig.*
Biocenter of the University, Basel, Switzerland.

*1488.* **Use of Cine MR Imaging for Evaluation of Obstructive Sites in Small Bowel Obstruction (SBO): Preliminary Results.**
*T. Takahara, A. Nakamura, H. Haradome, T. Nitatori, J. Hachiya and M. Miyazaki.*
Kyorin University, Tokyo, Japan and Toshiba Medical Systems Divisions, Tochigi, Japan.

*1489.* **MR Colonography Using Colon Distension with Air: A New Technique Using High Resolution HASTE Imaging.**
*M. Morrin, M. Hochman, R. Farrell, M. Blake and R. Edelman.*
Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, USA.

*1490.* **Optimising Single-Shot Half-Fourier RARE Sequences for MR $CO_2$ Colography.**
*M.J. Graves, R.R. Sood and D.J. Lomas.*
Addenbrooke's Hospital, University of Cambridge, Cambridge, UK.

*1491.* **Echo-Planar Imaging in the GI Clinical Practice: Preliminary Results on Patients.**
*L. Marciani, P. Young, J. Wright, R.J. Moore, R.C. Spiller and P.A. Gowland.*
University of Nottingham. and Queen's Medical Centre, University Hospital, Nottingham, UK.

*1492.* **Evaluation of Obstructive Sites in Small Bowel Obstruction (SBO): Comparison of MR Residue Sign with MR Transition Zone and CT Transition Zone.**
*T. Takahara, Y. Kurihara, A. Nakamura, H. Haradome, T. Yamaguchi, T. Nitatori and J. Hachiya.*
Kyorin University, Tokyo, Japan and Yokohama Sakae Kyosai Hospital, Yokohama, Kanagawa, Japan.

*1493.* **High-Resolution MRI of the Normal Gut: Correlation with Histology and Delineation of Regional Differences.**
*A.D. Williams, T. Krausz and N.M. de Souza.*
Imperial College School of Medicine, Hammersmith Hospital, London, UK.

*1494.* **Stomach Diseases: MR Evaluation Using Combined $T_2$-Weighted Single Shot Echo Train Spin Echo and Gadolinium-Enhanced Spoiled Gradient Echo Sequences.**
*H.B. Marcos and R.C. Semelka.*
University of North Carolina, Chapel Hill, NC, USA.

*1495.* **$T_2$-Weighted Echo-Planar MR Imaging of the Abdomen: Optimization of Imaging Parameters.**
*T. Li and S.A. Mirowitz.*
Washington University School of Medicine, St. Louis, MO, USA.

*1496.* **MR Imaging of Gastric Cancer Using Single Shot Fast Spin Echo (SSFSE): Delineation of the Submucosal Layer.**
*S. Kiryu, M. Minami, M. Akahane, M. Miyazawa, Y. Okada, K. Ohtomo, H. Kabasawa, H. Satoh and Y. Takahashi.*
University of Tokyo and GE-Yokogawa Medical Systems, Tokyo, Japan.

## Rapid Imaging

Hall C
Monday: 14:00 – 16:00

*1497.* **Rapid Contrast-Enhanced FLASH-3D MR Imaging of the Brain with Segmented Application of Radio-Frequency Pre-Pulses.**
*P.J. Oliverio, L. Yao, D.M. Thomasson and D. Nguyen.*
Georgetown University, Washington DC, USA and Siemens Medical Systems, Iselin NJ, USA.

*1498.* **Black-Blood Cerebral MRA with a Multi-Contrast SIMVA Acquisition.**
*K. Liu and M. Loncar.*
Picker Medical System, Cleveland, OH, USA.

*1499.* **BURST Imaging with Steady-State Free Precession.**
*O. Heid.*
Siemens AG, Erlangen, Germany.

***1500.*** **True FISP Imaging with Inherent Cancellation.**
*M. Deimling and O. Heid.*
Siemens Medical Systems, Erlangen, Germany.

***1501.*** **Rapid Diffusion Imaging of the Human Spinal Cord Using Non-CPMG Single Shot FSE.**
*P. Le Roux, C.A. Clark, A. Darquie and P.G. Carlier.*
GE Medical Systems, Buc, France and Service Hospitalier Frederic Joliot, CEA, Orsay, France.

***1502.*** **The Time Origin of RUFIS Using a Stimulated Spin Echo.**
*J.-J. Hsu and I.J. Lowe.*
University of Pittsburgh and Carnegie Mellon University, Pittsburgh,PA, USA.

***1503.*** **Parallel Imaging Strategies for Reduction of Resonance Offset Induced Artifacts and k-space Filtering Effects.**
*R. Bammer, R. Stollberger, H.P. Hartung and F. Fazekas.*
University of Graz, Graz, Austria.

***1504.*** **SNR in Single-Shot Imaging Using Paritally Parallel Acquisition (PPA) Techniques.**
*M.A. Griswold, A. Haase and P.M. Jakob.*
University of Würzburg, Würzburg, Germany.

***1505.*** **Calculation of Signal-to-Noise Ratio for Coil Sensitivity Encoding Method.**
*J. Wang.*
Siemens Medical Engineering, Erlangen, Germany.

***1506.*** **Parallel Image Reconstruction from Multiple Receiver Arrays for Fast MRI.**
*W.E. Kyriakos, L.P. Panych, D.F. Kacher, C-F. Westin, S.M. Bao, R.V. Mulkern and F.A. Jolesz.*
Brigham and Women's Hospital and Children's Hospital, Boston, MA, USA.

***1507.*** **Method for combining UNFOLD with SENSE or SMASH.**
*P. Kellman and E.R. McVeigh.*
National Institutes of Health, Bethesda, MD, USA.

***1508.*** **Real-Time Multi-Slice Imaging.**
*H. Eggers and P. Boesiger.*
Philips Research, Hamburg, Germany and Swiss Federal Institute of Technology Zurich and University of Zurich, Zurich, Switzerland.

***1509.*** **Fast Three-Dimensional Spiral Imaging.**
*B.A. Hargreaves, C.H. Meyer, J.M. Pauly and D.G. Nishimura.*
Stanford University, Stanford, CA, USA.

***1510.*** **Spiral Imaging With Variable Sampling Rates.**
*O. Heid.*
Siemens AG, Erlangen, Germany.

***1511.*** **Tagged Imaging Using Limited Angle Projection Reconstruction.**
*D.C. Peters, F.H. Epstein and E.R. McVeigh.*
Institutes of Health, Bethesda, MD, USA.

***1512.*** **Advances in 3D $T_2$-Weighted Projection Imaging.**
*E. Esparza-Coss, W.F. Block, F. Kelcz, D.C. Peters, F.R. Korosec and C.A. Mistretta.*
CINVESTAV, Mexico City, Mexico; Universidad de Guanajuato, Leon, Mexico and University of Wisconsin, Madison, WI, USA.

***1513.*** **3D Multiphase Coronary Artery Imaging in a Single Breath-hold Using Undersampled Projection Reconstruction.**
*A.V. Barger, T.M. Grist, T.F. Hany and C.A. Mistretta.*
University of Wisconsin, Madison, WI, USA.

*1514.* **A Rapid Look-Up Table Method for Reconstructing MR Images from Arbitrary K-Space Trajectories.**
*B.M. Dale, M. Wendt and J.L. Duerk.*
Case Western Reserve University and University Hospitals of Cleveland, Cleveland, OH, USA.

*1515.* **Applying the Uniform ReSampling (URS) Algorithm to a Lissajous Trajectory: Fast Image Reconstruction with Optimal Gridding.**
*H. Moriguchi, M. Wendt and J.L. Duerk.*
University Hospitals of Cleveland and Case Western Reserve University, Cleveland, OH, USA.

*1516.* **FFFT for High Speed MR Fluoroscopy Reconstruction.**
*Y. Zhu.*
GE Corporate Research & Development, Schenectady, NY, USA.

*1517.* **Trajectory Measurement and Generalised Reconstruction in Rectilinear EPI.**
*O. Josephs, R. Deichmann and R. Turner.*
Institute of Neurology, London, UK.

*1518.* **Acquisition of Power Intensive Images at 8T.**
*A. Kangarlu and P-M L. Robitaille.*
The Ohio State University, Columbus, OH, USA.

*1519.* **Recovery of Lost Signal Due to Susceptibility Effect for EPI Sequences.**
*J. Mao, A.W. Song and Y. Liu.*
University of Florida, Gainesville, FL, USA and Duke University, Durham, NC, USA.

*1520.* **Automatic Adjustment of all First- and Second-Order Shims for Slices of Arbitrary Orientation.**
*J. Shen.*
The Nathan S. Kline Institute for Psychiatric Research, Orangeburg, NY, USA and New York University School of Medicine, New York, NY, USA.

*1521.* **Rapid High SNR EPI Based Field Maps Without the Need for Phase Unwrapping.**
*R.T. Constable, C. Studholme and D.D. Spencer.*
Yale University School of Medicine, New Haven, CT, USA.

*1522.* **Respiratory Phase Specific Reference Scan for EPI Ghost Correction.**
*E. Yacoub, K. Ugurbil and X. Hu.*
University of Minnesota School of Medicine, Minneapolis, MN, USA.

*1523.* **Correction of Motion Artifact on BURST Imaging.**
*S. Kurokawa, T. Matsuda, S. Urayama, N. Sugimoto, K. Hayashi, H. Inoue, M. Komori and S. Eiho.*
Kyoto University and Kyoto University Hospital, Kyoto, Japan; National Cardiovascular Center, Suita, Osaka, Japan and Rakuwakai Otowa Hospital, Kyoto, Japan.

*1524.* **Reduction of the Blurring Artifacts due to the Local Field Inhomogeneity in $T_2$*-Weighted EPI.**
*Q.X. Yang, H.E. Smith, R.J. Demeure and M.B. Smith.*
The Pennsylavania State University College of Medicine, Hershey, PA, USA and Université Catholique de Louvain, Brussels, Belgium.

*1525.* **Correction of EPI Distortion in Phantoms Using FLASH and EPI Fieldmap Techniques.**
*K. Baudendistel and L.R. Schad.*
Deutsches Krebsforschungszentrum (DKFZ), Heidelberg, Germany.

*1526.* **Reduction of Off-Resonance Artifacts in Fast Imaging by Mixing Slice and Frequency Selection.**
*D.C. Alsop.*
University of Pennsylvania Medical Center, Philadelphia, PA, USA.

*1527.* **3D IR Half-Fourier RARE for Thin-Section Dynamic MR Imaging.**
*S. Nakano, S. Uchinomura, M. Ohki, Y. Toyama, Y. Mori, M. Ohkawa, Y. Yamashita and S. Sugiura.*
Kagawa Medical University, Kagawa, Japan and Toshiba Medical Inc. and Toshiba Nasu Works, Tochigi, Japan.

*1528.* **MRI of P.C. Lauterbur's Birthday Cake: Bananas, Peaches, and Susceptibilities.**
*C. Maxton and J. Frahm.*
Universität Göttingen, and Biomedizinische NMR Forschungs GmbH, Göttingen, Germany.

*1529.* **Improved SNR in Breath-Hold Cardiac Cine Imaging by Slice Interleaving.**
*D.A. Herzka, F.H. Epstein and E.R. McVeigh.*
The Johns Hopkins University School of Medicine, Baltimore, MD, USA and National Institutes of Health, Bethesda MD, USA.

*1530.* **Non-CPMG Fast Spin Echo in Practice.**
*P. Le Roux.*
GE Medical Systems, Buc, France.

*1531.* **Comparison of 2- and 3-Point Dixon Techniques in RF- and Readout-Shifted FSE Sequences.**
*H.K. Song, A.C. Wright, R.L. Wolf and F.W. Wehrli.*
University of Pennsylvania Medical Center, Philadelphia, PA, USA.

## Cardiac and Vascular Image Processing

Hall C
Monday: 14:00 – 16:00

*1532.* **Multi-scale Line Enhancement Filtering for Intracranial Magnetic Resonance Angiography: Comparison of Minimum Roughness and Maximum Curvature for Vessel Enhancement.**
*B.E. Chapman and D.L. Parker.*
University of Utah, Salt Lake City, UT, USA.

*1533.* **A Comparison of Densiometric Projections with A Depth Buffer Segmentation to a MIP Display for Intracranial MRA.**
*B.E. Chapman, C.M. Glastonbury, K.R. Moore, D.K. White and D.L. Parker.*
University of Utah, Salt Lake City, UT, USA.

*1534.* **Skeletonized Maximum Intensity Projections for Runoff Vessels: A Method of Displaying Magnetic Resonance Angiograms.**
*H. Marcos, V. Ho, P. Choyke, R. Mullick and P Yim.*
National Institutes of Health and Uniformed Services University of the Health Sciences, Bethesda, MD, USA.

*1535.* **Improving Visualization of Blood Pool Agent MRA with Virtual Contrast Injection.**
*X. Tizon and Ö. Smedby.*
Swedish University of Agricultural Sciences, Uppsala, Sweden and University Hospital, Linköping, Sweden.

*1536.* **Automatic Registration of Precomputed Anatomical Templates for Rapid 3D Segmentation.**
*G. Shechter and E.R. McVeigh.*
Johns Hopkins University, Baltimore, MD, USA and National Institutes of Health, Bethesda, MD, USA.

*1537.* **Segmentation of Time-of-Flight Images Using Thresholding and Region-Growth Estimation Techniques (TARGET) to Suppress Fat Signals on Projected Views.**
*Y-H. Kao, C-Y. Chang, A. Lin, A-L. Lin, W-Y. Guo and J-F. Lirng.*
National Yang-Ming University and Veteran General Hospital, Taipei, Taiwan, ROC.

***1538.*** **Autocorrection of Motion Corruption in 3D Time-of-Flight MR Angiograms of the Circle of Willis.**
*K.P. McGee, J.P. Felmlee, C. Jack, Jr., A. Manduca, S.J. Riederer and R.L. Ehman.*
Mayo Clinic Rochester, MN, USA.

***1539.*** **Contrast-Enhanced MRA Imaging Time-Sense Artery and Vein Separation.**
*M. Zhang, W. Li and R.R. Edelman.*
Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, USA.

***1540.*** **Time Series Method for Automated Segmentation of Blood Vessels and CSF Lumens.**
*N. Alperin and S.H. Lee.*
University of Illinois at Chicago, Chicago, IL, USA.

***1541.*** **Utilizing Supplementary Flow Information in Dual Contrast SIMVA for Black-Blood MRA.**
*K. Liu and P. Margosian.*
Picker Medical System, Cleveland, OH, USA.

***1542.*** **Quantitataive Analysis of the Carotid Stenosis Using 3D MR and CT Images.**
*C.T. Roque, D. Chen, B. Li and Z. Liang.*
State University of New York, Stony Brook, NY, USA.

***1543.*** **Conenctivity and Segmentation of MR Coronary Arteries.**
*H.E. Cline and S. Ludke.*
GE Corporate Research and Development, Schennectady NY, USA.

***1544.*** **A Graph Searching Technique for Semi-Automated Visualization in Three-Dimensional Coronary Angiography.**
*D.R. Thedens.*
University of Iowa, Iowa City, IA, USA.

***1545.*** **A New Multi-Planar Interpolation Technique for Three Dimensional Medical Image Rendering Using Laplace's Equation.**
*J.H. Yoon, C.Y. Kim, H.J Kim, D.H. Lee and C.B. Ahn.*
Kwangwoon University, Seoul, Korea.

***1546.*** **Flow Encoded EPI Visualised with the Daubechies 2D Wavelet.**
*A. Rodríguez-González and P. Mansfield.*
UAM-Iztapalapa, México and The University of Nottingham, Nottingham, UK.

***1547.*** **Two Phase Segmentation Method for Cardiac MRI Data Involving Deformable Contour and Deformable Model.**
*P. Makowski, T.S. Sørensen, S.V. Therkildsen, H. Stødkilde-Jørgensen and E.M. Pedersen.*
Technical University, Lodz, Poland; University of Aarhus and Aarhus University Hospital, Aarhus, Denmark.

***1548.*** **Automated 3D Tracking of Select LV Material Points Using Tagged MRI.**
*W.S. Kerwin.*
University of Washington, Seattle, WA, USA.

***1549.*** **A New Method for Automatic Tracking and Analysis of MR Images of the Heart.**
*M.F. Santarelli, V. Positano, L. Landini, M. Lombardi, A. Benassi, A. L'Abbate, M.J. Graves and R.A.R. Coulden.*
CNR Institute of Clinical Physiology, Pisa, Italy and Addenbrooke's Hospital, Cambridge, UK.

***1550.*** **Validation of Interpolation Technique for Heart Wall Motion Derived from MR Tagged Images.**
*S. Urayama, T. Matsuda, N. Sugimoto and N. Yamada.*
National Cardiovascular Center, Osaka, Japan and Kyoto University, Kyoto, Japan.

***1551.*** **An Integrated System for Measuring Regional Cardiac Function Using Harmonic Phase MRI.**
*N.F. Osman and J.L. Prince.*
Johns Hopkins University, Baltimore, MD, USA.

***1552.*** **Real-Time Interactive Visualization of the Cardiovascular System Based on Cardiac MRI.**
*T.S. Sørensen, S.V. Therkildsen, P. Makowski, J.L. Knudsen and E.M. Pedersen.*
University of Aarhus and Aarhus University Hospital, Aarhus, Denmark.

***1553.*** **Postprocessing of 3D MRI for Computer Assisted Surgery of the Lumbar Spine.**
*C.L. Hoad, A.L. Martel and J. Webb.*
University Hospital, Queen's Medical Centre, Nottingham, UK.

***1554.*** **Multitracer and Multimodal Coregistration and Fusion in Static and Gated Cardiac Studies.**
*S. Nekolla, T. Ibrahim, K. Schreiber, F. Bengel and M. Schwaiger.*
Technische Universität, München, Germany.

***1555.*** **Registration of Three-Dimensional Cardiac MRI and CT Images.**
*B. Sturm, E. Fisher, P.R. Schvartzman, S.S. Halliburton and R.D. White.*
The Ohio State University, Columbus, OH, USA and The Cleveland Clinic Foundation, Cleveland, OH, USA.

***1556.*** **Validation and Application of a Perceptual Difference Model for Keyhole MR Imaging.**
*K.A. Salem, J.L. Duerk, M. Wendt, J.S. Lewin, A.J. Aschoff and D.L. Wilson.*
Case Western Reserve University and University Hospitals of Cleveland, Cleveland, OH, USA.

***1557.*** **A Fast and Efficient Method for Compression of Digital Image Time Series.**
*M.S. Cohen.*
UCLA School of Medicine, Los Angeles, CA, USA.

## Myocardial Perfusion Imaging

Hall C
Wednesday: 13:30 – 15:30

***1558.*** **Assessment of First-Pass Stress and Rest Myocardial Perfusion Imaging Using Interleaved Notched Saturation: Comparison with Cardiac Catheterization.**
*S.D. Wolff, C.R. Comeau, G.S. Slavin, T.K.F. Foo and R.A. Hershman.*
Integrated Cardiovascular Therapeutics, Woodbury, NY, USA and GE Medical Systems, Milwaukee, WI, USA.

***1559.*** **High Resolution $T_2$-Weighted First-Pass Myocardial Perfusion Imaging Using Outer-Volume Suppression and the Intravascular Contrast Agent NC100150 Injection.**
*T. Bjerner, L.O. Johansson, A. Bjornerud, G. Wikstrom, H. Ahlström and A. Hemmingsson.*
Nycomed Imaging A/S, Oslo, Norway and Uppsala University Hospitals, Uppsala, Sweden.

***1560.*** **Qualitative Magnetic Resonance Perfusion Imaging in Patients with Coronary Artery Disease.**
*G.R. Cherryman, P.R. Sensky, A. Jivan, C. Reek and N.J. Samani.*
University of Leicester, Glenfield General Hospital NHS Trust, Leicester, UK.

***1561.*** **Quantification of Regional Myocardial Blood Flow in Patients with Coronary Artery Disease by Magnetic Resonance Imaging (MRI) and Positron Emission Tomography (PET).**
*T. Ibrahim, S. Nekolla, K. Schreiber, K. Odaka, S. Volz, M. Güthlin, W. Delius and M. Schwaiger.*
Technische Universität, München, Germany and Krankenhaus München, Bogenhausen, Germany.

***1562.*** **Compensation for Coil Sensitivity Inhomogeneities in Cardiac Perfusion Imaging.**
*P. Storey, M. Zhang, W. Li, D. Bloomgarden, L. Li, R. Edelman and P. Prasad.*
Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, USA.

*1563.* **Imaging Myocardial Ischemia with AngioMARK in the Pig.**
*C.H. Lorenz, M. Taniuchi, J.S. Allen, M. McLean, J.M. Chia, S. Flacke, R.M. Setser, K. Lahti, T. Chan and R. Weisskoff.*
Barnes-Jewish Hospital, Washington University School of Medicine, St. Louis, MO, USA and EPIX Medical, Inc., Cambridge, MA, USA.

*1564.* **How Good is Qualitative Analysis of 1st Pass Gd-DTPA Multislice Myocardial Perfusion Imaging for Clinical Evaluation?**
*D.C. Bloomgarden, P. Storey, W. Li, M. Zhang, L. Li, P. Prasad and R. Edelman.*
Beth Israel Deaconess Medical Center, Boston, MA, USA.

*1565.* **Clinical Application of Myocardial Perfusion Post PTCA with SE-EPI.**
*F.B. Gao, Y.G. Gao, B.S. Qiu, Y. Liang, Y.Q. Cai and X.Y. Ma.*
PLA General Hospital and GE Medical Systems China, Beijing, China.

*1566.* **Myocardial Perfusion Mapping With an Intravascular MR Contrast Agent: Performances of Deconvolution Methods at Various Flows.**
*B. Neyran, M. Janier, C. Casali, D. Revel and E. Canet.*
Hôpital Cardiologique and INSA, Lyon, France.

*1567.* **Blood-Oxygenation-Level-Dependent (BOLD) MRI in Patients with Symptoms of Coronary Artery Disease.**
*M.G. Friedrich, T. Niendorf, J. Schulz-Menger, O. Strohm and R. Dietz.*
Franz-Volhard-Klinik, University of Berlin, Berlin, Germany and GE Medical Systems, Leipzig, Germany.

*1568.* **Quantitative Assessment of Myocardial Perfusion by First-Pass Dynamic MRI of Intravascular Contrast Agent: Effect of Dose and Hemodynamic State.**
*W.G. Schreiber, G. Horstick, M. Schmitt, S. Petersen, T. Balzer, K-F. Kreitner, T. Voigtländer, J. Meyer and M. Thelen.*
Johannes Guttenberg-University, Mainz, Germany and Schering AG, Berlin, Germany.

*1569.* **Quantitative Evaluation of Contrast Enhancement in the Normal Myocardium Using a Fast Myocardial Perfusion Sequence with Echo-Planar Readouts.**
*H. Kubo, H. Sakuma, N. Kawada, A. Nozaki, H. Kabasawa, K. Nagasawa and K. Takeda.*
Mie University School of Medicine, Mie, Japan and GE Yokogawa Medical Systems, Tokyo, Japan.

## MR Imaging of Myocardial Function, Hemodynamics, and Disease

Hall C
Monday: 14:00 – 16:00

*1570.* **Using Population Data to Calibrate MRI-Based Blood Oxygen Saturation Measurements in CHD Patients and Volunteers.**
*X. Qi and G.A. Wright.*
University of Toronto, Toronto, ON, Canada.

*1571.* **Model-Based Registration of Cardiac CTA and MR Acquisitions.**
*T. O'Donnell, S. Aharon, S.S. Halliburton, A. Gupta, G. Funka-Lea and R.D. White.*
Siemens Corp Research, Princeton, NJ, USA and Cleveland Clinic Foundation, Cleveland, OH, USA.

*1572.* **Qualitative and Quantitative Assessment of Regional Left Ventricular Wall Thickening in Short Axis MR Images of Patients with Coronary Artery Disease Using z-score for Comparison to a Normal Database.**
*G.D. Waiter, A. Al-Mohammad, S.I.K. Semple and T.W. Redpath.*
University of Aberdeen and Grampian University Hospitals NHS Trust, Foresterhill, Aberdeen, UK.

*1573.* **MRI-Derived Left Ventricular Mass in End-Diastole and End-Systole: Effect of Endocardial Trabeculae on the Observed Wall Thickening.**
*J.T. Marcus, J.P.A. Kuijer, M.J.W. Götte, R.M. Heethaar and A.C. Van Rossum.*
Vrije Universiteit, Amsterdam, The Netherlands.

*1574.* **Determination of LV-Mass in Patients Using a "Black-Blood" Single Shot Fast Spin Echo Sequence with Millimetric Spatial Resolution.**
*O. Vignaux, C. Argaud, P.G. Carlier, P. Le Roux and P. Legmann.*
Hospital Cochin, Paris, France; SHFJ-DRM, Orsay, France and GE Medical Systems, Buc, France.

*1575.* **Quantitative Wall Motion Assessment with Real Time MR Imaging.**
*S. Flacke, R.M. Setser, S.E. Fischer and C.H. Lorenz.*
Barnes-Jewish Hospital at Washington University Medical Center, St. Louis, MO, USA.

*1576.* **Full Cardiac Coverage in a Single Breath-Hold Using Ultrafast MR Imaging.**
*H.J. Lamb, P. Kunz, J. Doornbos and A. de Roos.*
Leiden University Medical Center, Leiden, The Netherlands.

*1577.* **MR Evaluation of Ventricular Function: True FISP Versus FLASH.**
*J. Barkhausen, S.G. Ruehm, M. Goyen, K.H. Truemmler, G. Laub and J.F. Debatin.*
University Hospital, Essen, Germany and Siemens Medical Systems, Erlangen, Germany.

*1578.* **Single Breath-hold 3D Multiphase Contrast-Enhanced Method for Assessment of Cardiac Function.**
*A.V. Barger, T.M. Grist, W.F. Block and C.A. Mistretta.*
University of Wisconsin, Madison, WI, USA.

*1579.* **The Need for Motion Correction in the Quantification of Mitral Regurgitation Using the Control Volume Method.**
*P.G. Walker, K. Houlind, C. Djurhuus, W.Y. Kim and E.M. Pedersen.*
University of Leeds, Leeds, UK and Aarhus University Hospital, Aarhus, Denmark.

*1580.* **Low Body Negative Pressure and Cardiac MRI: Observations of Global and Regional Left Ventricular Changes.**
*S.J. Wilson, S.E. Rose, F. Chen, D. Rose, C.J. Bennett, K. McMahon, G.J. Galloway and D.M. Doddrell.*
University of Queensland, Saint Andrews War Memorial Hospital and Royal Brisbane Hospital, Brisbane, Australia.

*1581.* **Echo-Planar MR Imaging of Left Ventricular Aneurysm Resection.**
*H.J. Lamb, M.I.M. Versteegh and A. de Roos.*
Leiden University Medical Center, Leiden, The Netherlands.

*1582.* **MRI Evaluation of Pulmonary Venous Flow Pattern in Hypertrophic Cardiomyopathy.**
*R. Wassmuth, K.E.B. Bettis, L. Fananapazir and A.E. Arai.*
National Institutes of Health, Bethesda, MD, USA.

*1583.* **Assessment of Hemodynamic Changes in Patients with Chronic Thromboembolic Pulmonary Hypertension (CTEPH) before and after Thromboendarterectomy (PTE) by Breath-Hold MR Techniques.**
*K-F. Kreitner, S. Ley, H-U. Kauczor, P. Kalden, E. Mayer and M. Thelen.*
Johannes Gutenberg-University, Mainz, Germany.

*1584.* **Estimation of the Left Ventricular Peak dp/dt by Magnetic Resonance Imaging.**
*J.P. Tasu, E. Mousseaux, P. Colin, M. Slama, O. Jolivet and J. Bittoun.*
Université Paris-Sud, Le Kremlin-Bicêtre, France and Hôpital Antoine Béclère, France.

*1585.* **Early Intracavitary Left Ventricular Diastolic Inflow Characteristics in Patients With Aortic Stenosis. Magnetic Resonance Velocity Mapping Related To Pressure Dynamics.**
*K. Houlind, H.R. Ivarsen, O. Eschen, P. Schroeder, H. Stødkilde-Jørgensen, S. Milet, A.P. Yoganathan, P.K. Paulsen, H. Egeblad and E.M. Pedersen.*
Aarhus University Hospital, Aarhus, Denmark and Georgia Institute of Technology, Atlanta, GA, USA.

***1586.*** **Effect of Partial Oxygen Pressure and Hematocrit on $T_1$ Relaxation in Human Blood.**
*P. Hueckel, W.G. Schreiber, K. Markstaller, M. Bellemann, H.U. Kauczor and M. Thelen.*
Johannes Gutenberg-University, Mainz, Germany and University of Applied Sciences, Jena, Germany.

***1587.*** **Can Simultaneous Antegrade/Retrograde Cardioplegia Protect the Myocardium Distal to a Coronary Occulsion? Localized $^{31}$P MR Spectroscopy, MR Imaging and Fluorescence Imaging Studies on Isolated Pig Hearts.**
*G. Tian, G. Dai, B. Xiang, J. Sun, R. Mangat, J. Docherty, J. Mark, L. Gregorash, W. Richter, B. Kuzio, W. Lindsay and R. Deslauriers.*
National Research Council and University of Manitoba, Winnipeg, Manitoba, Canada.

***1588.*** **Evaluation of Left Ventricular Hypertrophy by Single-Shot Spin Echo Imaging of Hypertensive Rat Heart.**
*P.G. Carlier, E. Parzy, E. Giacomini, C. Wary and A. Leroy-Willig.*
Pitié-Salpêtrière, Paris, France.

***1589.*** **Follow-up of Changes of Cardiac Geometry and Function in a Mouse Model of Pressure Induced Hypertrophy with Magnetic Resonance Microimaging.**
*F. Wiesmann, C. Ritter, R. Illinger, C. Dienesch, A. Leupold, J. Ruff, E. Rommel, A. Haase and S. Neubauer.*
University of Wuerzburg, Wuerzburg, Germany.

***1590.*** **Early Detection of Mild Acute Rejection in Transplanted Hearts by Multi-Dimensional Cardiac Magnetic Resonance Imaging.**
*Y-J. Lin Wu, S. Kanno, S.J. Dodd, D.S. Williams and C. Ho.*
Carnegie Mellon University, Pittsburgh, PA, USA.

***1591.*** **A Novel Approach Using Magnetic Resonance Technique for the Detection of Cardiac Allograft Rejection.**
*S. Kanno, P.C. Lee, Y-J. Lin Wu, S.J. Dodd, M. Williams, D.S. Williams, T.R. Billiar and C. Ho.*
Carnegie Mellon University and University of Pittsburgh, Pittsburgh, PA, USA.

***1592.*** **The Use of Magnetization Transfer Contrast in Percutaneous Transluminal Septal Myocardial Ablation in Hypertrophic Obstructive Cardiomyopathy: Acute Results Clinical Application in the Human Heart.**
*K.O. Agyeman, A.H. Aletras, L. Fananapazir and A.E. Arai.*
National Institutes of Health, Bethesda, MD, USA.

## MR Imaging of Myocardial Infarction

Hall C
Wednesday: 13:30 – 15:30

***1593.*** **Preliminary Evaluation of EVP 1001-1: A New Cardiac Specific MR Contrast Agent with Optimal Kinetics for Evaluation of the Ischemic Heart.**
*P.V. Prasad, M. Post, P. Storey, W. Li, P.R. Seoane, P.P. Harnish and R.R. Edelman.*
Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, MA, USA and Eagle Vision Pharmacuetical Corp, Chester Springs, PA, USA.

***1594.*** **Delayed Contrast Enhancement Magnetic Resonance Imaging Identifies Acute Myocardial Infarction in Humans and Correlates with Extent of Myocardial Damage.**
*R.B. Minton, J.M. Wilson, R. Muthupillai, M. Pereyra, A. Achari and S.D. Flamm.*
Texas Heart Institute, Houston, TX, USA and Philips Medical System, Best, Netherlands.

*1595.* **Comparison of Infarct Size Using $T_2$ Weighted Turbo Spin-Echo MRI to Pathology in a Canine Model of Ischemic Heart Disease.**
*S.D. Buchthal, I.M. Sträter-Knowlen, G.M. Pohost and J.A. den Hollander.*
University of Alabama, Birmingham, AL, USA.

*1596.* **Myocardial Postcontrast $T_1$ Enhancement Corresponds to Decreased Regional FDG Activity in Patients with Multivessel Coronary Artery Disease.**
*K. Lauerma, T. Janatuinen, H.A. Hänninen, P. Niemi, L.M. Voipio-Pulkki, L. Toivonen, J. Knuuti and H.J. Aronen.*
Helsinki University Central Hospital, Helsinki, Finland and PET Centre, Turku, Finland.

*1597.* **The Severity of Microvascular Damage Immediately Following Myocardial Infarction May Not be Sufficient to Allow Extravascular Escape of a Blood Pool Contrast Agent into the Injured Region.**
*J. Mark, G. Dai, B. Xiang, J. Sun, J. Shen, N. Lazarow, W.G. Lindsay, R. Deslauriers and G. Tian.*
National Research Council Canada, Winnipeg, Manitoba, Canada; Dayton VA Medical Center, Dayton, OH, USA and University of Manitoba, Winnipeg, Manitoba, Canada.

*1598.* **Early *In Vivo* Markers of Myocardial Lesion Following Coronary Ligation in Rats.**
*S. Lenhard, L. Clark, J. Chen, T. Schaeffer, S. Sarkar, E.H. Ohlstein, T.L. Yue and S. Chandra.*
SmithKline Beecham Pharmaceuticals, King of Prussia, PA, USA.

*1599.* **Combined $^{87}$Rb and $^{23}$Na NMR for Imaging Infarction in Isolated Pig Hearts.**
*V.V. Kupriyanov, G. Dai, J. Sun, O. Jilkina, Z. Luo and R. Deslauriers.*
National Research Council Canada and University of Manitoba, Winnipeg, Manitoba, Canada.

*1600.* **Infarct Size Measurement with 3D $^{23}$Na MRI in Chronically Infarcted Rat Hearts.**
*C. Weidensteiner, M. Horn, S. Neubauer and M. v. Kienlin.*
Universität Würzburg, Würzburg, Germany.

*1601.* **$T_2$-Weighted MRI Predicts Functional Loss Early After Myocardial Infarction in Dogs: Comparison with Bis-Gadolinium-Mesoporphyrin Enhanced $T_1$-Weighted MRI and Functional Data from Cine MRI.**
*S. Dymarkowski, Y. Ni, Y. Miao, J. Bogaert, F.E. Rademakers, H. Bosmans, U. Speck, W. Semmler and G. Marchal.*
University Hospital KU, Leuven, Belgium and Schering AG, Berlin, Germany.

*1602.* **Protective Effects of Nicorandil in Reducing Myocardial Infarct Size Demonstrated by Necrosis Specific MR Contrast Media.**
*M. Saeed, G. Lund, M.F. Wendland, H-J. Weinmann and C.B. Higgins.*
University of California, San Francisco, CA, USA and Schering AG, Berlin, Germany.

## Myocardial Motion and Techniques

Hall C
Thursday: 13:30 – 15:30

*1603.* **Diagnostic Value of the Electrocardiogram During Cardiac MRI Stress Testing.**
*S.E. Fischer, J. Chia, P. Vugts, S.A. Wickline and C.H. Lorenz.*
University Medical Center, St. Louis, MO, USA and Philips Medical Systems, Best, The Netherlands.

*1604.* **An Evaluation of Left Ventricular Torsion of the Paced Canine Heart with MRI Tagging.**
*J.M. Sorger, B.T. Wyman, O.P. Faris, W.C. Hunter and E.R. McVeigh.*
Johns Hopkins University School of Medicine, Baltimore, MD, USA.

*1605.* **Automatic Analysis of Tagged MR Images.**
*L. Dougherty, J.C. Asmuth and J.M. Giammarco.*
Hospital of the University of Pennsylvania, Philadelphia, PA, USA and Sarnoff Corporation, Princeton NJ, USA.

***1606.*** **Ventricular Twist Allows Sensitive Detection of Early-Stage Diabetic Cardiomyopathy in the Rat.**
*C.H. Lorenz, J.S. Allen, K.J. Lunn, C. Dent and S.A. Wickline.*
Washington University Medical Center, St. Louis MO, USA.

***1607.*** **RingTag: Assessment of Myocardial Midwall Motion in Volunteers and Patients with Myocardial Hypertrophy.**
*M. Spiegel, R. Luechinger, O. Weber, M.B. Scheidegger, J. Schwitter and P. Boesiger.*
University and ETH Zurich and University Hospital, Zurich, Switzerland.

***1608.*** **Human Heart Imaging with Dual-Echo DENSE.**
*A.H. Aletras, R.S. Balaban and H. Wen.*
National Institutes of Health, Bethesda, MD, USA.

***1609.*** **Myocardial Tagging at Frame Rates Exceeding 100 Frames Per Second.**
*F.H. Epstein, M.A. Guttman, M.S. Elliot and E.R. McVeigh.*
National Institutes of Health, Bethesda, MD, USA.

***1610.*** **Quantitative Evaluation of Regional Strain in Mice Using SPAMM Tagging and DENSE.**
*A. Kolandaivelu and R.S. Balaban.*
National Institutes of Health, Bethesda, MD, USA.

***1611.*** **Detection of Localized Disturbances of Myocardial Motion by Means of Phase Contrast MRI and Correlation Analysis.**
*M. Markl, B. Schneider and J. Hennig.*
University of Freiburg, Freiburg, Germany.

***1612.*** **Motion Analysis of Both Ventricles Using Tagged-MRI in Paced Canine Hearts.**
*C. Ozturk and E.R. McVeigh.*
Johns Hopkins University School of Medicine, Baltimore, MD, USA and National Institutes of Health, Bethesda, MD, USA.

***1613.*** **CSPAMM Assessment of Systolic and Diastolic Left Ventricular Apical Rotation in Obesity.**
*P.G. Danias, M. Stuber, N.A. Tritos, C. Salton, K.V. Kissinger and W.J. Manning.*
Beth Israel Deaconess Medical Center, Harvard Medical School and Joslin Clinic, Harvard Medical School, Boston, MA, USA and Philips Medical Systems, Best, The Netherlands.

***1614.*** **Assessment of Canine Cardiomyoplasty Using Tissue Tagging at 4T.**
*L. Dougherty, J.J. Pilla, A.S. Blom, S.A. Pusca and M.A. Acker.*
Hospital of the University of Pennsylvania Philadelphia, PA, USA.

***1615.*** **Comparison of Phase Contrast MR with Tagging in Evaluation of Myocardial Motion.**
*M. Motooka, M. Markl, S. Urayama, N. Yamada, H. Iida, T. Matsuda, M. Takamiya and S. Sasayama.*
Kyoto University Hospital, Kyoto, Japan; National Cardiovascular Center, Suita, Japan and Freiburg University, Freiburg, Germany.

***1616.*** **Temporal Relationship of Left Ventricular Angular Displacement, Torsion and Strain Assessed by High Frame Rate Tagged Cardiac Magnetic Resonance Imaging.**
*C.H. Scott, B.S. Ivey, K.J. Duffy, V.A. Ferrari, L. Axel and M.G.S.J. Sutton.*
University of Pennslvania School of Medicine, Philadelphia, PA, USA.

***1617.*** **A Tool for Performing MR Based Cardiac Stress Function Exams with Realtime Acquisition, Reconstruction, Display and Analysis.**
*J.A. Derbyshire, D. Rettmann, M. Saranathan, T.K.F. Foo, B. M. Hoppel and M. Montequin.*
GE Medical Systems, Waukesha, WI, USA.

***1618.*** **A Complex Subtraction Technique for Myocardial Slice Tracking Using a Comb Excitation Preparation.**
*C.L. Charrier, P.D. Gatehouse and D.N. Firmin.*
Royal Brompton Hospital and Imperial College, London, UK.

*1619.* **Reduced Contractile Reserve and Diastolic Dysfunction in a Transgenic Mouse Model with b1-Adrenergic Receptor Overexpression Assessed by MRI.**
*F. Wiesmann, S. Engelhardt, J. Ruff, C. Ritter, L. Hein, M. Lohse, A. Haase and S. Neubauer.*
University of Wuerzburg, Wuerzburg, Germany.

*1620.* **ECG-Triggered Segmented 3D $^{23}$Na Gradient Echo Movie MRI of the Human Heart.**
*A. Greiser, A. Haase and M. von Kienlin.*
Physikalisches Institut, Würzburg, Germany.

*1621.* **Cardiovascular Imaging Using a Fast Spin-Echo Sequence with Radial Acquisition.**
*M.I. Altbach, R.J. Theilmann, T.P. Trouard and A.F. Gmitro.*
University of Arizona, Tucson, AZ, USA.

*1622.* **Human Cardiac Imaging at 3 Tesla Using Phased Array Coils.**
*R. Noeske, F. Seifert, K-H. Rhein and H. Rinneberg.*
Physikalisch-Technische Bundesanstalt, Berlin, Germany.

*1623.* **Cardiac Imaging at 4 Tesla.**
*L. Dougherty, T.J. Connick and G. Mizsei.*
Hospital of the University of Pennsylvania, Philadelphia, PA, USA.

## Coronary MR Angiography

Hall C
Thursday: 13:30 – 15:30

*1624.* **A Computationally Efficient Algorithm for Accurate Detection of Diaphragm Displacement in Naviagated 3D Coronary MR Angiography.**
*Y.P. Du, M. Saranathan, D.A. Bluemke, Y. Wang and T.K.F. Foo.*
GE-Medical Systems, Milwaukee, WI, USA and Johns Hopkins University, Baltimore, MD, USA.

*1625.* **Selected the Optimal Period of Diastole for Eliminating Cardiac Motion in Coronary MRA by the Use of an ECG-Triggered Navigator Echo Technique.**
*Y. Wang, R. Watts, J. Bezenson, I. Mitchell, T. Ngyen and M. Prince.*
Weill Medical College of Cornell University, New York, NY, USA.

*1626.* **Simulation Tool for k-Space Reordering in Free-Breathing Navigator-Gated 3D Coronary MRA.**
*M.E. Huber, D. Hengesbach, R.M. Botnar, P. Boesiger, W.J. Manning and M. Stuber.*
Beth Israel Deaconess Medical Center & Harvard Medical School, Boston, MA, USA; Philips Medical Systems, Best, the Netherlands and University and ETH, Zurich, Switzerland.

*1627.* **3D Coronary-Artery Imaging with Two-Dimensional Images of the Artery as Navigators.**
*G.T. Luk-Pat, T.S. Sachs, Z.A. Fayad and Y. Wang.*
Mount Sinai School of Medicine, New York, NY, USA; Stanford University, Stanford, CA, USA and General Electric Medical Systems, Milwaukee, WI, USA.

*1628.* **Scan Time Reduction in Coronary MRA by Simultaneous Acquisition of Two 3D Stacks.**
*D. Manke, P. Börnert, K. Nehrke and O. Dössel.*
Universität Karlsruhe, Karlsruhe, Germany and Philips Research, Hamburg, Germany.

***1629.*** **Improved 3D Breath-Hold Volume-Targeted Imaging of Coronary Arteries with Extravascular Contrast Agent.**
*D. Li, J. Carr, S.M. Shea, J. Zheng, P. Wielopolski, V.S. Deshpande, R. Kroeker, M. Ricciardi, R. Kim, G. Laub and J.P. Finn.*
Northwestern University and Bracco Diagnostics, Chicago, IL, USA; Dr. Daniel den Hoed Kliniek, Rotterdam, Netherlands and Siemens Medical Systems, Chicago, IL, USA.

***1630.*** **Improving 3D Segmented Echo-Planar Coronary Artery Imaging with Extracellular Contrast Agents.**
*V.S. Deshpande, P. Wielopolski, S.M. Shea, J. Carr, J. Zheng, G. Laub, J.P. Finn and D. Li.*
Northwestern University, Chicago, IL, USA; Dr. Daniel den Hoed Kliniek, Rotterdam, Netherlands and Siemens Medical Systems, Chicago, IL, USA.

***1631.*** **Evaluation of 3D Magnetic Resonance Coronary Angiography with Clariscan™ in Humans: Correlation with X-Ray Angiography.**
*R.M. Setser, L.O.M. Johansson, S.A. Wickline and C.H. Lorenz.*
Barnes-Jewish Hospital, St. Louis, MO, USA and Nycomed Amershman Imaging, Oslo, Norway.

***1632.*** **Spiral Coronary Angiography Using the Intravascular Contrast Agent NC100150 Injection.**
*E.M. Pedersen, M. Pedersen, J. Rickers, L.O. Johansson, P. Börnert and S. Ringgaard.*
Aarhus University Hospital, Aarhus, Denmark; Nycomed Imaging A/S, Oslo, Norway and Philips Research Laboratory, Hamburg, Germany.

***1633.*** **Intravascular Contrast-Enhanced Coronary MR Angiography: Relationship Between Coronary Artery Delineation and Blood $T_1$.**
*J. Zheng, F.M. Cavagna, J.P. Finn, F. Maggioni, G. Laub, O. Simonetti and D. Li.*
Bracco, S.p.A, Milan, Italy and Northwestern University and Siemens Medical Systems, Chicago, IL, USA.

## Cardiac MR Spectroscopy: Animal Models and Extracts

Hall C
Thursday: 13:30 – 15:30

***1634.*** **Na/H Exchange Inhibitor Effects on Myocardial Function & pH During Ischaemia/Reperfusion.**
*K. Thompson, R.T. Thompson, J. Sykes and G. Wisenberg.*
Lawson Research Institute and St. Joseph's Health Center, London, Ontario, Canada.

***1635.*** **Comparison of Isoflurane and Propofol Anaesthesia on Cardiac Function and pH During Ischaemia/Reperfusion.**
*K. Thompson, R.T. Thompson, J. Sykes and G. Wisenberg.*
Lawson Research Institute and St. Joseph's Health Center, London, Ontario, Canada.

***1636.*** **Fatty Acid Oxidation In Rats Fed with Etomoxir Enriched Diet.**
*L.S. Szczepaniak, C. Storey, J.D. McGarry and R.L. Dobbins.*
University of Texas, Southwestern Medical Center, Dallas, TX, USA.

***1637.*** **Cardiac Substrate Oxidation After Acute Carnitine Palmitoyl Transferase-I Suppression.**
*P.E. Meyer, R.Y. Chao, J.B. Patel, J.D. McGarry and M.E. Jessen.*
University of Texas Southwestern Medical Center, Dallas, TX, USA.

***1638.*** **On the Disparity Between Myocardial Substrate Uptake and Metabolism *in Situ*: *In Vivo* $^{13}$C-MRS Provides a New Perspective.**
*A. Ziegler, C.E. Zaugg, P.T. Buser, J. Seelig and B. Künnecke.*
Biocenter of the University, University Hospital and F. Hoffman-La Roche, Basel, Switzerland.

*1639.* **Mitochondrial Creatine Kinase is Critically Necessary to Maintain a Normal Profile of Myocardial High-Energy Phosphates.**
*M. Spindler, R. Niebler, M. Horn, T. Lanz, K. Schnackerz and S. Neubauer.*
University of Wuerzberg, Wuerzberg, Germany.

*1640.* **Simultaneous Measurement of Tissue Energetics and Oxygenation in Pig Hearts Using $^{31}$P NMR and Optical Spectroscopy.**
*V.V. Kupriyanov, R.A. Shaw, J. Sun, Z. Luo, G. Dai, H.H. Mantsch and R. Deslauriers.*
National Research Council, Winnipeg, Manitoba, Canada.

*1641.* **$Na^+$-$K^+$ ATPase Activity in Pyruvate-Reperfused Isolated Rat Hearts: No Enhancement by Pyruvate-Dehydrogenase Activation.**
*J.G. van Emous, M.G.J. Nederhoff, T.J.C. Ruigrok and C.J.A. van Echteld.*
University Medical Center and Interuniversity Cardiology Institute (ICIN), Utrecht, The Netherlands.

*1642.* **$^{13}$C MRS Metabolic Studies of Isolated Superfused Heart Mitochondria.**
*N.M. Doliba, A.M. Babsky, S. Wehrli, N.M. Doliba, A. Savchenko and M.D. Osbakken.*
University of Pennsylvania and Children's Hospital of Philadelphia, Philadelphia, PA, USA and Covance, Princeton, NJ, USA.

*1643.* **Metabolic Flux Measurements by $^{13}$C NMR in Isolated Rat Heart Mitochondria.**
*S. Kamzolova, D. Varadarajan, A.D. Sherry, F.M.H. Jeffrey and C.R. Malloy.*
University of Texas, Southwestern Medical Center, Dallas TX, USA and University of Texas at Dallas, Richardson, TX, USA.

*1644.* **Characterisation of Atherosclerotic Intima Using Magic Angle Spinning (MAS) MRS.**
*W. Lo, P. Russell, S. Dowd, S. McDonald, U. Himmelreich, M. Appleberg, C. Lean and C. Mountford.*
University of Sydney, Sydney, Australia.

## Human Cardiac MR Spectroscopy and Sodium MR Imaging

Hall C
Thursday: 13:30 – 15:30

*1645.* **Abnormal *in vivo* Cardiac Energetics in Individuals Harbouring the Mitochondrial DNA A3243G Mutation.**
*R. Lodi, B. Rajagopalan, A.M. Blamire, J.G. Crilley, P. Styles, D.M. Turnbull and P.F. Chinnery.*
University of Oxford, Oxford, UK; University of Bologna, Bologna, Italy and University of Newcastle-upon-Tyne, Newcastle-upon-Tyne, UK.

*1646.* **Human Cardiac $^{31}$P MRS During an Oral Glucose Tolerance Test.**
*W.I. Jung, M. Bunse, A. Riefflin, O. Schmidt, M. Heimesaat, O. Lutz and G. Dietze.*
Max Grundig Clinic, Bühl, Germany and University of Tübingen, Tübingen, Germany.

*1647.* **Detection of Alterations in the Myocardial High Energy Phosphate Metabolism in Patients with Insulin Dependent Diabetes Mellitus (IDDM).**
*M. Schocke, B. Metzler, C. Wolf, P. Steinboeck, W. Judmaier, M. Lechleitner, O. Pachinger and P. Lukas.*
University of Innsbruck, Innsbruck, Austria.

*1648.* **Patients with Familial and Nonfamilial Hypertrophic Cardiomyopathy Show Different Cardiac Energetics.**
*W.I. Jung, L. Sieverding, J. Breuer, M. Bunse, O. Schmidt, S. Widmaier, O. Lutz and G. Dietze.*
Max Grundig Clinic, Bühl, Germany and University of Tübingen, Tübingen, Germany.

*1649.* **Metabolic Changes after Carotid Endarterectomy in Patients with Asymptomatic Internal Carotid Artery Flow Lesion by Localized *In Vivo* Proton Magnetic Resonance Spectroscopy ($^1$H-MRS).**
*G.E. Kim, Y.P. Cho, J.H. Lee, S-T. Kim, K.H. Lim and T-H. Lim.*
Asan Medical Center, University of Ulsan College of Medicine and Asan Institute for Life Sciences, Seoul, Korea.

*1650.* **Cardiac Phosphorus-31 Spectroscopy of Women with Suspected Microvascular Dysfunction.**
*H-W. Kim, A.P. Bruner, S.D. Buchthal, J.A. den Hollander, D.M. Miller, S.P. McGorray, C.J. Pepine, G.M. Pohost and K.N. Scott.*
University of Florida and VA Medical Center, Gainesville, FL, USA and University of Alabama, Birmingham, AL, USA.

*1651.* **Time Resolved Sodium Imaging of the Human Heart at 1.5 T.**
*R. Jerečić, M. Bock, H-J. Zabel and L.R. Schad.*
Deutsches Krebsforschungszentrum (DKFZ), Heidelberg, Germany.

## Characterizing Vessel Wall & Plaque

Hall C
Tuesday: 13:30 – 15:30

*1652.* **Measurements of *In Vivo* Vessel Wall Motion and Strain with Cine Phase Contrast MRI.**
*K.L. Wedding, M.T. Draney, R.J. Herfkens, C.K. Zarins, C.A. Taylor and N.J. Pelc.*
Stanford University, Stanford, CA, USA.

*1653.* **Wall Shear Stress in Major Cerebral Arteries as Function of Age Measured by Cine Magnetic Resonance Imaging.**
*M. Zhao, F.T. Charbel, F. Loth, K. Guppy, N. Alperin, X. Du, M.E. Clark and J.I. Ausman.*
University of Illinois at Chicago, Chicago, IL USA.

*1654.* **Comparison of Computerized Fluid Dynamics and High Resolution Phase Contrast MRI for Wall Shear Stress Estimation *In Vivo*. Preliminary Results.**
*E.M. Pedersen, P. Walker, A. Ferrandez, S. Wu, S. Oyre and T. David.*
Aarhus University Hospital, Aarhus, Denmark and University of Leeds, Leeds, UK.

*1655.* **Determination of Wall Shear Stress and Subpixel Lumen Area in the Right Coronary Atreries Using MRI.**
*S. Oyre and E.M. Pedersen.*
Aarhus University Hospital, Aarhus, Denmark.

*1656.* **250 mm Resolution MRI Wall Shear Stress Measurements *In Vivo* Shows Difference Between Femoral, Brachial and Carotid Artery Wall Shear Stresses.**
*S.P. Wu, S. Ringgaard, R. Stokholm, S. Oyre, M.S. Hansen and E.M. Pedersen.*
Aarhus University Hospital, Aarhus, Denmark.

*1657.* ***In-vivo* and *in-vitro* MRI of the Carotid Artery Wall Using a Small Diameter Surface Coil.**
*M.E. Kooi, K.B.J.M. Cleutjens, M.J.A.P. Daemen, P.J.E.H.M. Kitslaar, G.J. Kemerink and J.M.A. van Engelshoven.*
University Hospital of Maastricht, Maastricht, The Netherlands.

*1658.* **Simultaneous MR Imaging of the Vascular Lumen and Wall.**
*C. Rofe, J.H. Rapp and D. Saloner.*
VA Medical Center, San Francisco, CA, USA.

*1659.* **Arterial Vessel Wall Thickness Measurement Based on Black Blood MRI.**
*X. Kang, D. Xu and C. Yuan.*
University of Washington, Seattle, WA, USA.

*1660.* **Assessment of Endothelial Function; A Comparison between a New MRI Based Method and the Established Ultrasound Method.**
*H. Flaagoy, M.S. Hansen, S. Oyre, K.E. Sorensen and E.M. Pedersen.*
Aarhus University Hospital, Aarhus, Denmark.

*1661.* **A Framework for Assessing the Accuracy of Segmented MR Images of Atherosclerotic Plaque.**
*S. Clarke, B. Rutt, S. Lownie, R. Hammond and J.R. Mitchell.*
University of Western Ontario, The John P. Robarts Research Institute and London Health Science Centre, London, Ontario, Canada.

*1662.* **Magnetic Resonance Angiography of Thoracic Aortic Atherosclerosis in Homozygous Familial Hypercholesterolemia.**
*R.M. Summers, P.L. Choyke, N.J. Patronas, E. Tucker, B. Wise, M.K. Busse and R. Shamburek.*
National Institutes of Health, Bethesda, MD, USA.

*1663.* **High Resolution MRI of Carotid Atherosclerosis: Precision Analysis of Arterial Lumen and Wall Area Measurement.**
*X. Kang, N.L. Polissar, C. Han and C. Yuan.*
University of Washington and The Mountain-Whisper-Light Statistical Consulting, Seattle, WA, USA.

*1664.* **3D Gradient Echo Imaging of Atherosclerotic Plaque at Human Carotid Artery: Quantitative Evaluation of Fibrous Cap.**
*D. Xu, M.S. Ferguson, T.S. Hatsukami, J-N. Hwang and C. Yuan.*
University of Washington, Seattle, WA, USA.

*1665.* ***In Vivo*** **Identification of Lipid Cores in Advanced Carotid Atherosclerotic Plaques by High Resolution MR Imaging.**
*L.M. Mitsumori, C. Yuan, M.S. Ferguson and T.S. Hatsukami.*
University of Washington, Seattle, WA, USA.

*1666.* **A Novel True FISP Technique for Visualizing Vascular Plaque.**
*E. Washington, O. Simonetti, A. Chiou and J.P. Finn.*
Northwestern University and Medical School and Siemens Medical Systems, Chicago, IL, USA.

*1667.* **Atherosclerotic Lesion Mapping by MR Imaging on Watanabe Rabbits: Influence of Lipid-Rich Diet.**
*L. Chaabane, E. Canet, F. Contard, D. Guerrier, A. Briguet and P. Douek.*
UCB-CPE, Villeurbanne, France; Hôpital Cardiologique, Lyon, France and Lipha SA, Lyon, France.

## Flow Quantification

Hall C
Tuesday: 13:30 – 15:30

*1668.* **Reducing Errors Due to Partial-Volume Effects and Noise in Pressure Maps Calculated from MR Velocity Data.**
*M.J. da Silva, D.H. Laidlaw and J.M. Tyszka.*
Brown University, Providence, RI, USA and City of Hope National Medical Center, Duarte, CA, USA.

*1669.* **Quantitative Analysis of PC MRI Velocity Maps for Pulsatile Flow in Cylindrical Vessels.**
*M.B. Robertson, U. Köhler, P.R. Hoskins and I. Marshall.*
University of Edinburgh, Western General Hospital, Edinburgh, UK.

*1670.* **Pulsatility "Doppler" MR: A New Source of Contrast in EPI Sequences.**
*D.W. McRobbie, C.N. Guy and R.A. Quest.*
The Hammersmith Hospitals NHS Trust and Imperial College, London, UK.

***1671.*** **Real-Time Velocity Measurements with High Performance Gradients.**
*J.C. Sabataitis, G.T. Luk-Pat, B.S. Hu, C.H. Meyer and D.G. Nishimura.*
Stanford University, Stanford, CA, USA and Mount Sinai School of Medicine, New York, NY, USA.

***1672.*** **A New Method for Flow Quantification With An Active MRI Stent (AMRIS) in a Phantom Study.**
*M. Busch, F. Toennissen, R. Wetzler, T. Bertsch and A. Melzer.*
Mediport Simag GmbH, Berlin, Germany; University of Applied Science FH Gelsenkirchen, Gelsenkirchen, Germany and Institute of Diagnostic and International Radiology, Mülheim/Ruhr, Germany.

***1673.*** **One-Dimensional Particle Tracking of Fluid Motion Using Tagging.**
*C.K. Macgowan and M.L. Wood.*
University of Toronto, Toronto, Ontario, Canada.

***1674.*** **Spatial-Resolution Requirements for Flow Quantification Using Fourier Velocity Encoding.**
*C-M. Tsai, E.W. Olcott and D.G. Nishimura.*
Stanford University, Stanford, CA, USA.

***1675.*** **A New Method of Quantitating Arterial Spin Tagging Perfusion Images.**
*S.D. Keilholz-George and S.S. Berr.*
University of Virginia, Charlottesville, VA, USA.

***1676.*** **Motion Adapted Gating with Partial Averaging for Quantification of Coronary Sinus Flow Reserve in Patients with Aortic Regurgitation.**
*S. Kozerke, J. Schwitter, O.M. Weber and P. Boesiger.*
University and ETH Zurich and University Hospital, Zurich, Switzerland.

***1677.*** **Ultra-Fast MRI to Quantitate Pulmonary Regurgitation and Biventricular Function during Physical Exercise in Corrected Tetralogy of Fallot Patients.**
*A.A.W. Roest, W.A. Helbing, P. Kunz, E.E. van der Wall, H.J. Lamb and A. de Roos.*
Interuniversity Cardiology Institute of The Netherlands, Utrecht, The Netherlands and Leiden University Medical Center, Leiden, The Netherlands.

***1678.*** **The Significance of Net CSF Flow at the Cerebral Aqueduct: A Cine Phase-Contrast Study.**
*M-Y. Chen, T-Y. Huang, C-Y. Chen and H-W. Chung.*
National Taiwan University, Taipei, Taiwan; Yuan-Pei Technical College, Hsin-Chu, Taiwan and Tri-Service General Hospital, Taipei, Taiwan, ROC.

***1679.*** **Comparison of Two Ways of Measuring Cerebrovascular Reactivity.**
*A. Spilt, M.A. van Buchem, R. van den Boom, E.L.E.M. Bollen and G.J. Blauw.*
Leiden University Medical Center, Leiden, The Netherlands.

***1680.*** **Magnetic Resonance Imaging of the Saphenous Vein: Lack of a Dilatory Response to Nitroglycerin.**
*L. Ribe, S. Oyre, K.M. Munk, J.E. Nielsen-Kudsk, K.E. Sorensen and E.M. Pedersen.*
Aarhus University Hospital, Aarhus, Denmark.

## Motion & Artifacts: Field Issues

Hall C
Monday: 14:00 – 16:00

***1681.*** **Dielectric Resonance in Ultra High Field MRI.**
*T.S. Ibrahim, R. Lee, B.A. Baertlein, A. Kangarlu and P.M.L. Robitaille.*
The Ohio State University, Columbus, OH, USA.

*1682.* **$B_1$ Field Distribution in UHFMRI.**
*A. Kangarlu, B. Baertlein, R. Lee and P-M L. Robitaille.*
The Ohio State University, Columbus, OH, USA.

*1683.* **An Analysis of Macroscopic Susceptibility in Ultra High Field MRI.**
*A.M. Abduljalil and P-M L. Robitaille.*
The Ohio State University, Columbus, OH, USA.

*1684.* **$T_2$* - Weighted Human Brain Imaging With the GESEPI at 7.0 Tesla.**
*Q.X. Yang, M.B. Smith, X. Zhu, H. Liu, S. Michaeli, X. Zhang, P. Andersen, G. Adriany, H. Merkle, K. Ugurbil and W. Chen.*
The Pennsylavania State University College of Medicine, Hershey, PA, USA and University of Minnesota, Minneapolis, MN, USA.

*1685.* **SVD Regularization Algorithm for Improved High-Order Shimming.**
*D.H. Kim, E. Adalsteinsson, G. Glover and D.M. Spielman.*
Stanford University, Stanford, CA, USA.

*1686.* **A Comparison of the Efficacy of Z-Shimming Techniques.**
*G. Johnson, Y. Zaim Wadghiri and D.H. Turnbull.*
New York University School of Medicine, New York, NY, USA.

*1687.* **Effects of Maxwell Terms on Reference Scans.**
*X.J. Zhou, J.K. Maier and S.J. Huff.*
M.D. Anderson Cancer Center, Houston, TX, USA and General Electric Medical Systems, Milwaukee, WI, USA.

*1688.* **Phantom System To Quantify and Map Gradient Induced Distortions in MR Images of the Pelvis.**
*D.J. Finnigan, S.F. Tanner, L. Moore, D. Dearnaley and M.O. Leach.*
The Institute of Cancer Research & The Royal Marsden NHS Trust, Sutton, Surrey, UK and Leeds General Infirmary, Leeds, UK.

## Motion & Artifacts: Other

Hall C
Monday: 14:00 – 16:00

*1689.* **Robust Multi-Contrast Adaptive Imaging with Line Scan.**
*S.E. Maier, D.F. Kacher, Y. Mamata, H. Mamata, L.P. Panych, R.V. Mulkern and F.A. Jolesz.*
Brigham and Women's Hospital Harvard, Medical School, Boston, MA, USA.

*1690.* **FLAIR MRI Contrast Optimization in Patients with High CSF Blood or Protein Content.**
*M. Bock and M. Essig.*
Deutsches Krebsforschungszentrum (dkfz), Heidelberg, Germany.

*1691.* **A Quantitative Evaluation of Ghost Suppression Algorithms.**
*S. Chavez and Q-S. Xiang.*
University of British Columbia, Vancouver, BC, Canada.

*1692.* **A Novel Approach to Motion Compensation on the Slice-Selection Axis for SE-GMN Sequences.**
*G.H. Jahng, S. Pickup, J.J. Wang and S. Lai.*
University of Connecticut Health Center, Farmington, CT, USA and University of Missouri-Columbia, Columbia, MO, USA.

***1693.*** **Ultrafast Technique for Correction of Translational and Rotational Motion in Projection Reconstruction MRI: COBALT.**
*H.K. Song and L. Dougherty.*
University of Pennsylvania Medical Center, Philadelphia, PA, USA.

***1694.*** **Movement Correction of the Kidney in Dynamic MRI Scans Using FFT Phase Difference Decoding.**
*E. Giele, J.A. de Priester, J.A. Blom, J.A. den Boer, J.M.A. van Engelshoven, A. Hasman and M. Geerlings.*
Eindhoven University of Technology, Eindhoven, the Netherlands and University Hospital Maastricht and Maastricht University, Maastricht, the Netherlands.

***1695.*** **A Temporal Frequency Analysis of Dynamic MRI Techniques.**
*Y. Wu and A.L. Alexander.*
University of Utah, Salt Lake City, UT, USA.

***1696.*** **Motion-Compensated Keyhole/RIGR Imaging.**
*Z-P. Liang, X. Ji and C.P. Hess.*
University of Illinois at Urbana-Champaign, Urbana, IL, USA.

***1697.*** **Limitations on the Spatial and Temporal Resolution of In-Plane Motion During Rapid MR Imaging.**
*J.A. Derbyshire.*
GE Medical Systems, Waukesha, WI, USA.

## Motion and Artifacts: Cardiovascular and Respiratory

Hall C
Monday: 14:00 – 16:00

***1698.*** **High Speed Respiratory Navigation Applied to MR Imaging of the Living Mouse.**
*J. Ruff, F. Wiesmann and A. Haase.*
Universität Würzburg, Würzburg, Germany.

***1699.*** **A Comparison of Respiratory Compensation Techniques As Applied to MR Oximetry.**
*J.A. Stainsby, T.S. Sachs, A. Chiu and G.A. Wright.*
University of Toronto, Toronto, Ontario, Canada and Stanford University, Stanford, CA, USA.

***1700.*** **The Lever-Coil: A Simple, Inexpensive Sensor for Respiratory Motion in MRI Experiments.**
*K.W. Fishbein and R.G.S. Spencer.*
National Institute on Aging, Baltimore, MD, USA.

***1701.*** **Measurement of Heart Position Consistency during Breath-Held Scans.**
*R.W. Schaffer, T.S. Sachs, C.H. Meyer, J.M. Pauly, B.S. Hu and D.G. Nishimura.*
Stanford University, Stanford, CA, USA.

***1702.*** **Automated Registration of Dynamic Images for Myocardial Perfusion Quantification.**
*J-P. Vallée, L. Bidaut and F. Lazeyras.*
Geneva University Hospital, Geneva, Switzerland.

***1703.*** **Artifact-Free MR Fluoroscopic Coronary Image Combination With the Correlation Coefficient Technique.**
*M.S. Sussman, N. Robert, A.B. Kerr, J.M. Pauly, N. Merchant and G.A. Wright.*
University of Toronto, Toronto, Ontario, Canada and Stanford University, Stanford, CA, USA.

*1704.* **Application of a Novel Motion Resistant Phase Ordering Technique to Segmented 2D Imaging of the Heart.**
*P. Jhooti, J. Keegan, P.D. Gatehouse, N. Bunce and D.N. Firmin.*
Royal Brompton Hospital and Imperial College, London, UK.

*1705.* **View-Ordering Methods for Suppression of Cardiac Motion Artifacts in Coronary MRA.**
*T. Nguyen, G. Ding, R. Watts and Y. Wang.*
Weill Medical College of Cornell University, New York, NY, USA.

*1706.* **Real-Time Echo Planar Imaging of Left Ventricular Function - Faster is Better.**
*O.M. Weber, H. Eggers, M. Oelhafen, M.A. Spiegel, M.B. Scheidegger, R. Proksa and P. Boesiger.*
University of Zurich and ETH Zurich, Zurich, Switzerland and Philips Research Laboratories, Hamburg, Germany.

*1707.* **Reduction of Flow Artifacts in 2D TOF Angiography by Preconditioning the Inflow Signal with a V-Equalizer.**
*K.J. Jung and S.H. Park.*
Medison Co., Seoul, Korea.

## Motion & Artifacts: EPI

Hall C
Monday: 14:00 – 16:00

*1708.* **A Strategy to Decrease Motion Artifacts in Diffusion Weighted Imaging with Multiple-shot Spiral Imaging to Increase Sensitivity.**
*A. Chu, J.G. Pipe and J.L. Evelhoch.*
Wayne State University, Detroit, MI, USA and Barrows Neurological Institute, Phoenix, AZ, USA.

*1709.* **Distortion Correction for Diffusion Weighted Echo Planar Imaging.**
*N-K. Chen and A.M. Wyrwicz.*
Northwestern University, Evanston, IL, USA.

*1710.* **Correction of Gross Distortion Caused by Unbalanced Alternating Gradient In Echo Planar Imaging.**
*J-Y. Chiou and O. Nalcioglu.*
University of California, Irvine, CA, USA.

*1711.* **A Simple Method to Correct Off-Resonance Related Distortion In Echo Planar Imaging.**
*J-Y. Chiou and O. Nalcioglu.*
University of California, Irvine, CA, USA.

*1712.* **Geometrical Distortion Correction in EPI Using Two Images with Orthogonal Phase-Encoding Directions.**
*D. Cordes, K. Arfanakis, V. Haughton and M.E. Meyerand.*
University of Wisconsin, Madison, WI, USA.

*1713.* **Single-Shot and Segmented EPI Ghost Artifacts Removal with Two-Dimensional Phase Correction.**
*N-K. Chen and A.M. Wyrwicz.*
Northwestern University, Evanston, IL, USA.

*1714.* **Point Spread Function Artefacts from In-Plane Constant and Pulsatile Flow in EPI: Implications for Pulsatility Imaging.**
*C.N. Guy and D.W. McRobbie.*
Charing Cross Hospital, Imperial College, London UK.

***1715.*** **Head Motion Characterization During fMRI Motor Tasks.**
*E. Seto, G. Sela, W.E. McIlroy, S.E. Black, W.R. Staines, M.J. Bronskill and S.J. Graham.*
Sunnybrook and Women's College Health Sciences Centre and University of Toronto, Toronto, Ontario, Canada.

***1716.*** **Artifacts Caused by Transcranial Magnetic Stimulation Coils and EEG Electrodes in $T_2$*-Weighted Echo-Planar Imaging.**
*J. Baudewig, W. Paulus and J. Frahm.*
Biomedizinische NMR Forschungs GmbH and Universität Göttingen, Göttingen, Germany.

***1717.*** **Exploratory Data Analysis Reveals Spatio-Temporal Structure of Null fMRI Data.**
*R. Baumgartner, L. Ryner, R. Somorjai and R. Summers.*
National Research Council Canada, Winnipeg, Manitoba, Canada.

## New Sequences and Reconstruction Methods

Hall C
Wednesday: 13:30 – 15:30

***1718.*** **Method for Phase Contrast Reconstruction for Partial Fourier Acquisitions.**
*T.K.F. Foo, J.A. Polzin and J.A. Derbyshire.*
GE Medical Systems, Milwaukee, WI, USA.

***1719.*** **An Array That Exploits Phase for SENSE Imaging.**
*J.V. Hajnal, D.J. Larkman and D.J. Herlihy.*
Imperial College School of Medicine, Hammersmith Hospital, London, UK.

***1720.*** **Sub-Sampled Phased-Array MRI Reconstruction Via Coherent Spatial Nulling.**
*D.O. Walsh and A.F. Gmitro.*
Vista Clara Inc. and University of Arizona, Tucson, AZ, USA.

***1721.*** **Extending the Composite Field of View in Phased-Array MRI.**
*D.O. Walsh and A.F. Gmitro.*
Vista Clara Inc., and University of Arizona, Tucson, AZ, USA.

***1722.*** **Radial Acquisition of Data GRASE (RAD-GRASE).**
*A.F. Gmitro, R.J. Theilmann, M.I. Albatch and T.P. Trouard.*
University of Arizona, Tuczon, AZ, USA.

***1723.*** **Sparse 3D Radial Scanning and Reconstruction.**
*L.T. Martinez, F.T.A.W. Wajer, R. Lethmate, R.A.J. de Jong, G.H.L.A. Stijnman, Y. Crémillieux, D. van Ormondt and D. Graveron-Demilly.*
Delft University of Technology, Delft, The Netherlands and Université Lyon I-CPE, Lyon, France.

***1724.*** **Effective Echo Time in the Projection-Type Fast Spin Echo Imaging.**
*C.B. Ahn, C.Y. Kim, H.J. Kim and S.M. Kim.*
Kwangwoon University, Seoul, Korea.

***1725.*** **Overlapping Slice Coverage Using Z-Interleaved Phase Encoding (ZIP) Trajectories.**
*H-P. Fautz, K. Scheffler and J. Hennig.*
University of Freiburg, Freiburg, Germany.

***1726.*** **Incremental Table Motion for Increased Volume Coverage.**
*J.H. Brittain, R.A. McCann and J.M. Pauly.*
GE Medical Systems, Milwaukee, WI, USA and Stanford University, Stanford, CA, USA.

*1727.* **An Optimal and Efficient New Gridding Algorithm Using Estimation Theory.**
*D. Rosenfeld.*
GE Medical Systems Israel, Tirat Carmel, Israel.

*1728.* **Reconstruction MR Images from Undersampled Data: Data Weighting Considerations.**
*J.G. Pipe.*
St. Joseph's Hospital, Phoenix, AZ, USA.

*1729.* **MAP-EM Method for Angularly Undersampled Projection-Reconstruction CE-MRA Imaging.**
*E.G. Kholmovski, V.Y. Panin, A.L. Alexander and G.L. Zeng.*
University of Utah, Salt Lake City, UT, USA.

*1730.* **A Library of Generalized Fourier Sampling Theorems for Irregular 2D Regions of Support.**
*S.K. Nagle and D.N. Levin.*
University of Chicago, Chicago, IL, USA.

*1731.* **Analytic Reconstruction of the PERL Transform.**
*M.I. Hrovat and S. Patz.*
Mirtech Inc. and Brigham & Women's Hospital, Boston, MA, USA.

*1732.* **Power Spectral Density Imaging to Expand the Nyquist Limit on Phantom with Local Temporal Fluctuation.**
*R. Tong, J. Bodurka and R.W. Cox.*
Medical College of Wisconsin, Milwaukee, WI, USA.

*1733.* **Acquisition of MR Elastography Measurements Using Steady State Motion.**
*J.B. Weaver, E. Van Houten, M.I. Miga, F.E. Kennedy and K.D. Paulsen.*
Dartmouth-Hitchcock Medical Center, Lebanon, NH, USA and Dartmouth College, Hanover, NH, USA.

*1734.* **Three Dimensional Reconstructive Elastographic Imaging.**
*E.E.W. Van Houten, M.I. Miga, F.E. Kennedy, J.B. Weaver and K.D. Paulsen.*
Dartmouth College, Hanover, NH, USA.

*1735.* **Use of Constraints to Produce Plane Strain Conditions for MR Elastography.**
*J. Bishop, A. Samani, J. Sciarretta and D.B. Plewes.*
University of Toronto, Toronto, Ontario, Canada.

*1736.* **Simultaneous Water and Fat Dual-Echo Spin Echo Imaging.**
*E. Kwok, S.M.S. Totterman and J. Zhong.*
University of Rochester Medical Center, Rochester, NY, USA.

*1737.* **Continuous Radial Scanning MR Thermography.**
*J.A d'Arcy, D.J. Collins, T. Prock, P.S. Murphy, I.J. Rowland and M.O. Leach.*
Institute of Cancer Research, Sutton, Surrey, UK.

*1738.* ***In Vivo*** **Triple-Quantum-Filtered Sodium MRI: Signal Dependence on the RF Pulse-Widths.**
*I. Hancu, J.R.C. van der Maarel, G.X. Shen and F.E. Boada.*
University of Pittsburgh, Pittsburgh, PA, USA and Leiden University, Leiden, Netherlands.

*1739.* **Fast Spin Echo Imaging of Human Head at 4 Tesla.**
*J.S. Gati, R.S. Menon and B.K. Rutt.*
The John P. Robarts Research Institute, London, Ontario, Canada.

*1740.* **Flipped Cycled Main Field for Optimized Overhauser Imaging.**
*C. Leussler, J. Overweg, P. Röschmann and U. Katscher.*
Philips Research Laboratories, Hamburg, Germany.

*1741.* **Modular Hybrid Imaging with FLASH/EPI-Techniques.**
*P.M. Jakob, C. Hillenbrand, D. Hahn and A. Haase.*
Universität Würzburg, Würzburg, Germany.

*1742.* **Assessment of Spatial Resolution Effects in MR-CAT Scan.**
*C. Hillenbrand, D. Hahn, A. Haase and P.M. Jakob.*
Universität Würzburg, Würzburg, Germany.

*1743.* **Use of k-Space Reordered FLAIR with a Non-Selective Inversion Pulse to Reduce Flow Artefacts and Provide Uniform Tissue Contrast.**
*A.H. Herlihy, G.A. Coutts, D.J. Larkman, A. Oatridge, P. Margosian, G.M. Bydder and J.V. Hajnal.*
Imperial College School of Medicine, Hammersmith Hospital, London, UK and Picker International, Cleveland, OH, USA.

*1744.* **Optimization of 3D MP-RAGE Sequences for Structural Brain Imaging.**
*R. Deichmann, C.D. Good, O. Josephs, J. Ashburner and R. Turner.*
Institute of Neurology, London, UK.

*1745.* **Interleaved Inversion Recovery Gradient-Recalled EPI.**
*V. Roopchansingh, S.J. Li and A. Jesmanowicz.*
Medical College of Wisconsin, Milwaukee, WI, USA.

*1746.* **Partial k-space Acquisition for Isotropic PE 3D FSE.**
*E.G. Kholmovski, A.L. Alexander and D.L. Parker.*
University of Utah, Salt Lake City, UT, USA.

*1747.* **Development of a 3D MRI Sequence for Computer Assisted Surgery of the Lumbar Spine.**
*C.L. Hoad, A.L. Martel, R. Kerslake and J. Webb.*
University Hospital, Queen's Medical Centre, Nottingham, UK.

*1748.* **A Pulse Sequence for Liver Magnetic Susceptibility Quantitation by Vessel Imaging for Iron Overload Assessment.**
*Z.J. Wang and O.P. Simonetti.*
The Children's Hospital of Philadelphia, Philadelphia, PA, USA and Siemens Medical Systems, Inc., Chicago, IL, USA.

*1749.* **Pulse Sequences for Respiratory Gated MR Virtual Bronchoscopy.**
*D.W. McRobbie, R.A. Quest and S. Pritchard.*
The Hammersmith Hospital NHS Trust, Charing Cross Hospital, London, UK.

## Registration, Segmentation, and Tissue Characterization

Hall C
Wednesday: 13:30 – 15:30

*1750.* **Automatic Registration of Volumes with Large MS Lesion Load Change.**
*C.K. Jones, D.K.B. Li, K.P. Whittall and D.W. Paty.*
University of British Columbia, Vancouver, British Columbia, Canada.

*1751.* **FFT-Based Subpixel MRI Image Registration and Its Application in fMRI.**
*H. Tang, G.M. Perera, R.L. DeLa Paz, Q.Y. Ma and E.X. Wu.*
Columbia University, New York, NY, USA.

*1752.* **Mapping the Results of Rigid Body Registrations for Multiple, Overlapping Spatially Separate Regions of Serially Acquired 3D MR Images of the Human Head.**
*M.D. Coley, R.E. Ansorge, L.D. Hall and T.A. Carpenter.*
University of Cambridge, Cambridge, UK.

*1753.* **$T_1$-Based Partial Volume Segmentation of Brain Tissue with a Surface Coil.**
*G.F. Mason.*
Yale University School of Medicine, New Haven, CT, USA.

*1754.* **A Simple Efficient Algorithm for Brain Segmentation on $T_1$-Weighted Images Employing Edge Detection.**
*M-L. Wu, W-C. Wu, H-W. Chung and C-Y. Chen.*
National Taiwan University and Tri-Service General Hospital, Taipei, Taiwan, ROC.

*1755.* **A Novel MR Brain Segmentation Technique Using Dynamic Susceptibility Contrast.**
*B.B. Biswal and A.P. Pathak.*
Medical College of Wisconsin and Marquette University, Milwaukee, WI, USA.

*1756.* **Multiresolution MRI Brain Image Representation and Segmentation.**
*H. Tang, E.X. Wu, Q.Y. Ma and D. Gallagher.*
Columbia University, New York, NY, USA.

*1757.* **Segmentation of Multiple Sclerosis Lesions into Vanishing Part vs. Newly-Appearing Part on the Base of Follow-Up MR Images.**
*L. Stawiarz and H. Link.*
Karolinska Institute, Huddinge University Hospital, Huddinge, Sweden and Karolinska Hospital, Stockholm, Sweden.

*1758.* **Chemotherapeutic Effects on Brain Tissue Volumes Measured by Segmentation and Classification.**
*J.O. Glass, S.L. Palmer, R.K. Mulhern and W.E. Reddick.*
St. Jude Children's Research Hospital, Memphis, TN, USA.

*1759.* **Underdetermined Problems of Tissue Fraction Quantification in MS Patients.**
*C.K. Jones, K.P. Whittall, D.K.B. Li and D.W. Paty.*
University of British Columbia, Vancouver, British Columbia, Canada.

*1760.* **A B-Spline Active Surface Method for Segmentation of the Optic Nerve.**
*O. Coulon, G.J.M. Parker, J.A. Schnabel and S.R. Arridge.*
University College London and Guy's Hospital, King's College London, London, UK.

*1761.* **Automated EEG Electrode Localization in 3D MR Images.**
*J. Sijbers, I. Michiels, B. Vanrumste, G. Van Hoey, P. Boon, A. Van der Linden, M. Verhoye and D. Van Dyck.*
University of Antwerp & Ghent, Antwerp, Belgium.

## Data Correction Methods

Hall C
Wednesday: 13:30 – 15:30

*1762.* **A Renormalization Method for Inhomogeneity Correction of MRI Data.**
*D. Chen, L. Li and Z. Liang.*
State University of New York, Stony Brook, NY, USA.

*1763.* **Correction of Spatial Coil Intensity Profile Employing Registered Difference, Ratio and Edge Enhanced Images.**
*N. Saeed, J.V. Hajnal, A. Oatridge, S. White and G.M. Bydder.*
Hammersmith Hospital, London, UK.

*1764.* **Real Time Motion Detection and Correction in k-Space Images.**
*M.E. Alexander and P. Zhilkin.*
National Research Council Canada, Winnipeg, Manitoba, Canada.

*1765.* **Correction of Local Deformations in fMRI by 3D Non-Linear Warping in Map-Slice-to-Volume Approach.**
*B. Kim, C.R. Meyer and P.H. Bland.*
University of Michigan Medical Center, Ann Arbor, MI, USA.

*1766.* **Sub-Voxel Unwarping of Spin Echo EPI to Conventional Anatomical MRI.**
*C. Studholme, R.T. Constable and J.S. Duncan.*
Yale University School of Medicine, New Haven, CT, USA.

*1767.* **Off-Resonance Correction with a Segmented and Density Compensated Linear Time Map.**
*M. Rosenblitt, J. A. Akel and P. Irarrázaval.*
Pontificia Universidad Católica de Chile, Santiago, Chile.

*1768.* **Improved Sensitivity and Speed for Localized, Subsecond Shimming Without a Reference Scan.**
*R. Gruetter and I. Tkáč.*
University of Minnesota, Minneapolis, MN, USA.

*1769.* **Alternative Reconstruction Method for 2DFT Data in the Presence of Off-Resonance.**
*J.A. Akel and P. Irarrázaval.*
Pontificia Universidad Católica de Chile, Santiago, Chile.

*1770.* **A Slice Encoded Reference Scan for 3D-PRESTO.**
*H. Hoogduin, P. van Gelderen, J. van de Brink and N. Ramsey.*
University Medical Center, Utrecht, The Netherlands; National Institutes of Health Bethesda, MD, USA and Philips Medical Systems, Best, The Netherlands.

*1771.* **Optimization and Calibration of EPI Raw Data Reconstruction Parameters to Minimize Image Ghosting Using Image-Based Corrections.**
*D.H. Wu and W. Dannels.*
Picker International, Cleveland, OH, USA.

*1772.* **K-space Synthesis for MR Imaging in the Presence of Gradient Field Nonlinearity.**
*Y. Zhu.*
GE Corporate Research & Development, Schenectady, NY, USA.

*1773.* **Harmonic Function Characteristics of Magnetic Field and Confirmation with MR Phase Imaging.**
*L. Li and J.S. Leigh.*
University of Pennsylvania, Philadelphia, PA, USA.

*1774.* **A Bayesian Approach to Noise Removal in Dynamic MRI of Lung.**
*G. Torheim, G. Sebastiani, T. Amundsen, P.A. Rinck and O. Haraldseth.*
Norwegian University of Science and Technology, Trondheim, Norway; Istituto per le Applicazioni del Calcolo, C.N.R., Rome, Italy and Université de Mons-Hainaut, Mons, Belgium.

*1775.* **Removal of Correlated Noise from MR Images Using Wavelet Domain Filters.**
*M.E. Alexander, R. Baumgartner, M. Klarhoefer, E. Moser and R.L. Somorjai.*
National Research Council Canada, Winnipeg, Manitoba, Canada and University of Vienna, Vienna, Austria.

*1776.* **Optimal Complex Wavelet Bases for Localized Encoding in Magnetic Resonance Imaging.**
*E.X. Wu, J. Baude, J.M. Lina and A.F. Laine.*
Columbia University, New York, NY, USA and University of Montreal, Montreal, Quebec, Canada.

*1777.* **Adaptive Template Filtering Without Boundary Artifact.**
*Y.C. Song, H.K. Lee, K.J. Jung, C.H. Oh and C.B. Ahn.*
Kwangwoon University, Catholic University Medical College, Medison MRI Research Center and Korea University, Seoul, Korea.

*1778.* **Use of the Adaptive Line Enhancement Filter for SNR Improvement in NMR Spectroscopy.**
*S. Pajevic, G.H. Weiss, K.W. Fishbein and R.G.S. Spencer.*
National Institutes of Health, Bethesda, MD USA and National Institute on Aging, Baltimore, MD, USA.

*1779.* **Impact of Image Processing Operations on MR Noise Distributions.**
*P. Summers, A.C.S. Chung and J.A. Noble.*
King's College, London, UK and Oxford University, Oxford, UK.

*1780.* **Iterative Sharpening of the Resolution in Magnetic Resonance Imaging.**
*R.K.S. Rathore, R.K. Gupta, V.S.N. Kali Prasad, S.B. Rao and S. Datta.*
Indian Institute of Technology, Kanpur, India and Sanjay Gandhi Post Graduate Institute of Medical Sciences, Lucknow, India.

## MR Angiography

Hall C
Wednesday: 13:30 – 15:30

*1781.* **An Inversion-Prepped, ECG-Gated, Complex-Subtraction Method for Determining the Arrival Time of a Contrast Agent for CE MRA.**
*F.R. Korosec, T.J. Carroll, T.M. Grist and C.A. Mistretta.*
University of Wisconsin, Madison, WI, USA.

*1782.* **Multiple Transit Time Detection by 3D Test-Bolus Scan with 1ml Gd-Injection.**
*Y. Yuasa, A. Tanimoto, H. Shinmoto, T. Kurata, T. Yamashita, K. Kashima, K. Hiramatsu and A. Nozaki.*
Keio University and GE Yokogawa Medical Systems, Ltd., Tokyo, Japan.

*1783.* **Experimental Contrast Curve Design for the Evaluation of Vessel Contrast and Artifact in Three Dimensional Contrast-Enhanced MR Angiography.**
*O. Al-Kwifi and A.H. Wilman.*
University of Alberta, Edmonton, Alberta, Canada.

*1784.* **3D MR Angiography with Nonselective Excitation.**
*O. Heid.*
Siemens AG, Erlangen, Germany.

*1785.* **Background Suppression for Two-Dimensional Contrast-Enhanced MRA.**
*C. Bos, C.J.G. Bakker and M.A. Viergever.*
University Medical Center, Utrecht, Netherlands.

*1786.* **MRI with Contrast Enhancement May Detect Neovasculature in Atherosclerotic Plaque.**
*C. Yuan, M.S. Ferguson, K.R. Maravilla, J.H. Maki and T.S. Hatsukami.*
University of Washington, Seattle, WA, USA.

***1787.*** **Resolution Requirements for Grading Stenoses in 3D CE-MRA.**
*G.J. Wilson, D. Haynor and J.H. Maki.*
Puget Sound VA Medical Center and University of Washington, Seattle, WA, USA.

***1788.*** **Multiphase 3D Contrast Enhanced Renal MR Angiography: A Comparison Between Cartesian and Spiral Readout.**
*M. Amann, F. Floemer, M. Bock, S.O. Schoenberg and L.R. Schad.*
Deutsches Krebsforschungszentrum (dkfz), Heidelberg, Germany.

***1789.*** **Optimization of Gadolinium-Enhanced MR Angiography by Manipulation of Acquisition and Scan Delay Times.**
*J.M. Lee, Y. Chang and D.S. Kang.*
Kyungpook National University, Taegu, Korea.

***1790.*** **High Resolution Carotid Magnetic Resonance Angiography - The Effect of Breath-Holding on Image Quality.**
*J. Beland, J. Carr, G. Laub and J.P. Finn.*
Northwestern University Medical School and Siemens Medical Systems, Chicago, IL, USA.

***1791.*** **High-Resolution Carotid Artery MRA; Comparison with Fast Dynamic Acquisition.**
*J. Wikström, L.O. Johansson, S. Rossitti, S. Karacagil and H. Ahlström.*
Uppsala University Hospital, Uppsala, Sweden and Nycomed Imaging A/S, Oslo, Norway.

***1792.*** **The Effect of Injection Profiles on Carotid Artery CE-MRA.**
*L.D. Jou, J. Stroud, S. Berger and D. Saloner.*
VA Medical Center, San Francisco, CA, USA and University of California, Berkeley, CA, USA.

***1793.*** **The Effect of Injection Rate on Contrast Enhanced Peripheral MRA.**
*T.J. Carroll, F.R. Korosec, J.S. Swan and C.A. Mistretta.*
University of Wisconsin, Madison, WI, USA and Indiana University, Indianapolis, IN, USA.

***1794.*** **Comparison of TOF MRA and CE MRA with 3-D X-ray Angiography: an *In Vitro* Study.**
*D.W. Holdsworth, M. Cole, C.J.D. Norley and B.K. Rutt.*
University of Western Ontario and John P. Robarts Research Institute, London, Ontario., Canada.

***1795.*** **Contrast-enhanced 2D MR-DSA of the Thoracic Lesion.**
*S. Kitano, S. Hirohashi, K. Ueda, Y. Nishimoto, J. Okamoto and H. Uchida.*
Nara Medical University, Nara, Japan and Siemens-Asahi Medical Technologies Ltd., Tokyo, Japan.

***1796.*** **Real-Time MR Imaging with Radial Scanning in Suspected Pulmonary Embolism: Early Results.**
*P. Haage, A. Bücker, G. Adam, A. Glowinski, T. Schäffter, S. Weiß and R.W. Günther.*
University of Technology, Aachen, Germany and Philips Research Laboratories, Hamburg, Germany.

***1797.*** **Ultra-Fast Three-Dimensional Digital Subtraction MR Angiography to Evaluate Aortic Dissections.**
*H. Masunaga, Y. Takehara, H. Isoda, S. Isogai, N. Kodaira, H. Takeda, H. Sakahara and A. Nozaki.*
Hamamatsu University School of Medicine, Hamamatsu, Japan and GE Yokogawa Medical Systems, Tokyo, Japan.

***1798.*** **MR Pulmonary Angiography Without Contrast Materials: Separate Demonstration of the Pulmonary Arteries and Veins.**
*Y. Kurihara, Y.K. Yakushiji, I. Tani, H. Niimi, H. Arakawa, J. Matsumoto, Y. Nakajima and K. Hirose.*
St. Marianna University, Kawasaki, Japan and Toshiba Medical System, Tokyo, Japan.

***1799.*** **Simulation of Optimized Time-Resolved Segmented Elliptical-Centric 3D TRICKS for Abdominal MRA.**
*O. Wieben, W.F. Block and C.A. Mistretta.*
University of Wisconsin-Madison, Madison, WI, USA.

*1800.* **Contrast Enhanced Renal MRA Compared to X-Ray Angiography and Intraarterial Pressure Measurements.**
*H. Eklöf, L.O. Johansson, S. Karacagil, R. Nyman and H. Ahlström.*
Uppsala University Hospital, Uppsala, Sweden and Nycomed Imaging A/S, Oslo, Norway.

*1801.* **Quantification of the Perfusion of the Renal Cortex during Gd-Enhanced Magnetic Resonance Angiography in the Assessment of Renal Function.**
*S.W.C. van den Dool, M.N.J.M. Wasser, J. Hoekstra and R.J. van der Geest.*
Leiden University Medical Center, Leiden, The Netherlands.

*1802.* **Magnetic Resonance Angiography for the Diagnosis of Renal Artery Stenosis: A Meta-Analysis.**
*K.T. Tan, E.J.R. van Beek, P.W.G. Brown, O.M. van Delden and L.E. Ramsay.*
University of Sheffield, Sheffield, UK and Academic Medical Center, Amsterdam, the Netherlands.

*1803.* **3D Contrast Enhanced MR Angiography of the Superior Mesenteric and Celiac Arteries: Identification and Significance of Median Arcuate Ligament Compression.**
*L.A. Kramer, S.M. Haidry, E. Bass, E.T. Tamm and A.M. Cohen.*
University of Texas Health Science Center, Houston, TX, USA.

*1804.* **Review of Major Diagnostic Tests in Renovascular Hypertension.**
*G.B.C. Vasbinder, P.J. Nelemans and J.M.A. van Engelshoven.*
University Hospital Maastricht, Maastricht, The Netherlands.

*1805.* **Fast 3D Time-Resolved Contrast-Enhanced MR Angiography of the Abdominal Vasculature Using SENSE.**
*A. Kassner, K.P. Pruessmann, M. Weiger, G. Roditi, T. Lawton, A. Reid and P. Boesiger.*
Philips Medical Systems, London, UK; University and ETH, Zurich, Switzerland and Glasgow Royal Infirmary, Glasgow, UK.

*1806.* **Improved Signal Uniformity in Pelvic MR Angiography Using Dual Station Transit Time Measurements.**
*J. Wikström, L.O. Johansson, S. Karacagil and H. Ahlström.*
Uppsala University Hospital, Uppsala, Sweden and Nycomed Imaging A/S, Oslo, Norway.

*1807.* **Automated Region-Specific VTRAC Segmentation on Peripheral MRA.**
*J. Du, Y. Mazaheri, T.J. Carroll, E. Esparza Coss, T.M. Grist and C.A. Mistretta.*
University of Wisconsin-Madison, Madison, WI, USA.

*1808.* **Image Subtraction in Contrast-Enhanced Peripheral MRA.**
*T. Leiner, K. Yiu, J.A.M. Ho and J.M.A. van Engelshoven.*
Academic Hospital, Maastricht, The Netherlands.

*1809.* **Segmentation of Arteries from Veins in Contrast-Enhanced 3-D Magnetic Resonance Angiography of the Lower Extremities.**
*J. Svensson, P. Leander, F. Ståhlberg, C. Thomsen, S. Sjöberg and L.E. Olsson.*
Malmö University Hospital, Malmö, Sweden; Lund University Hospital, Lund, Sweden and Copenhagen University Hospital, Copenhagen, Denmark.

*1810.* **Moving Table Gd-Enhanced MR Angiography of the Lower Extremities: A Combination 3D and 2D Technique - Preliminary Results.**
*J.H. Maki, J.H. Ephron, D.J. Glickerman, P.D. Baker and G.J. Wilson.*
Puget Sound VA Medical Center and University of Washington, Seattle, WA, USA and Portland VA Medical Center, Portland, OR, USA.

*1811.* **A Prospective Comparison of Highly-Optimized Bolus-Chase MRA with Infrapopliteal 2D TOF MRA in Patients with Peripheral Vascular Disease.**
*D.A. Roberts, D. Leung, J. Solomon, M. Sehgal, M. Farner, R. Baum, J. Carpenter, R. Fairman, M. Golden and M.D. Schnall.*
University of Pennsylvania Medical Center, Philadelphia, PA, USA.

*1812.* **High-Resolution Gd-Enhanced 3D Elliptical Centric MRA of the Infrapopliteal Arteries: Lessons for Improving Bolus-Chase Multi-Station Peripheral MRA.**
*M.N. Hood, V.B. Ho, T.K.F. Foo, J.M. Czum, H.B. Marcos, S. Hess and P.L. Choyke.*
Uniformed Services University of the Health Sciences and National Institutes of Health, Bethesda, MD, USA and GE Medical Systems, Milwaukee, WI, USA.

*1813.* **Bolus-Chasing CEMRA of the Peripheral Artery System: Comparison with I.A. DSA in 50 Patients with Peripheral Artery Occlusive Disease.**
*J.C. Steffens, J. Brossmann, B. Oberscheid and M. Heller.*
Christian-Albrechts-Universität, Kiel, Germany.

*1814.* **Toward an Objective Measure of Image Quality for Peripheral Vascular MRA.**
*C.A. Webster, N. Merchant, D.S. Kucey and G.A. Wright.*
University of Toronto, Sunnybrook and Women's College Health Science Centre, Toronto, Ontario, Canada.

*1815.* **Gadolinium-Enhanced 3D MR Angiography of Pediatric Hemangiomas and Vascular Malformations.**
*R.N. Low, M.O. Senac Jr., L.F. Eichenfield, S.F. Freidlander and B.B. Cunningham.*
Sharp and Children's MRI Center and Children's Hospital, San Diego, CA, USA.

*1816.* **Selective Contrast-Enhanced MRA in an Animal Model.**
*C. Bos, C.J.G. Bakker, H.F.M. Smits and M.A. Viergever.*
University Medical Center, Utrecht, Netherlands.

*1817.* **Assessment of Central Venous Occlusion by Injection of Dilute Contrast Material into the Upper Extremities: "Direct" 3D MR Venography.**
*J.F.M. Meaney, M. Kouwenhoven, A. Radjenovic, S.P. McPherson, D. Dambitis, J. Cullingworth, A. Kassner and J.P. Ridgway.*
Leeds General Infirmary, Leeds, UK.

*1818.* **Phase II Studies of Gadobenate Dimeglumine (MultiHance) for MR Angiography.**
*M.V. Knopp, H. von Tengg-Kobligk, S.O. Schoenberg, F. Floemer and R. Hentrich.*
German Cancer Research Center (dkfz) Heidelberg, Germany; The Ohio State University, Columbus, OH, USA and Bracco-Byk Gulden, Konstanz, Germany.

*1819.* **Dose Response Analysis of a Superparamagnetic Contrast Agent for MR Angiography.**
*M.V. Knopp, F. Floemer, S.O. Schoenberg, H. von Tengg Kobligk, M. Bock, C. Wunsch, G. Richter, V. Hoffmann and S. McGill.*
German Cancer Research Center (dkfz) and University of Heidelberg, Heidelberg, Germany; The Ohio State University, Columbus, OH, USA and Nycomed-Amersham, Oslo, Norway.

*1820.* **MRI Structure Analysis of Thrombi in the Superficial Femoral Artery Before Thrombolytic Treatment.**
*M. Kozak, A. Blinc, I. Ser[1]a, U. Mikac and M. Šurlan.*
University of Ljubljana Medical Center, Ljubljana, Slovenia.

*1821.* **Improved MRA Using Fat-Suppressed MTC Pulse and SLINKY Acquisition.**
*A. Ishikawa, K. Takeo, S. Kohno, N. Iijima, A. Kasai, A. Fujita and K. Liu.*
Shimadzu Corporation, Kyoto, Japan and Picker International Inc., Highland Heights, OH, USA.

*1822.* **Accuracy of MR Oximetry after Resuscitation with a Hemoglobin-Based Oxygen Carrier.**
*F.P. Chan, J.S. Jahr, B. Driessen, D.A. Daunt and K.C.P. Li.*
Stanford University Medical Center, Stanford, CA, USA; U.C. Davis Medical Center, Davis, CA, USA and University of Pennsylvania, Philadephia, PA, USA.

*1823.* **EPI-TOF MR-Angiography Has Superior CNR and SNR Compared to Standard FFE-TOF Carotid MR-Angiography.**
*A.D. Blankholm, E. Lundorf, J. Solgaard, J. Kværness and E.M. Pedersen.*
Aarhus University Hospital, Aarhus, Denmark and Philips Medico, Copenhagen, Denmark.

*1824.* **High Resolution MRA with SLINKY and Dedicated Phased Array Coils.**
*K. Liu, T. Cull and C.K. Anand.*
Picker Medical System, Cleveland, OH, USA.

*1825.* **Dual VENC Phase Contrast Angiography for Arterial and Venous Discrimination.**
*Y. Zhang, T. Foo, V. Ho, H. Marcos, J. Butman and P. Choyke.*
National Institutes of Health Bethesda, MD USA; GE Medical Systems, Milwaukee, WI, USA and Uniformed Services University of the Health Sciences, Bethesda, MD, USA.

*1826.* **Artifacts due to Reverse Flow in the Artery and Their Correction in TOF Angiography with Presaturation of the Vein.**
*K.J. Jung, J.K. Lee and S.T. Chung.*
Medison, Co., Seoul, Korea.

*1827.* **Control of Angular Undersampling Artifacts in Projection-Based Angiography by Iterative Reconstruction.**
*J.E. Holden, O. Unal, D.C. Peters and T.R. Oakes.*
University of Wisconsin-Madison, Madison, WI, USA.

*1828.* **Flow Relaxographic Angiography.**
*J-H. Lee, M.K. Sammi and C.S. Springer, Jr.*
Brookhaven National Laboratory, Upton, NY, USA and State University of New York, Stony Brook, NY, USA.

*1829.* **Effects of Gradient Moment Nulling in 3D Half-Fourier FSE "Bright Blood" Imaging.**
*Y. Machida, H. Kanazawa, Y. Kassai, H. Takai, S. Sugiura and M. Miyazaki.*
Toshiba, Tochigi, Japan.

*1830.* **Angiographic Study of the Thermoregulatory Function of the Rat Tail.**
*G. Vanhoutte, M. Verhoye, E. Raman and A. Van der Linden.*
University of Antwerp, Antwerp, Belgium.

## Spectroscopic Localization and Imaging

Hall C
Monday: 14:00 – 16:00

*1831.* **Fast Spectroscopic Imaging (FSI).**
*L.N. Ryner and K. Malkoske.*
National Research Council of Canada and University of Manitoba, Winnipeg, Manitoba, Canada.

*1832.* **Line Scan Echo Planar Spectroscopic Imaging: Single Slice 2D CSI in Seconds with an Infinite TR.**
*K. Oshio, W. Kyriakos and R.V. Mulkern.*
Brigham and Women's Hospital, Children's Hospital and Harvard Medical School, Boston, MA, USA.

*1833.* **REduced Scan Time Phase Encoded Echo Planar (REST-PEEP) Chemical Shift Imaging.**
*D.N. Guilfoyle.*
Nathan S. Kline Institute, Orangeburg, NY, USA and Albert Einstein College of Medicine, Bronx, NY, USA.

*1834.* **Simultaneous Multi-Slice MR Spectroscopic Imaging Using Modified Hadamard-like Technique.**
*P.C. Chen, J.C. Jao, P.H. Lai, C.C. Hsiao, H.B. Pan and C.F. Yang.*
Veterans General Hospital-Kaohsiung and Kaohsiung Medical University, Kaohsiung, Taiwan, ROC.

*1835.* **Applications of Spiral MRSI Using Surface and Phased-Array Coils.**
*D.H. Kim, E. Adalsteinsson and D.M. Spielman.*
Stanford University, Stanford, CA, USA.

*1836.* **Multislice Spectroscopic Imaging Improvements on Clinical Scanners by Dynamically Switching Individual Shim Settings for Each Slice.**
*J.W.C. van der Veen, D.R. Weinberger, J.A. Frank and J.H. Duyn.*
National Institutes of Health, Bethesda, MD, USA.

*1837.* **Spectroscopy Reconstruction Method Using an Iterative Data Recovery Procedure.**
*H. Liu, W. Chen and K. Ugurbil.*
University of Minnesota, Minneapolis, MN, USA.

*1838.* **Visual GSLIM: Software for an Integrative Approach to Spectroscopic Image Reconstruction Using Prior Information.**
*J. Tsao and P.C. Lauterbur.*
University of Illinois at Urbana-Champaign, Urbana, IL, USA.

*1839.* **Peak Specific Phase Correction for Automatic Processing of *In Vivo* Proton SI Data.**
*X. Zhang, K. Heberlein, S. Sarkar and X. Hu.*
University of Minnesota, Minneapolis, MN, USA.

*1840.* **Reliable Detection of Macromolecules in Single Volume $^{1}$H Spectra of Human Brain.**
*U. Seeger, U. Klose, I. Mader, T. Nägele, O. Lutz and W. Grodd.*
University of Tübingen, Tübingen, Germany.

*1841.* **2D Constrained Reconstruction of Spectoscopic Imaging Data Using Accurate Segmentation of MR Images.**
*D.T.A. Sellars, A.J. Schwarz and M.O. Leach.*
Institute of Cancer Research and Royal Marsden Hospital, Sutton, Surrey, UK.

*1842.* **ROI Tailored k-Space Sampling and a 2D Prolate Spheroidal Wave Function Filter: Reduction of Spectral Contamination in Spectroscopic Imaging.**
*M.A. Lindquist, Q.X. Yang, C-H. Zhang, R.J. Demeure, M.B. Smith and L. Shepp.*
The Pennsylvania State University College of Medicine, Hershey, PA, USA; Rutgers University, New Brunswick, NJ,USA and Université Catholique de Louvain, Brussels, Belgium.

*1843.* **Reduction of the Truncation Artifact in High-Speed MRSI by Using Linear Prediction Extrapolation and Normalization with the $T_2$* Decay Curve.**
*S. Hirata, Y. Bito, T. Takahashi, T. Kimura, S. Naruse and K. Tsukada.*
Hitachi, Ltd., Tokyo, Japan; Hitachi Medical Corporation, Chiba, Japan; Louis Pasteur Center for Medical Research, Kyoto, Japan and Kyoto Prefectural University of Medicine, Kyoto, Japan.

*1844.* **Partial Volume Correction of Spectroscopic Imaging Using a Proportional Grid System.**
*K. Heberlein, X. Zhang, S. Sarkar and X. Hu.*
University of Minnesota, Minneapolis, MN, USA.

*1845.* **Comparison of Non Water Suppressed and Water Suppressed Proton Magnetic Resonance Spectroscopy in Normal Volunteers.**
*B. Lewis, J.W. van der Veen, J. Duyn and J.A. Frank.*
National Institutes of Health, Bethesda, MD, USA.

*1846.* **Confidence Images for MR Spectroscopic Imaging.**
*D. Khetselius, K. Young, B.J. Soher and A.A. Maudsley.*
DVA Medical Center, San Francisco, CA, USA.

*1847.* **Automated Quantitative Spectroscopic Imaging of Coupled Spins at 3T - Influence of Realistic Volume Selective Pulse Sequences.**
*J.M. Wild, R.B. Thompson and P.S. Allen.*
University of Alberta, Edmonton, Alberta, Canada.

*1848.* **The Spatial Response Function in SENSE-SI.**
*U. Dydak, K.P. Pruessmann, M. Weiger and P. Boesiger.*
University and ETH Zurich, Zurich, Switzerland.

*1849.* **Localized Detection of Intracellular Sodium with Shift Reagent Aided $^{23}$Na CSI in Isolated Rat Hearts.**
*C. Weidensteiner, M. Horn, E. Fekete, A. Haase, S. Neubauer and M. v. Kienlin.*
Universität Würzburg, Würzburg, Germany.

*1850.* **High-Resolution Human Brain $^{13}$C - MRS and MRSI.**
*K. Okamoto, M. Umeda, Y. Ishihara, H. Watanabe, M. Oda, T. Kanamatsu and Y. Tsukada.*
Toshiba Medical Systems R&D Center, Otawara, Japan and Soka University, Hachioji, Japan.

*1851.* **The Response of Choline-containing Compounds to Neoadjuvant Chemotherapy in Human Breast Carcinoma: A Volume Localized *In-Vivo* Proto MR Spectroscopy Study.**
*M. Kumar, O. Coshic, P.K. Julka, G.K. Rath and N.R. Jagannathan.*
All India Institute of Medical Sciences, New Delhi, India.

*1852.* **Monitoring Response of Head & Neck Tumors to Therapy Using *In Vivo* Localized $^{31}$P Decoupled MR Spectroscopy : A Preliminary Study.**
*H. Serrai, L.A. Loevner, K. Zakian, F. Arias-Mendoza, M. Rijpkema, J.A. Koutcher, T.R. Brown, H.C. Charles, M.O. Leach, J.R. Griffiths, S.J. Nelson, J.L. Evelhoch, A. Heershap and J.D. Glickson.*
Multi-Institutional Group on MRS Application to Cancer.

*1853.* **Improved Spatial Resolution in $^{31}$P Brain Spectroscopic Imaging at 4.0T: Implications For the Clinical Study of Membrane Metabolism.**
*J.E. Jensen, D.J. Drost, P.C. Williamson and R.S. Menon.*
Lawson Research Institute, St. Joseph's Health Centre and Robarts Research Institute, London Health Science Centre, and University of Western Ontario, Toronto, Ontario, Canada.

*1854.* **Proton J-Resolved Specroscopic Imaging Without Water Suppression. Application to Rat Brain With Tumour.**
*G. Hérigault, S. Zoula, A. Ziegler, C. Rémy and M. Décorps.*
CHU Grenoble, Grenoble, France.

## MR Spectroscopy - Other

Hall C
Monday: 14:00 – 16:00

*1855.* **Measurement of Oxygen Consumption in Lung Tissue by $^{13}$C NMR.**
*P.E. Meyer, F.M.H. Jeffrey, M.E. Jessen, R.Y. Chao, J.B. Patel and D.M. Meyer.*
University of Texas Southwestern Medical Center, Dallas, TX, USA.

*1856.* **Multi-Pulse Water Suppresion for $^{1}$H NMR Spectroscopy of Human Brain.**
*I. Tkáč and R. Gruetter.*
University of Minnesota, Minneapolis, MN, USA.

*1857.* **Single-Voxel Short-Echo Time Proton Spectroscopy of Human Brain with Standard Surface Coils.**
*V. Mlynárik, S. Gruber, Z. Starčuk, Z. Starčuk, Jr., M. Roden and E. Moser.*
University of Vienna Medical School, Vienna, Austria and Academy of Sciences of Czech Republic, Brno, Czech Republic.

***1858.*** **High Resolution Localized Brain $^{1}$H Spectroscopy With Multiple Voxel Interleaved STEAM.**
*J. Théberge, D.J. Drost, P.C. Williamson and R.S. Menon.*
Lawson Research Institute, St. Joseph's Health Centre and Robarts Research Institute, London Health Science Centre and University of Western Ontario, Toronto, Ontario, Canada.

***1859.*** **Is GABA a Strongly Coupled Spin System at 1.5T?**
*R.B. Thompson and P.S. Allen.*
University of Alberta, Edmonton, Alberta, Canada.

***1860.*** **A Strategy for MQ GABA Detection at 3.0 ppm with Simultaneous Suppression of Creatine and Macromolecules.**
*J. Shen.*
The Nathan S. Kline Institute for Psychiatric Research, Orangeburg, NY, USA and New York University School of Medicine, New York, NY, USA.

***1861.*** **Simultaneous Spectral Editing for Lactate and g-Aminobutyric Acid (GABA) Using Double-Quantum Filtering and PRESS Localization.**
*H. Lei and J. Peeling.*
University of Manitoba, Winnipeg, Manitoba, Canada.

***1862.*** **Preliminary Study on Glutamate and GABA Using *in vivo* Two-Dimensional (2D) MRS Technique.**
*Y. Ke, J.Y. Bang, B.M. Cohen, M.Q. Yang, S.M. Babb and P.F. Renshaw.*
McLean Hospital, Harvard Medical School, Belmont, MA, USA.

***1863.*** **Detection of Glutathione in the Human Brain *In Vivo* Without Contamination With GABA and Macromolecules.**
*A.H. Trabesinger and P. Boesiger.*
University and ETH Zurich, Zurich, Switzerland.

***1864.*** **Localized 2D SECSY of Human Brain.**
*N. Binesh, K. Yue and M.A. Thomas.*
University of California, Los Angeles, CA, USA.

***1865.*** **Localized 2D COSY in Human Breast.**
*K. Yue, N. Binesh, M. Raman, N. DeBruhl and M.A. Thomas.*
University of California, Los Angeles, CA, USA.

***1866.*** **Validation of Reliability of Time Domain Based Quantification of Cardiac $^{31}$P NMR Spectra.**
*O. Schmidt, M. Bunse, W-I. Jung, G.J. Dietze and O. Lutz.*
Universität Tübingen, Tübingen, Germany and Max Grundig Clinic, Bühl, Germany.

***1867.*** **Using NOE to Improve Spectral Resolution of $^{31}$P MRS Studies *In Vivo*.**
*G.S. Payne, A. Bifone and M.O. Leach.*
Royal Marsden NHS Trust and Institute of Cancer Research, Sutton, Surrey, UK.

***1868.*** **Unsupervised Chemometric Methods to Automatically Discriminate between $^{1}$H-MRSI Spectra in Patients with a Brain Tumor.**
*A.W. Simonetti, W.J. Melssen, M. Rijpkema, A. Heerschap and L.M.C. Buydens.*
Nijmegen University and University Hospital Nijmegen, Nijmegen, The Netherlands.

***1869.*** **Efficient Numerical Modeling of Metabolites in $^{1}$H MRS Using Density Matrices in an Irreducible Representation.**
*D.C. Mueller, A.H. Trabesinger and P. Boesiger.*
University and ETH Zurich, Zurich, Switzerland.

***1870.*** **CWave: Software for the Design and Analysis of $^{13}$C Labeling Studies Performed *In Vivo*.**
*G.F. Mason.*
Yale University, School of Medicine, New Haven, CT, USA.

*1871.* **Comparison of Methods for Baseline Characterization of *In Vivo* $^{1}$H MR Spectra.**
*B.J. Soher, K. Young and A.A. Maudsley.*
DVA Medical Center, San Francisco, CA, USA.

*1872.* **Symmetric Apodization of Spectroscopy Signals Leads to Lean Lines.**
*S.A. Roell, U. Boettcher and O. Heid.*
Siemans AG, Erlangen, Germany.

*1873.* **Analysis of Lipids in Primary and Clonal Brain Cells by Coupled HPLC-$^{1}$H NMR: Localization of Sphingomyelin in Glia.**
*C. Zwingmann, C. Richter-Landsberg, J. Stelten and D. Leibfritz.*
Universität Bremen, Bremen, Germany and Universität Oldenburg, Oldenburg, Germany.

*1874.* **Compared Effect of Short-Chain Fatty Acids and Acetate on Energetic Metabolism on Isolated Perfused Liver of Fed Rats.**
*P. Tissier, M.C. Delmas-Beauvieux, P. Canioni, H. Gin and J.L. Gallis.*
Université Bordeaux 2, Bordeaux, France and Hôpital Haut-Lévêque, Pessac France.

## Musculoskeletal MR Spectroscopy

Hall C
Wednesday: 13:30 – 15:30

*1875.* **Metabolic Control Analysis of Insulin Stimulated Glucose Disposal in Rat Skeletal Muscle.**
*B.M. Jucker, N. Barucci and G.I. Shulman.*
Yale University School of Medicine, New Haven, CT, USA.

*1876.* **Quantitative Comparison Between Fat Selective Imaging and Localized $^{1}$H-Spectroscopy: Assessment of Muscular Lipids in 32 Volunteers.**
*F. Schick, K. Brechtel, J. Machann, S. Jacob, A. Strempfer, D.T. Stein and C.D. Claussen.*
University of Tübingen, Tübingen, Germany and Albert Einstein College of Medicine, New York, NY, USA.

*1877.* **Impaired Metabolic Recovery from Exercise and Decreased Oxidative Capacity Correlate with Fatigue in Patients with Juvenile Dermatomyositis.**
*S.A. Smith, K.J. Niermann, A. Das, M. Hernanz-Schulman, N.J. Olsen and J.H. Park.*
Vanderbilt Medical School, Nashville, TN, USA and Temple University, Philadelphia, PA, USA.

*1878.* **$^{31}$P-MRS of Functional Electrical Stimulated Muscle in SCI Subjects.**
*A.M. Erika Scremin, O.U. Scremin, T. Barstow, T. Ernst, T. Nguyen, K. Yue and A. Thomas.*
University of California, Los Angeles, CA, USA.

*1879.* **High Resolution $^{13}$C MRS Studies of Cartilage Metabolism in Intact Bovine Explants.**
*E.A. Noyszewski, S. Wehrli, S. Kudchodkar, M. Vardaro and R. Reddy.*
University of Pennsylvania and Children's Hospital of Philadelphia, Philadelphia, PA, USA.

*1880.* **Acquired Generalized Lipoatrophy (AGL) and Severe Insulin Resistance (IR): Chemical Shift Selective MR Imaging and $^{1}$H-MR Spectroscopy.**
*K. Brechtel, J. Machann, S. Jacob, B. Hauer, M. Nielsen, S. Matthaei, H-U. Haering, C.D. Claussen and F. Schick.*
University of Tuebingen, Tübingen, Germany.

*1881.* **Effect of Creatine Ingestion on Muscle Bioenergetics during Intermittent Maximal Exercise: a $^{31}$P-NMR Study.**
*E. Thiaudière, R. Yquel, L. Arsac, G. Manier and P. Canioni.*
Unité de Résonance Magnétique des Systèmes Biologiques, UMR 5536 CNRS and Laboratorie de Physiologie de Université Victor Segalen, Bordeaux 2, Bordeaux, France.

*1882.* **Direct Assessment of Intramyocellular Lipids (IMCL) During Exercise in Well Trained Male Runners: A $^{1}$H-MRS Study.**
*K. Brechtel, A. Niess, S. Jacob, J. Machann, H.U. Haering, H.H. Dickhuth, C.D. Claussen and F. Schick.*
University of Tuebingen, Tuebingen, Germany.

*1883.* **Intramyocellular Lipid (IMCL) Stores Before and After Lipid Infusion.**
*M. Kr[11]ák, M. Krebs, H. Stingl, V. Mlynárik, S. Gruber, E. Moser and M. Roden.*
University of Vienna, Vienna, Austria.

*1884.* **End of Exercise pH and PCR Values Normalized to Power Output are Invariant Metabolic Parameters of Muscle Metabolism. A P-31 MR Spectroscopy Study.**
*J.P. Mattei, D. Bendahan, M. Roussel, Y. Lefur and P.J. Cozzone.*
Faculté de Médecine and Hôpital de la Conception, Marseille, France.

*1885.* **The Role of Exchangeable Protons in the Magnetization Transfer Effect of Creatine in Rat Skeletal Muscle.**
*M.J. Kruiskamp and K. Nicolay.*
University Medical Centre, Utrecht, The Netherlands.

*1886.* **Abnormalities in Magnesium ($Mg^{2+}$) and ATP Levels Correlate With Weaknesses in Juvenile Dermatomyositis.**
*K.J. Niermann, M. Hernanz-Schulman, N.J. Olsen and J.H. Park.*
Vanderbilt Medical School, Nashville TN, USA.

*1887.* ***In Vivo*** **Evaluation of the Effects of Continuous Exercise on Skeletal Muscle Triglycerides in Humans.**
*E.L. Thomas, M. Moosavi, J. Rico-Sanz, J. McCarthy, G.A. Coutts, N. Saeed and J.D. Bell.*
Imperial College School of Medicine, Hammersmith Hospital and The National Sports Medicine Institute of the UK, London, UK.

*1888.* **Influence of Oral Creatine Supplementation on Skeletal Muscle Phosphocreatine Availability: $^{31}$P Saturation Transfer Studies in Normal Subjects and a MELAS Patient.**
*H.E. Möller, D. Wiedermann, J. Schneider, A. Fromme and G. Kurlemann.*
Universität Münster and Institut für Chemo- and Biosensorik, Münster, Germany and University of California, San Francisco, CA, USA.

*1889.* **Early Changes in Skeletal Muscle Phosphocreatine and Inorganic Phosphate during Nutritional Repletion of Malnourished Elderly Subjects Using $^{31}$P MRS.**
*I. Bourdel-Marchasson, E. Thiaudière, P-A. Joseph, M. Biran, P. Dehail, M. Rainfray, J-P. Emeriau and P. Canioni.*
Centre Hospitalier Universitaire de Bordeaux, Bordeaux, France; Centre de Gériatrie Henri Choussat, Pessac, France and Université Victor Ségalen Bordeaux 2, Bordeaux, France.

*1890.* **Dipolar Coupling Contributions to the Quantification of Lactate in Skeletal Muscle Observed by $^{1}$H NMR Spectroscopy.**
*I. Asllani, E. Shankland, R. Stuppard and M. Kushmerick.*
University of Washington, Seattle, WA, USA.

*1891.* **High Spatial Resolution $^{1}$H Lipid MRS of Healthy Human Muscles.**
*J. Hu and J.L. Evelhoch.*
Wayne State University School of Medicine, Detroit, MI, USA.

# MR Spectroscopy of the Abdomen and Pelvis

Hall C
Wednesday: 13:30 – 15:30

*1892.* **Is Grading of Prostate Carcinoma Possible by 2D $^{1}$H CSI?**
*B. Pfleiderer, M. Stanka, E. Eltze, A. Maier, A. Semjonow, K.D. Sievert, W. Böker and W. Heindel.*
University of Münster, Münster, Germany.

*1893.* **A 3D Phosphorus Chemical Shift Imaging Assessment of Metabolites in the Regenerating Human Liver following Partial Hepatectomy.**
*K.L. Zakian, Y. Fong, S. Malhotra, L. Schwartz, W. Jarnagin and J.A. Koutcher.*
Memorial Sloan-Kettering Cancer Center, New York, NY, USA.

*1894.* **Tracking Metabolic Response to Neo-Adjuvant Chemotherapy in Prostate Cancer by Proton Magnetic Resonance Spectroscopic Imaging.**
*K.L. Zakian, J.P. Dyke, J. Kurhanewicz, W.K. Kelly, L. Schwartz, P. Scardino, D. Vigneron, S.J. Nelson and J.A. Koutcher.*
Memorial Sloan-Kettering Cancer Center, New York, NY, USA and University of California at San Francisco, San Francisco, CA, USA.

*1895.* **Measurement of Liver TCA Cycle Flux in Awake Rats.**
*V.P. Lebon, S. Dufour, G.W. Cline, B.M. Jucker, K.S. Cadman and G.I. Shulman.*
Yale University School of Medicine, New Haven, CT, USA.

*1896.* ***In Vivo* $^{1}$H MRS of Malignant Extra-Cranial Tumours at 1.5T: Observed Metabolite Signals and Changes in Response to Chemotherapy.**
*A.J. Schwarz, D.J. Collins, N.R. Maisey, G.S. Payne, F.L. Kinnaird, R. Huddart, D. Cunningham and M.O. Leach.*
Institute of Cancer Research and Royal Marsden NHS Trust, Sutton, Surrey, UK.

*1897.* **The Biliary Excretion of a Xenobiotic Demonstrated *In Vivo* at 1.5T Using $^{1}$H-MRS.**
*A.S.K. Dzik-Jurasz, P.S. Murphy, M.O. Leach and I.J. Rowland.*
Institute of Cancer Research and the Royal Marsden NHS Trust, Sutton, Surrey, UK.

*1898.* **$^{1}$H-NMR and ESR Spectroscopic Assessment of Cyanobacterial Toxin-Induced Liver Damage in Rats.**
*S.A. Sturgeon, R.A. Towner and K.E. Hore.*
James Cook University, Townsville, Queensland, Australia.

*1899.* **Spectral Characterization of Prostate Biopsies After External Beam Radiotherapy.**
*T. Bezabeh, C. Menard, L. Leboldus, C. Littman and I.C.P. Smith.*
National Research Council of Canada,; Manitoba Cancer Research and Treatment Foundation, Winnipeg Clinic, and University of Manitoba, Winnipeg, Manitoba, Canada.

*1900.* **The Hepatobiliary $^{19}$F-MRS Catabolite Signal Detected From Patients on Protracted Venous Infusion of 5-Fluorouracil is Detected Predominantly in the Gallbladder.**
*A.S.K. Dzik-Jurasz, D.J. Collins, M.O. Leach and I.J. Rowland.*
Royal Marsden Hospital, Sutton, Surrey, UK.

*1901.* **$^{23}$Na MRI Study of the Intact Rat Kidneys: Effect of Diuretics on the Sodium Gradient.**
*N. Maril, R. Margalit, M. Brezis and H. Degani.*
The Weizmann Institute of Science, Rehovot, Israel and Hadassah University Hospital, Jerusalem, Israel.

*1902.* **Pre-Treatment Phosphorus MR Spectroscopy ($^{31}$P-MRS) Aids in Determination of Tumor Aggressiveness and Early Prediction of Treatment Response in Non-Hodgkin's Lymphoma *In Vivo*.**
*F. Arias-Mendoza, M.R. Smith and T.R. Brown.*
Fox Chase Cancer Center, Philadelphia, PA, USA.

*1903.* **Proton MR Spectroscopy of Prostate Cancer: Comparison 2D-CSI Technique Using Phased-Array Coil with Using Endorectal Surface Coil.**
*Y. Kaji, K. Sugimura, M. Matsuo, M. Matsuki, T. Imoto, Y. Kobashi, K. Maruyama and O. Takizawa.*
Tenri Hospital, Tenri, Japan; Kobe University, Kobe, Japan and Siemens-Asahi Medical Technologies, Tokyo, Japan.

*1904.* **Clinical MR-Spectroscopy of Patients During Radiotherapy Under Treatment of Erythropoietin to Correct for Anemia.**
*M. Büchert, C. Altehoefer, K. Fischer, S. Bartelt, M. Henke and J. Hennig.*
University of Freiburg, Freiburg, Germany.

*1905.* **Evidence of Strong Coupling in Human Prostate Using Endorectal 2D JPRESS Spectroscopy *In Vivo*.**
*M.A. Thomas, M. Raman, A. Marumoto, K. Yue, N. Binesh and Z. Barbaric.*
University of California, Los Angeles, CA, USA.

*1906.* **The Role of High Resolution MRI and *In Vivo* MRS in Assessing Response of Stage Ib Cervical Carcinoma to Neoadjuvant Chemotherapy.**
*M.M. Mahon, A.D. Williams, G.A. Coutts, W.P. Soutter, G.A. McIndoe and N.M. deSouza.*
Hammersmith Hospital, London, UK.

*1907.* **Evaluation of Female Intrapelvic Tumors by Clinical Proton MR Spectroscopy.**
*T. Okada, M. Harada, K. Matsuzaki, S. Hisaoka, H. Nishitani, M. Nishimura and T. Aono.*
Tokushima University, Tokushima, Japan.

## Pediatric MR Spectroscopy

Hall C
Thursday: 13:30 – 15:30

*1908.* **Clinically Feasible 1-$^{13}$C-Glucose Infusion Protocol in Pediatric Patients.**
*A. Moreno, S. Bluml, J.H. Hwang, R.W.K. Lee and B.D. Ross.*
Huntington Medical Research Institutes and California Institute of Technology, Pasadena, CA, USA.

*1909.* ***N*-Acetyl-Aspartate: A Marker for Viable Neurons?**
*T. Thiel, A. Capone, J.F. Schneider, J. Hennig and E. Martin.*
University Children's Hospital, Zurich, Switzerland and University of Freiburg, Freiburg, Germany.

*1910.* **Proton Magnetic Resonance Spectroscopic Imaging (MRSI) and Cognitive Outcome in Children with Fetal Alcohol Syndrome (FAS).**
*B.M. Cortese, G.J. Moore, S.W. Jacobson, D.R. Rosenberg, M.W. Faulk, I.B. Wilds and J.H. Hannigan.*
Wayne State University School of Medicine, Detroit, MI, USA.

*1911.* **Multiple Covariance Analysis of Metabolic Differences in the Brain of Autistic Patients Depending on the Cerebral Region and Age Measured by Proton MR Spectroscopy.**
*S. Hisaoka, M. Harada, T. Okada, K. Yoneda, K. Mori and H. Nishitani.*
Tokushima University, Tokushima, Japan.

*1912.* **Brain Metabolite Levels Appear Normal in Children with Cockayne Syndrome: An *In Vivo* $^{1}$H MRS Study.**
*W. Huang, L. Gabis, P. Roche, M. Savatic, C. Geronimo, T. Button and A. Belman.*
State University of New York, Stony Brook, NY, USA.

*1913.* **MRS in the Diagnosis and Monitoring of Maple Syrup Urine Disease.**
*M. Scadeng, J.A. Ressler, R.A. Moats, D.J. Dubowitz and M.D. Nelson.*
Children's Hospital Los Angeles, Los Angeles, CA, USA and California Institute of Technology, Pasadena, CA, USA.

*1914.* ***In Vivo* $^{1}$H MRS Measurement of Brain Glycine Levels in Non-Ketotic Hyperglycinemia: Correlation with Plasma Glycine Levels.**
*W. Huang, L. Gabis, A. Tudorica, P. Parton, P. Roche and N. Lenn.*
State University of New York, Stony Brook, NY, USA.

*1915.* ***In Vivo* Volume-Selected Proton MR Spectroscopy of the Fetus *in Utero* - Initial Experience.**
*C-S. Lin, B. Fenton, C. Macedonia, D. Schellinger and S.M. Ascher.*
Georgetown University Medical Center, Washington, DC, USA.

*1916.* **Proton Spectroscopy of the Brain of Preterm Infants.**
*A.M. Roelants-van Rijn, J. van der Grond, L.S. de Vries and F. Groenendaal.*
Wilhelmina Children's Hospital, Academic Hospital Utrecht and University Medical Center, Utrecht, The Netherlands.

*1917.* **Value of Cerebral Proton Magnetic Resonance Spectroscopy Using Different Echo Times in Asphyxiated Newborns.**
*A.M. Roelants-van Rijn, J. van der Grond, L.S. de Vries and F. Groenendaal.*
Wilhelmina Children's Hospital, Academic Hospital Utrecht and University Medical Center, Utrecht, The Netherlands.

*1918.* **Serial MRI and MRS in Infants and Children with Mitochondrial Disease.**
*A.A. Tzika, M. Zarifi, T.Y. Poussaint, R.L. Robertson and P.D. Barnes.*
Children's Hospital and Harvard Medical School, Boston, MA, USA.

*1919.* **Metabolic Change in the Brain by Adrenocorticotropic Hormone (ACTH) Injeciton Treatment in West Syndrome Evaluated by Proton MR Spectroscopy.**
*S. Hisaoka, M. Harada, K. Mori, T. Okada and H. Nishitani.*
Tokushima University, Tokushima, Japan.

*1920.* **Long-term Therapeutical Course of Two Cases of Non-Ketotic Hyperglycinemia Monitored by $^{1}$H MRS of Serum, Cerebrospinal Fluid and Brain.**
*A. Viola, F. Nicoli, B. Chabrol, S. Confort-Gouny, F. Vintila, P. Viout, J. Vion-Dury, J. Mancini and P.J. Cozzone.*
Faculté de Médecine and CHU la Timone, Marseille, France.

*1921.* **Differential Diagnosos of Focal Brain Lesions in Children by Quantitative Single-Voxel Proton Magnetic Resonance Spectroscopy.**
*P. Dechent, B. Wilken, J. Herms, C. Maxton, E. Markakis, F. Hanefeld and J. Frahm.*
Biomedizinische NMR Forschungs GmbH and Georg-August-Universität, Göttingen, Germany.

*1922.* **Characteristic Proton MR Spectroscopy Profiles of Brain Lesions Associated with Tuberous Sclerosis in Children.**
*K.M. Cecil, J.C. Egelhoff, B.L. Koch, D. Franz and B.V. Jones.*
Children's Hospital Medical Center, Cincinnati, OH, USA.

*1923.* **Short TE Cerebral H-MRS in Children with Neurofibromatosis Type-1.**
*I.D. Wilkinson, A. Davison, J. Wales and P.D. Griffiths.*
University of Sheffield and Royal Hallamshire Hospital, Sheffield, UK.

*1924.* **Neuro-Developmental Status of Infants with Transposition of the Great Arteries (TGA) Undergoing Arterial Switch Operation Monitored Before and 1 Year After Surgery by Localized $^{1}$H MR Spectroscopy.**
*I.S. Park, S.Y. Yoon, J-Y. Min, Y.H. Kim, J.K. Ko, D.M. Suh, K-S. Kim, I.K. Sung, S-T. Kim and J.H. Lee.*
Asan Medical Center, University of Ulsan College of Medicine, Asan Institute for Life Sciences and Catholic University Medical School, Seoul, Korea.

*1925.* **The Effects of Intestinal Ischaemia and Reperfusion on Neonatal Liver Metabolites: $^{1}$H NMR Indicates Hepatic Glutathione May be Decreased.**
*S.B. Williams, S.R. Williams, L. Spitz and A. Pierro.*
Institute of Child Health and Great Ormond Street Hospital, London, UK and University of Manchester, Manchester, UK.

# Pediatric MR Imaging

Hall C
Thursday: 13:30 – 15:30

***1926.*** **Reproduceability of Diffusion Anisotropy Measurements in Human Neonates.**
*H.E. D'Arceuil, M. Mirmiran, B. Betts, A.J. de Crespigny, M. Hedehus, J. Constantinou, F. Blankenberg, B. Fleisher, S. Atlas, M.E. Moseley and R. Ariagno.*
Stanford University School of Medicine, Stanford, CA, USA.

***1927.*** **Diffusion, Perfusion and $T_2$ MR Imaging of Neonatal Infarcts.**
*P.E. Grant, G.H. Mochida, O. Wu, J. Synott, M. Salhus, A.G. Sorensen, P.W. Schaefer, R.G. Gonzales and K.S. Krishnamoorthy.*
Massachusettes General Hospital, Boston MA, USA and Massachusetts Institute of Technology, Cambridge MA, USA.

***1928.*** **Magnetic Resonance Image Quantification of the Cerebellum Following Hypoxic-Ischaemic Injury to the Neonatal Brain.**
*E. Le Strange, N. Saeed, S. Counsell, D. Edwards and M. Rutherford.*
Imperial College of Science Technology and Medicine, Hammersmith Campus, London, UK.

***1929.*** **Diffusion Tensor MRI of the Cervical Spinal Cord of Normal Preterm Newborns: Cord Microstructure Studied by Tensor Eigenvalue Analysis.**
*G.P. Zientara, B.P. Murphy, S.E. Maier, P.S. Huppi, P.D. Barnes, J.J. Volpe and F.A. Jolesz.*
Harvard Medical School and Brigham and Women's Hospital, Boston, MA, USA; University of Geneva, Geneva, Switzerland and Children's Hospital, Boston, MA, USA.

***1930.*** **Diffusion Changes During Human Brain Maturation.**
*A.M. Ulug, C.G. Filippi, L.A. Heier and R.D. Zimmerman.*
Weill Medical College of Cornell University, New York, NY, USA.

***1931.*** **Hippocampal Developmental Changes: MR Evaluation in Patients with Wide Variety of Brain Developmental and Congenital Malformations.**
*N. Sato, S. Hatakeyama, S. Shimizu, A. Hikima, J. Aoki and K. Endo.*
Gunma University School of Medicine, Maebashi, Gunma, Japan.

***1932.*** **Persistent Reduced Apparent Diffusion Coefficient in Sturge-Weber Syndrome (SWS): Possible Relationship to Increased Tissue Oxygen Extraction.**
*A. Connelly, F.J. Kirkham, F. Calamante, M. Bynevelt, S. Aylett, D.A. Porter, W.K. Chong and D.G. Gadian.*
University College London Medical School and Great Ormond Street Hospital, London, UK.

***1933.*** **Elevation of $T_1$ and $T_2$ Values in the Cerebral White Matter in Periventricular Leukomalacia.**
*S.J. Counsell, A.H. Herlihy, N.J. Robertson, I.J. Cox, G.A. Coutts, B.K. Puri, J.M. Allsop, M.A. Rutherford, A.D. Edwards and G.M. Bydder.*
Imperial College, Hammersmith Hospital, London, UK.

***1934.*** **$^1$H NMR Imaging and Volumetry in Idiopathic Anatomic Megalencephaly.**
*K.P.J. Braun, M.L.C. Hoogendoorn, H.E. Hulshoff Pol, H.G. Schnack, T.D. Witkamp, R.H.J.M. Gooskens and J. van der Grond.*
University Medical Center, Utrecht, The Netherlands.

# Spectroscopic Quantitation

Hall C
Tuesday: 13:30 – 15:30

*1935.* **Observation of Synthesis of Human Cortical GABA by $^{13}C$ NMR.**
*G.F. Mason, K. Petersen, J. Shen, K.L. Behar, O.A.C. Petroff, G.I. Shulman and D.L. Rothman.*
Yale University School of Medicine, New Haven, CT, USA and Nathan Kline Institute, Orangeburg, NY, USA.

*1936.* **Improved Formulas for Multiple-Site Saturation-Transfer Measurements of Chemical-Exchange Rates and Comparison with a New Method.**
*P.B. Kingsley and W.G. Monahan.*
North Shore University Hospital, Manhasset, NY, USA, and New York University School of Medicine, New York, NY, USA.

*1937.* **Metabolite Concentrations of Pons, Mendulla, Motor Cortex in Normal Human Brain Using 2D CSI.**
*B. Yang, Y. Wang, E. Pioro and T.C. Ng.*
The Cleveland Clinic Foundation Cleveland, OH, USA.

*1938.* **A Comparison of Several Methods for Quantification of Resolved Glucose Signals in $^{1}H$ NMR Spectra of the Human Brain.**
*I. Tkac, E.R. Seaquist and R. Gruetter.*
University of Minnesota, Minneapolis, MN, USA.

*1939.* **Metabolite $T_1$ Differs Within and Between Regions of Normal Human Brain.**
*E.E. Brief, K.P. Whittall, D.K.B. Li and A.L. MacKay.*
University of British Columbia, Vancouver, British Columbia, Canada.

*1940.* **Effects of Tissue Segmentation on MRSI Results in the Hippocampal Region.**
*W. Weber-Fahr, G. Ende, D.F. Braus, S. Walter, M. Ruf, C. Buechel and F.A. Henn.*
Central Institute of Mental Health, Mannheim, Germany and Wellcome Department of Cognitive Neurology, London, UK.

*1941.* **Principal Component Analysis versus Hankel Total Least Squares in Magnetic Resonance Spectroscopic Quantitation.**
*S. Van Huffel, Y. Wang, L. Vanhamme and N. Mastronardi.*
Katholieke Universiteit Leuven, Leuven, Belgium.

*1942.* **Grading of Mammary Carcinoma and Relation to Hydrophilic and Lipophilic Tissue Compounds: Application of $^{1}H$-NMR Spectroscopy and Self-Organizing Maps.**
*O. Beckonert, J. Monnerjahn, U. Bonk and D. Leibfritz.*
University of Bremen and Central Hospital Bremen-Nord, Bremen, Germany.

*1943.* **The Optimized Detection of Myo-Inositol *in vivo* Using PRESS and STEAM at 3T.**
*H. Kim and P.S. Allen.*
University of Alberta, Edmonton, Alberta, Canada.

*1944.* **Signal-to-Noise Consequences of Accurate Metabolite Measurements *In Vivo* Using the One-pulse Experiment.**
*R.G.S. Spencer and K.W. Fishbein.*
National Institutes of Health, Baltimore, MD, USA.

*1945.* **Correlation Between Water Content, Transverse Relaxation, and Magnetization Transfer in Red Bone Marrow of Healthy Young Subjects.**
*J. Machann, K. Brechtel, S.H. Duda, O. Lutz, C.D. Claussen and F. Schick.*
Eberhard-Karls-University, Tübingen, Germany.

***1946.*** **Pathology, Vascularisation and Nodal Involvement Determined Using Magnetic Resonance Spectroscopy from a Single Aspiration Breast Biopsy.**
*L. Gluch, C.L. Lean, P. Russell, P. Malycha, C.E. Mountford, R.L. Somorjai, B. Dolenko, A.Nikulin and I.C.P. Smith.*
University of Sydney, Sydney, Australia and National Research Council of Canada, Winnipeg, Manitoba, Canada.

***1947.*** **Automatic Analysis of Double-Phase Encoded Imaging Data.**
*S. Cavassila, O. Beuf, A. Naressi and D. Graveron-Demilly.*
Université LYON I-CPE, Villeurbanne, France and Universität Leipzig, Leipzig, Germany.

***1948.*** **Coherent Averaging of Proton MR Spectroscopy Data Using the Residual Water Resonance as Intrinsic Reference.**
*G. Helms and A. Piringer.*
Karolinska Hospital, Stockholm, Sweden.

***1949.*** **Quantitative Analysis of *In Vivo* 2D $^{1}H$-$^{13}C$ HSQC Spectra Using Complex Nonlinear Least-Squares Curve-Fitting.**
*H. Watanabe, M. Umeda, Y. Ishihara, K. Okamoto, M. Oda, T. Kanamatsu and Y. Tsukada.*
Toshiba Medical Systems R&D Center, Otawara, Japan and Soka University, Hachioji, Japan.

***1950.*** **A Novel Test Procedure for Evaluation of MRS Quantitation Methods.**
*F. Schubert, F. Seifert, C. Elster, A. Link, M. Walzel and H. Rinneberg.*
Physikalisch-Technische Bundesanstalt, Berlin, Germany.

***1951.*** **Quantitative MR Spectroscopy made EASY.**
*J.S. Taylor, R.J. Ogg, W.E. Reddick and P.B. Kingsley.*
St. Jude Children's Research Hospital, Memphis, TN, USA.

***1952.*** **Incorrect Echo Times Yield a 10% Reduction in the Lactate Intensity and a 9% Reduction in the $T_2$ of Lactate.**
*J. van der Grond and K.P.J. Braun.*
University Medical Center, Utrecht, the Netherlands.

***1953.*** **Generalized Application of Principal Component Analysis for Spectral Analysis.**
*R.S. Stoyanova and T.R. Brown.*
Fox Chase Cancer Center, Philadelphia, PA, USA.

***1954.*** **Quantification of Proton MR Spectroscopy Without Prior and Post Acquisition Water Suppression.**
*Z. Dong, W. Dreher and D. Leibfritz.*
Universität Bremen, Bremen, Germany.

***1955.*** **Does the Cr-Methyl-signal in $^{1}H$-NMR-Spectra Vary During Hypoxia?**
*J. Schneider, E. Fekete, S. Neubauer, A. Haase and M. von Kienlin.*
Institute of Physics and University Hospital of Würzburg, Würzburg, Germany.

***1956.*** **Automated Analysis of *In Vitro* $^{1}H$ NMR Spectra Using Simulated Basis Functions.**
*V. Govindaraju, B.J. Soher, K. Young and A.A. Maudsley.*
University of California San Francisco, San Francisco, CA, USA.

***1957.*** **Monitoring the Development of Kidney Function of Human Neonate Using $^{1}H$-NMR Spectra of Urine and Self-Organizing Maps.**
*S. Trump, J. Monnerjahn, N. Unruh, R. Gölz and D. Leibfritz.*
University of Bremen, Bremen, Germany and Children's Hospital of the University of Tübingen, Tübingen, Germany.

***1958.*** **Bilateral Quantification of Metabolic Concentrations in the Human Temporal Lobe by *In Vivo* Proton Magnetic Resonance Spectroscopy.**
*M.C. Newbold and S.F. Keevil.*
Guy's King's and St Thomas' School of Medicine, King's College, London, UK.

***1959.*** **Quantification of the Serial Reproducibility of *In Vivo* 3D $^{1}$H MRS in the Human Brain.**
*B.S.Y. Li, M. Sobel, B.J. Soher, A.A. Maudsley and O. Gonen.*
Fox Chase Cancer Center, Philadelphia, PA, USA and University of California and Department of Veterans Affairs Medical Center, San Francisco, CA, USA.

***1960.*** **A 3-Stage Robust Classification Strategy for Biomedical Spectra: Application to Urine MR and IR Spectra to Distinguish Normal Allografts from Biopsy Proven Rejections.**
*R.L. Somorjai, B. Dolenko, A. Nikulin, P. Nickerson, D. Rush, A. Shaw, M. de Glogowski, J. Rendell and R. Deslauriers.*
National Research Council and University of Manitoba, Winnipeg, MB, Canada.

***1961.*** **Calibration of MRS Signal Using Ventricular CSF as an Internal Reference.**
*S.F. Dreha, C. Shen, M.Q. Wu, J.C. Haselgrove, R.A. Zimmerman and Z.J. Wang.*
Martin-Luther-University, Halle/Wittenberg, Germany and The Children's Hospital of Philadelphia, Philadelphia, PA, USA.

***1962.*** **Differentiation Between Intra- and Extracellular Inorganic Phosphate in $^{31}$P NMR Spectra of the Human Heart.**
*O. Schmidt, M. Bunse, W-I. Jung, G.J. Dietze and O. Lutz.*
Universität Tübingen, Tübingen, Germany and Max Grundig Clinic, Bühl, Germany.

***1963.*** **Inter- and Intra-Site Reproducibility of *in vivo* Metabolite Quantification with Proton Magnetic Resonance Spectroscopic Imaging.**
*D.T. Chard, M.A. McLean, G.J.M. Parker, D.G. MacManus and D.H. Miller.*
University College London, London, UK and National Society for Epilepsy, Chalfont St. Peter, Bucks, UK.

***1964.*** **Segmentation of Brain from a PRESS Localised Single Volume Using Double Inversion Recovery for Simultaneous $T_1$ Nulling.**
*C.C. Hanstock and P.S. Allen.*
University of Alberta, Edmonton, Alberta, Canada.

***1965.*** **Classification of $^{1}$H MR Spectra of Common Pathogenic Bacteria Using Linear Discriminant Analysis.**
*R. Bourne, U. Himmelreich, C. Mountford and T. Sorrell.*
University of Sydney, Sydney, Australia.

***1966.*** **How Accurate is Whole Brain *N*-Acetylaspartate Quantification?**
*O. Gonen and R.I. Grossman.*
Fox Chase Cancer Center and the University of Pennsylvania Medical Center, Philadelphia, PA, USA.

## Quantitative Imaging

Hall C
Monday: 14:00 – 16:00

***1967.*** **MRI Intracranial Tumor Characterization by the Association of Texture Analysis, Dynamic Relaxometry and Morphometric Parameters: A Preliminary Study.**
*P.A. Eliat, D. Olivié, S. Herlidou, B. Carsin, E.L. Rumeur and J.D. de Certaines.*
Faculté de Médecine and Fédération d'Imagerie Médicale de Pontchaillou, CHRU, Rennes, France.

***1968.*** **Improving Estimates of Endothelial Permeability Surface Area Product Using Constrained Fitting Parameters for the Estimation of the Plasma Tracer Concentration Function (PTCF).**
*K.L. Li, X.P. Zhu, J.C. Waterton, D. Checkley, J.J.L. Tessier, Y. Watson and A. Jackson.*
University of Manchester, Manchester, UK and AstraZeneca, Macclesfield, Cheshire, UK.

***1969.*** **The Choroid Plexus as an Internal Reference for Quantitative Permeability Studies in Brain Tumors.**
*X.P. Zhu, A. Jackson and K.L. Li.*
University of Manchester, Manchester, UK.

***1970.*** **Assessment of Body Fat in Obese Rats by MRI: Validation and Timecourse Study.**
*P.R. Allegrini, M. Rudin, D. Baumann and H. Schmid.*
Novartis Pharma Ltd, Basel, Switzerland.

***1971.*** **Methodology for the *In Vivo* Estimation of Fat Emulsification Using MRI.**
*P. Young, L. Marciani, D. Tyler, P. Manoj, A. Fillery-Travis, R. Spiller and P.A. Gowland.*
University of Nottingham, Nottingham, UK and Institute of Food Research, Norwich, UK.

***1972.*** **Hybrid Relaxometric-Spectroscopy: Quantitation of Blood Volume and Oxygenation.**
*C. Bowen and B.K. Rutt.*
University of Western Ontario and John P. Robarts Research Institute, London, ON, Canada.

***1973.*** **Effects of In-Flow and Local Susceptibility in Volume Fraction Measurements: A Phantom Study.**
*A. Celik and W. Lin.*
University of North Carolina, Chapel Hill, NC, USA and Washington University, St. Louis, MO, USA.

***1974.*** **A Comparison between the Transverse Relaxation Spectra of Amphibian and Mammalian Nerve Measured *In Vitro*.**
*K. Wachowicz and R.E. Snyder.*
University of Alberta, Edmonton, Alberta, Canada.

***1975.*** **A Novel Method of High Precision Field Mapping.**
*L. Li and J.S. Leigh.*
University of Pennsylvania, Philadelphia, PA, USA.

***1976.*** **Tissue Characterization Using Magnetic Resonance Elastography: Shear Modulus & Shear Viscosity.**
*S.A. Kruse, J.A. Smith, A.J. Lawrence, A. Manduca and R.L. Ehman.*
Mayo Clinic, Rochester, MN, USA.

***1977.*** **The Effects of Growth Hormone Treatment on Spin-Lattice Relaxation Times in 18q- Subjects.**
*L.J. Hardies, J.L. Lancaster, C.T. Gay, R.J. Leach, J.D. Cody and P.T. Fox.*
University of Texas Health Science Center, San Antonio, TX, USA.

***1978.*** **Longitudinal Relaxation Time Measurements for the Human Brain at 8 Tesla.**
*Y. Yu, A.M. Abduljalil and P-M L. Robitaille.*
The Ohio State University, Columbus, OH, USA.

***1979.*** **Fast $T_1$r Measurements for MR Gel Dosimetry.**
*M. Bock, S. Sammet, A. Bankamp, S. May, U. Ramm, U. Weber, P. Bachert and L.R. Schad.*
Deutsches Krebsforschungszentrum (dkfz), Heidelberg, Germany; J.W. Goethe-Universität, Frankfurt, Germany and Gesellschaft für Schwerionenforschung (GSI), Darmstadt, Germany.

***1980.*** **Mapping the Refractive Index Distribution in Human Eye Lenses Using Transverse Relaxation ($T_2$) Imaging.**
*B.A. Moffat and J.M. Pope.*
Queensland University of Technology, Brisbane, Queensland, Australia.

***1981.*** **Reduced-Dose Cranial Radiation Associated with Decreased CNS Morbidity.**
*W.E. Reddick, J.M. Russell, J.O. Glass and A. Gajjar.*
St. Jude Children's Research Hospital, Memphis, TN, USA.

***1982.*** **Investigaton of the NMR Dose Response of a Ceric Sulfate Dosimeter.**
*S.Å.J. Bäck, M. Lepage and C. Baldock.*
Queensland University of Technology, Brisbane, QLD, Australia.

*1983.* **On the Stability of MR Based Monomer/Polymer Gel Dosimeters.**
*Y. De Deene, C. De Wagter, E. Achten and W. De Neve.*
University Hospital of Gent, Gent, Belgium.

*1984.* **A Methacrylate Type Gel for Radiotherapy Dosimetry: Assessment by MRI and MRS.**
*P.S. Murphy, V. Cosgrove, A.J. Schwarz, S. Webb and M.O. Leach.*
The Institute of Cancer Research and The Royal Marsden NHS Trust, Sutton, Surrey, UK.

*1985.* **BANG™ Gel Dosimetry in Carbon Ion Beams.**
*A. Bankamp, M. Bock, U. Ramm, O. Jäckel and L. Schad.*
Deutsches Krebsforschungszenrum (DKFZ), Heidelberg, Germany; J.W.Goethe-Universität, Frankfurt, Germany and Gesellschaft für Schwerionenforschung (GSI), Darmstadt, Germany.

*1986.* **MRI Oxygenation Maps of the Eye: Improved Modelling and Estimation of Regional Retinal Blood Flow.**
*P.S. Tofts, C. Baldock and B.A. Berkowitz.*
University College London, London, UK; Queensland University of Technology, Brisbane, Australia and Wayne State University, Detroit, MI, USA.

*1987.* **A Perfusion Chamber Suitable for the Measurement of Transverse Relaxation Spectra of Tissue Maintained *In Vitro*.**
*K. Wachowicz and R.E. Snyder.*
University of Alberta, Edmonton, Alberta, Canada.

## High Field (≥ 3T): Normal Anatomy

Hall C
Monday: 14:00 – 16:00

*1988.* **Average RF Power Reduction for $T_2$ FLAIR at 3.0 Tesla.**
*H.G. Reynolds and J. Rydberg.*
GE Medical Systems, Milwaukee WI, USA and Mayo Clinic, Rochester MN, USA.

*1989.* **Ultra High Resolution Imaging of the Human Head.**
*P-M L. Robitaille, A.M. Abduljalil and A. Kangarlu.*
The Ohio State University, Columbus, OH, USA.

*1990.* **Comparison of Cerebral Cortical Vessels of High Resolution Human and Rodent Brain Images at 8 Tesla.**
*Y. Yu, R.E. Burgess, D.W. Chakeres and P-M L. Robitaille.*
The Ohio State University, Columbus, OH, USA.

*1991.* ***In-vivo*** **Measurement of Localized Tissue Sodium $T_2$* at 4.0 Tesla.**
*R. Bartha and R.S. Menon.*
John P. Robarts Research Institute, London, Ontario, Canada.

*1992.* **Relationship of Longitudinal Relaxation Rates to Esitmated Regional Iron and Water Contents in Human Brain *In Vivo* at 3 Tesla.**
*N. Gelman, J.R. Ewing, J.M. Gorell, E.M. Spickler and E. Solomon.*
Henry Ford Hospital and Health Sciences Center, Detroit, MI, USA.

*1993.* **High Resolution MRI of Brainstem at 8 Tesla.**
*P. Novak, V. Novak, A. Kangarlu, A.M. Alduljalil and P-M L. Robitaille.*
The Ohio State University, Columbus, OH, USA.

*1994.* **Routine Clinical Brain MR Imaging at 3.0T: Initial Experience.**
*M.A. Bernstein, J. Huston III, C.R. Jack, J.P. Felmlee, N.G. Campeau and B.J. Erickson.*
Mayo Clinic and Foundation, Rochester MN, USA.

*1995.* **Double Inversion-Recovery Echo-Planar Imaging at 3 Tesla.**
*R.T. Kneusel, R.W. Cox and V. Roopchansingh.*
Medical College of Wisconsin, Milwaukee, WI, USA.

*1996.* **Optimizing Image Parameters of 3.0T MRI for $T_1$ SE, $T_2$ SE, and 3D SPGR in Diagnostic Brain MRI.**
*G.H. Chung, C.R. Jack, Jr., M. Bernstein, J. Huston and J.P. Felmlee.*
Mayo Clinic, Rochester, MN, USA.

## Safety and Bioeffects

Hall C
Wednesday: 13:30 – 15:30

*1997.* **Side Effects after Anesthesia for Cerebral MRI in 175 Children.**
*A. Sandner-Kiesling, E. Spork, G. Schwarz, M. Vizenci, A. Fall, F. Ebner and W.F. List.*
University of Graz, Graz, Austria.

*1998.* **Mutagenic or Co-Mutagenic Effect of Static Magnetic Fields in the Ames-Test?**
*E.M. Teichmann, J.G. Hengstler, W.G. Schreiber, I. Schiffer, S. Haffner, F. Oesch, H.W. Spieb and M. Thelen.*
Johannes Gutenberg-University, Mainz, Germany.

*1999.* **Potential MR Hazard to Patients with Metallic Heart Valves: The Lenz Effect.**
*B. Condon and D.M. Hadley.*
Institute of Neurological Sciences, Glasgow, UK.

*2000.* **MRI and Pacemaker: Is 1.5 Tesla Enough to Close the Reed Switch of a Pacemaker?**
*R. Luechinger, V.A. Zeijlemaker, F. Duru, M.B. Scheidegger, R. Candidas and P. Boesiger.*
University and ETH, Zurich, Switzerland; Bakken Research Center, Maastricht, The Netherlands and University Hospital, Zurich, Switzerland.

*2001.* **Fast MR Imaging of RF Heating via Phase Difference Mapping.**
*E.M. Shapiro, A. Borthakur, K. Gunderson, M.J. Shapiro, R. Reddy and J.S. Leigh.*
University of Pennsylvania, Philadelphia, PA, USA and Novartis Institute for Biomedical Research, Summit, NJ, USA.

*2002.* **Analysis of RF Heating at 3.0T.**
*J.P. Felmlee, M.A. Bernstein and J. Huston III.*
Mayo Clinic and Foundation, Rochester MN, USA.

*2003.* **RF Transmit Power Limit for the Bare-Wire Loopless Catheter Antenna.**
*C.J. Yeung and E. Atalar.*
John Hopkins University, Baltimore, MD, USA.

*2004.* **Accurate SAR and $B_1$ Field Calculations Using High Resolution Head Models.**
*T.S. Ibrahim, H. Zhu, B.A. Baertlein, R. Lee and P.M.L. Robitaille.*
The Ohio State University, Columbus, OH, USA.

*2005.* **Bodycoil Electric Field Distribution and Surface Coil Heating.**
*C.C. Guclu, S. Venkatraman and X. Lou.*
GE Medical Systems, Milwaukee, WI, USA.

*2006.* **Knowledge Transfer From Electrostimulation to Peripheral Nerve Stimulation by Magnetic Gradient Fields in MRI.**
*A. Hoffmann, S. Faber, A. Bongers, L. Jäger and M. Reiser.*
Klinikum Grosshadern, University of Munich, Munich, Germany.

*2007.* **SAFE-Model - A New Method for Predicting Peripheral Nerve Stimulations in MRI.**
*F.X. Hebrank and M. Gebhardt.*
Siemens Medical Systems, Erlangen, Germany.

*2008.* **Frequency Analysis of MRI Acoustic Noise.**
*D.L. Price, J.P. De Wilde, A.M. Papadaki, J.S. Curran and R.I. Kitney.*
Imperial College, London, UK.

*2009.* **Acoustic Noise Reduction in MRI by Selective Gradient Derating.**
*Y. Zhou and J. Ma.*
GE Medical Systems, Milwaukee, WI, USA.

*2010.* **Acoustic Optimisation of Rapid MRI.**
*F. Hennel.*
CEA-SHFJ, Orsay, France.

## Non-Gadolinium Contrast Agents: Animal Models and Others

Hall C
Tuesday: 13:30 – 15:30

*2011.* ***In Vivo* NMR of Hyperpolarized $^{129}$Xe in Rat Brain.**
*G. Duhamel, P. Choquet, J.L. Leviel, L. Lamalle, C. Julien, M. Décorps, A. Ziegler and A. Constantinesco.*
CHU Grenoble, Grenoble, France and CHU Hautepierre, Strasbourg, France.

*2012.* **Mismatch Between the Manganese Ion Influx and Decreased Apparent Diffusion Coefficient of Water in the Focal Ischemia.**
*I. Aoki, C. Tanaka, T. Ebisu, K. Katsuta, A. Fujikawa, M. Umeda, M. Fukunaga, Y. Watanabe, Y. Someya, K. Fukuda, T. Takegami and S. Naruse.*
Meiji University of Oriental Medicine and Kyoto Prefectural University of Medicine, Kyoto, Japan and Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan.

*2013.* **Non invasive Quantification of Manganese Deposits in the Rat Brain by Measurement of $T_1$.**
*B. Gallez, R. Demeure, C. Baudelet, N. Abdelahouab, N. Beghein, B.F. Jordan, M. Geurts and H. Roels.*
Université Catholique de Louvain, Brussels, Belgium.

*2014.* **Manganese Enhanced MRI (MEMRI) Neuronal Tract Tracing in Response to Odor Stimulation in Mice.**
*R.G. Pautler and A.P. Koretsky.*
Carnegie Mellon University, Pittsburgh, PA, USA and National Institutes of Health, Bethesda, MD, USA.

*2015.* **Magnetization Transfer Imaging Reveals Lower Contrast in Mice Afflicted with Niemann-Pick Type C Neurodegenerative Disease.**
*J. Guo, J-P. Galons and R.J. Gillies.*
University of Arizona Cancer Center, Tucson, AZ, USA.

*2016.* **Reduced Animal Use in Efficacy Testing in Disease Models Through Group-Sequential Experimental Designs in Combination with MRI.**
*J.C. Waterton, B.J. Middleton, R. Pickford, C.P. Allott, D. Checkley and R.A. Keith.*
AstraZeneca, Macclesfield, Cheshire, UK and AstraZeneca, Wilmington, DE, USA.

***2017.*** **$T_2$ Changes Following Shunt-Treatment of Neonatal Hydrocephalic H-Tx Rats.**
*C.M. Mohr, B.J. Carter, J.S. Depelteau, S.J. Blackhand and H.C. Jones.*
University of Florida, Gainesville, FL, USA and National High Magnetic Field Laboratory, Tallahassee, FL, USA.

***2018.*** **Cerebral Blood Volume Measurements: Effects of Water Exchange.**
*A. Celik, Y.Y. He, C.Y. Hsu and W. Lin.*
University of North Carolina, Chapel Hill, NC, USA and Washington University, St. Louis, MO, USA.

## Contrast Agent Applications

Hall C
Wednesday: 13:30 – 15:30

***2019.*** **Comparison of Gd-DTPA BMA and NC100150 Enhancement Patterns in C3H Mammary Carcinoma Bearing Mice.**
*L. Østergaard, P. Vestergaard-Poulsen, L. Bentzen, M.R. Horsman, J. Overgaard, A. Bjørnerud, K. Briley-Sæbø and C. Gyldensted.*
Aarhus University Hospital, Aarhus, Denmark and Nycomed/Amersham, Oslo, Norway.

***2020.*** **Optimal dose of Gd-DTPA in Dynamic MR Studies.**
*H. Rusinek, V. Lee, G. Johnson, A. Huang and A. Ton.*
NYU Medical Center, New York, NY, USA.

***2021.*** **Quantification of Gadodiamide Signal Changes for rCBF Measurements.**
*A. Tudorica, G.C. Newman, E. Delucia-Deranja, F.E. Hospod, W. Huang, C.S. Patlak and H.F. Li.*
State University of New York, Stony Brook, NY, USA.

***2022.*** **Quantification of Gadodiamide Induced MR Signal Changes for Hemodynamic Measurements.**
*A. Tudorica, G.C. Newman, E. Delucia-Deranja, F.E. Hospod, W. Huang, C.S. Patlak and H. Li.*
State University of New York, Stony Brook, NY, USA.

***2023.*** **Quantitative Assessment of Gd-DTPA Contrast Agent from Signal Enhancement.**
*M. Pedersen, J. Mørkenborg, F.T. Jensen, H. Stødkilde-Jørgensen and J. Frøkiær.*
Aarhus University Hospital, Aarhus, Denmark.

***2024.*** **Human Cerebral Blood Flow Maps Improve with Higher Concentration of Contrast Agent.**
*T. Benner, B. Tombach, J.P. Synnott, G. Schuierer, P. Reimer, V. Geens, L. Østergaard and A.G. Sorensen.*
Massachusetts General Hospital, Charlestown, MA, USA; Westfalian Wilhelms -University, Münster, Germany and Schering AG, Berlin, Germany.

***2025.*** **Accurate De-Oxygenation of *Ex Vivo* Whole Blood Using Sodium Dithionite.**
*K. Briley-Sæbø and A. Bjørnerud.*
Nycomed Imaging AS, Oslo, Norway.

***2026.*** **Analytical Model of Susceptibility Induced MR Signal Dephasing By Capillaries.**
*V.G. Kiselev and D.S. Novikov.*
Research Center Jülich GmbH, Jülich, Germany; Institute of Physics, Minsk, Byelorussia and California Institute of Technology, Pasadena, CA, USA.

***2027.*** **An Estimate of the Error Introduced by $^1$H Exchange in Bolus Tracking.**
*G.R. Moran and F.S. Prato.*
The Lawson Research Institute, St. Joseph's Health Centre, London, Ontario, Canada.

*2028.* **The Effect of Equilibrium Transcytolemmal Water Exchange on the Determination of Contrast Reagent Concentration, [CR].**
*C.S. Springer, Jr., C.S. Landis, X. Li and W.D. Rooney.*
Brookhaven National Laboratory, Upton, NY, USA and State University of New York, Stony Brook, NY, USA.

*2029.* **Comparison of Gadomer-17 and Gadopentetate dimeglumine (Gd-DTPA) for Assessment of Tumor Vascular Characterization.**
*T. Motohara, K. Sugimura, Y. Ohno, T. Yoshikawa, M. Fujii, N. Katoh, T. Yokawa and H. Kitagaki.*
Shimane Medical University, Izumo, Japan; Kobe University, Kobe, Japan; Miki Civil Hospital, Miki, Japan and Nihon Schering, Osaka, Japan.

*2030.* **NC100150 Enhanced Imaging Offers the Possibility to Monitor Pharmacological Modification of Tumor Blood Flow and Blood Volume in Experimental Tumors in Mice.**
*L. Bentzen, P. Vestergaard-Poulsen, M.R. Horsman, J. Overgaard, A. Bjørnerud, K. Briley-Sœbø, C. Gyldensted and L. Østergaard.*
Aarhus University Hospital, Aarhus, Denmark and Nycomed/Amersham Imaging, Oslo, Norway.

*2031.* **Determination of the Signal Intensity Time Course in Oxygen Enhanced MR Lung Imaging.**
*C.J. Müller, M. Schwaiblmair, J. Scheidler, M. Deimling, J. Weber, C. Vogelmeier, R. Löffler and M. Reiser.*
Klinikum Großhadern, Ludwig-Maximilians-Universität, Munich, Germany and Siemens Medizintechnik, Erlangen, Germany.

*2032.* **Safety and Efficacy of Gadobenate Dimeglumine on MR Imaging of Pediatric CNS. Comparison with Gadopentatate Dimeglumine.**
*A. La Noce, C. Baldoli, L. D'Incerti, I. Salerio, M.A. Kirchin, G. Pirovano and A. Spinazzi.*
Bracco SpA; Ospedale S. Raffaele and Instituto Neurologico Besta, Milan, Italy.

*2033.* **Comparison of the Contrasting Behaviour of Gd-BOPTA and Gd-DTPA for MR Imaging of CNS Tumors.**
*M. Essig, M. Hartmann, F. Floemer, S. Heiland, H. Hawighorst, A. Mohr, O. Jansen, K-P. Lodemann and M.V. Knopp.*
German Cancer Research Center, Heidelberg, Germany and Bracco-Byk Gulden, Konstanz, Germany.

*2034.* **MRI Contrast Enhancement of Human Glioblastoma Multiforme with Gadolinium Texaphyrin.**
*J.R. Alger, J.M. Ford, S. Haney, T.J. Endicott, D. Ludwig and A. Wagner.*
University of California, Los Angeles, CA, USA.

*2035.* **Contrast Enhanced MRI of Brain Tumor in Rats Using a New Medium Moledcular Size Contrast Agent NMS60 Compared with Low Molecular Size Gd-DTPA.**
*Y. Hashiguchi, A. Nakatani, C. Fujimoto, S. Seri, K. Takahashi and M. Kato-Azuma.*
Nihon Medi-Physics Co. Ltd., Chiba, Japan.

*2036.* **Contrast Agent Enhanced 7T mMRI of a Transgenic Mouse Model of Multiple Sclerosis.**
*Y. Zaim Wadghiri, L.A. Sheiman, J.J. Lafaille and D.H. Turnbull.*
NYU School of Medicine, New York, NY, USA.

*2037.* **Iron Oxide Black Blood Contrast Agent Improves Nerve Image Selectivity in MR Neurography.**
*A.G. Filler, K.S. Tarlo, J.A. Haynes and P. Villablanca.*
UCLA Medical Center, Los Angeles, CA, USA and Nycomed, Wayne, PA, USA.

*2038.* **First Pass and Blood Pool Effect of a New Superparamagnetic Iron Oxide Blood Pool MR Contrast Agent: Phase I Clinical Trial.**
*B. Tombach, P. Reimer, C. Bremer, T. Allkemper, M. Engelhardt, M. Mahler and W. Heindel.*
University of Muenster, Muenster, Germany and Schering AG, Berlin, Germany.

*2039.* **3D Fast MR Angiography of P 760 and Dose Effect Relationship After Intravenous Bolus Injection in Rabbit Compared to Gd-DOTA.**
*R. Vosshenrich, E. Castillo, U. Fischer, B. Raab, C. Corot and E. Grabbe.*
Georg-August-Universität, Göttingen, Germany and Guerbet, Roissy, France.

*2040.* **3D-Micro-MR Angiography Using Macromolecular MR Contrast Agents with Various Size of Polyamidoamine Dendrimer Cores.**
*H. Kobayashi, N. Sato, A. Hiraga, T. Saga, J. Konishi, K. Togashi and M.W. Brechbiel.*
Kyoto University, Kyoto, Japan and National Institutes of Health, Bethesda, MD, USA.

*2041.* **Value of Blood Pool Contrast Agent in Magnetic Resonance Venography (MRV) of the Lower Extremities and Pelvis.**
*M. Aschauer, R. Stollberger, K.A. Hausegger, J. Raith, H. Portugaller, S. Doder and F. Ebner.*
University Hospital, Graz, Austria.

*2042.* **Interstitial MR Lymphography With MS-325 (Angiomark®).**
*S.G. Ruehm, R. Lauffer, K. Treiber, A. Borowski and J.F. Debatin.*
University Hospital, Essen, Germany and EPIX Medical, Cambridge, MA, USA.

*2043.* **Superparamagnetic Iron Oxide MION: A Contrast Agent for $^{23}$Na Cardiac MRI in Myocardial Infarction.**
*C.D. Constantinides, D. Herzka, D. Bolar, F. Boada, D. Kraitchman, P.A. Bottomley and J. Rogers.*
Johns Hopkins University, Baltimore MD, USA; University of Pittsburgh, Pittsburgh, PA, USA and Advanced Magnetics Inc., Cambridge, MA, USA.

*2044.* **Assessment of Myocardial Viability in Hyperenhanced Moderately Injured Myocardium Using Gd-DTPA and Gadophrin.**
*M. Saeed, G. Lund, M.F. Wendland, J. Bremerich, H-J. Weinmann and C.B. Higgins.*
University of California, San Francisco, CA, USA and Schering AG, Berlin, Germany.

*2045.* **Occlusive Myocardial Infarction: Investigation of Gadophrin-2 Enhanced MR Imaging in a Cat Model.**
*S.S. Lee, S.H. Choi, S.I. Choi, S.T. Kim, K.H. Lim, C.H. Lim and T-H. Lim.*
Asan Medical Center, University of Ulsan College of Medicine and Asan Institute for Life Sciences, Seoul, Korea.

*2046.* **Assessment of Myocardial Viability with Use of Necrosis-Avid Versus Blood Pool MR Contrast Agents in Reperfused Myocardial Infarction in a Cat Model.**
*D.H. Kim, S.I. Choi, S.T. Kim, K.H. Lim, C.H. Lim, G.Y. Gong, H-J. Weinmann and T-H. Lim.*
Asan Medical Center, University of Ulsan College of Medicine and Asan Institute for Life Sciences, Seoul, Korea and Schering AG, Berlin, Germany.

*2047.* **EVP 1001-1: A New Cardiac Specific MR Contrast Agent with Optimal Kinetics for Evaluation of the Ischemic Heart.**
*P.R. Seoane, P.V. Prasad, R.R. Edelman and P.P. Harnish.*
Eagle Vision Pharmaceutical Corp., Chester Springs, PA, USA and Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, MA, USA.

*2048.* **Morphological and Functional MR Imaging of Focal Nodular Hyperplasia with Gadobenate Dimeglumine: Work in Progress.**
*G. Morana, L. Grazioli, M. Kirchin, A. Spinazzi, A. Chiesa and C. Procacci.*
University of Verona, Verona, Italy; University of Brescia, Brescia, Italy and Bracco SpA, Milan, Italy.

*2049.* **The Rim Enhancement Patterns of Liver-Specific Gd-EOB-DTPA and MnDPDP in Hepatic Abscess Model.**
*Y. Chang, H.J. Park, J.M. Lee, B.S. Han and D.S. Kang.*
Kyungpook National University, Taegu, Korea.

*2050.* **Low-Dose Gadobenate Dimeglumine-Enhanced MRI in the Detection and Charcterization of Focal Liver Lesions.**
*G. Pirovano, M. Kirchin and A. Spinazzi.*
Bracco S.p.A., Milan, Italy.

*2051.* **Optimal Delay Time for MR Imaging of the Biliary Tract Following Mn-DPDP Administration.**
*G.S. Foster and D. Hebel.*
Rush University, Rush-Presbyterian-St. Luke's Medical Center, Chicago, IL, USA.

*2052.* **Gadobenate Dimeglumine-enhanced Dynamic Imaging of Hypervascular Liver Lesions in Previously Contrast-Enhanced Liver Parenchyma.**
*G. Schneider, K. Altmeyer, M. Kirchin, R. Seidel, A. Stumm and B. Kramann.*
University Hospital, Homburg / Saar, Germany.

*2053.* **MRI Detection of Macrophage Infiltration in Rat Renal Transplantation.**
*C. Ho, Y. Zhang, S.J. Dodd, K.S. Hendrich and M. Williams.*
Carnegie Mellon University, Pittsburgh, PA, USA.

*2054.* **Excretion of Gadopentetate Dimeglumine into Human Breast Milk During Lactation.**
*R.A. Kubik-Huch, N.M. Gottstein-Aalame, T. Frenzel, B. Seifert, E. Puchert and J.F. Debatin.*
University Hospital, Zurich, Switzerland; Schering AG, Berlin, Germany and University of Zurich, Zurich, Switzerland.

## New Contrast Agents

Hall C
Wednesday: 13:30 – 15:30

*2055.* **LDRR-001: The First Noncovalent Calix[4]arene-Gd-Albumin MR Contrast Agent.**
*L.H. Bryant, Jr., A.T. Yordanov, J.J. Linnoila, M.W. Brechbiel and J.A. Frank.*
National Institutes of Health, Bethesda, MD, USA.

*2056.* **$^{2}$H NMR Study of the MP 2269-HSA Interaction: A Step Forward to the Dynamics of Non-Covalent Binding.**
*L. Vander Elst, S. Laurent, K. Adzamli and R.N. Muller.*
University of Mons-Hainaut, Mons, Belgium and Mallinckrodt Inc., St. Louis, MO, USA.

*2057.* **Beneficial Effect of a Slow Water Exchange on the High Field Relaxivity of Dy-DTPA Derivatives.**
*L. Vander Elst, A. Roch, P. Gillis, S. Laurent, F. Botteman, J.W.M. Bulte and R.N. Muller.*
University of Mons-Hainaut, Mons, Belgium and National Institutes of Health, Bethesda, MD, USA.

*2058.* **Microenvironmental Responsive MRI Contrast Agent Consisting of Polyion Complex for Tumor Sensing.**
*M. Mikawa, N. Miwa, T. Akaike and A. Maruyama.*
Tokyo Institute of Technology, Yokohama, Japan and Nihon Schering K.K., Osaka, Japan.

*2059.* **Molecular Factors that Determine Curie Spin Relaxation in Dy-Chelates.**
*J.W.M. Bulte, M.T. Greenfield and P. Caravan.*
National Institutes of Health, Bethesda, MD, USA and EPIX Medical Inc., Cambridge, MA, USA.

*2060.* **Blood Clearance of High-Generation Dendrimer-Based Gadolinium Chelates: The Study of a Potentially Saturable Site (Mechanism) in the Rat.**
*L.H. Bryant Jr., E.K. Jordan, J.W.M. Bulte, K. Garmestani and J.A. Frank.*
National Institutes of Health, Bethesda, MD, USA.

*2061.* **Paramagnetic Relaxation Enhancement in Off-Resonance Rotating Frame: From Gd-DTPA to MION.**
*H. Zhang and A.M. Wyrwicz.*
ENH Reasearch Institute, Evanston, IL, USA.

***2062.*** **Magnetodendrimers as a New Class of Cellular Contrast Agents.**
*J.W.M. Bulte, T. Douglas, E. Strable, B.M. Moskowitz and J.A. Frank.*
National Institutes of Health, Bethesda, MD, USA; Temple University, Philadelphia, PA, USA and University of Minnesota, Minneapolis, MN, USA.

***2063.*** **Pharmacokinetics and Enhancement Patterns of Macromolecular MR Contrast Agents with Various Size of Polyamidoamine Dendrimer Cores.**
*N. Sato, H. Kobayashi, A. Hiraga, T. Saga, K. Togashi, J. Konishi and M.W. Brechbiel.*
Kyoto University, Kyoto, Japan and National Institutes of Health, Bethesda, MD, USA.

***2064.*** **Gadolinium-cDTPAa Conjugated with Melanoma Monoclonal Antibody 9.2.27 as a Melanoma Specific MRI Contrast Agent.**
*D. Shahbazi-Gahrouei, M. Williams, S. Rizvi and B.J. Allen.*
University of Western Sydney and St. George Hospital, Sydney, Australia.

***2065.*** **Liposomes as Carriers of Amphiphilic Gd-Chelates.**
*C. Gløgård, G. Stensrud, R. Hovland, S.L. Fossheim and J. Klaveness.*
University of Oslo and Nycomed Imaging AS, Oslo, Norway.

***2066.*** **Targeted Contrast Agents for Magnetic Resonance Imaging: Possibilities and Limitations.**
*L.O. Johansson, K.E. Kellar, H.K. Ahlström, A. Bjørnerud, B. Douty, D.L. Ladd and D.K. Fujii.*
Nycomed Amersham Imaging, Oslo, Norway and Uppsala University Hospital, Uppsala, Sweden.

***2067.*** **Direct $^{1}$H NMR Observation of a Lanthanide Bound Water in Aqueous Solution.**
*S. Zhang, K. Wu and A.D. Sherry.*
University of Texas at Dallas, Richardson, TX, USA and University of Texas Southwestern Medical Center, Dallas, TX, USA.

***2068.*** **Binding of Gd(III) Complexes to Albumin as Measured by High Field EPR.**
*T.I. Smirnova, A.I. Smirnov, R.L. Belford and R.B. Clarkson.*
University of Illinois, Urbana, IL, USA.

## Novel Contrast Mechanisms

Hall C
Thursday: 13:30 – 15:30

***2069.*** ***In Vivo*** **$^{1}$H Double Quantum Filtered MRI of the Human Wrist and Ankle.**
*A.H. Aletras, L. Tsoref and G. Navon.*
National Institutes of Health, Bethesda, MD, USA and Tel Aviv University, Tel Aviv, Israel.

***2070.*** **Intermolecular Multiple-Quantum Coherence Relaxation and its Implication for MRI Contrast.**
*Z. Chen, S.D. Kennedy and J. Zhong.*
University of Rochester, Rochester, NY, USA.

***2071.*** **Intermolecular Double-Quantum-Coherence Imaging.**
*S. Ahn, R.R. Rizi, T-Q. Li, L-S. Bouchard, D.A. Roberts, W.S. Warren, J.S. Leigh and M.D. Schnall.*
University of Pennsylvania Medical Center, Philadelphia, PA, USA and Princeton University, Princeton, NJ, USA.

***2072.*** **Image Formation From Intermolecular Double-Quantum Coherences.**
*J. Zhong, Z. Chen and E. Kwok.*
University of Rochester, Rochester, NY, USA.

***2073.*** **Feasibility of Intermolecular Zero Quantum MRI at 1.5T.**
*L-S. Bouchard, S. Ahn, R.R. Rizi, T-Q. Li, D.A. Roberts, J.S. Leigh, M.D. Schnall and W.S. Warren.*
Princeton University, Princeton, NJ, USA and University of Pennsylvania Medical Center, Philadelphia, PA, USA.

***2074.*** **3D - MR Microscopy of the Mouse Brain with Intermolecular Zero and Double Quantum Coherences at 11.7T.**
*P.T. Narasimhan, S.S. Velan and R.E. Jacobs.*
California Institute of Technology, Pasadena, CA, USA.

***2075.*** **Magnetization Transfer Contrast in Electrically Stimulated Neural Tissue.**
*V. Gulani, G.A. Iwamoto, P. Gor'kov, R. Subramanian, A.G. Webb and P.C. Lauterbur.*
University of Illinois at Urbana-Champaign, Urbana, IL, USA and National High Magnetic Field Laboratory, Tallahassee, FL, USA.

***2076.*** **Improved Specificity of Magnetization Transfer with Low-Power Binomial Pulses.**
*M. Pachot-Clouard and L. Darrasse.*
U.P.S., Orsay, France and Université Joseph Fourier, Grenoble, France.

***2077.*** **Water-Melanin Interactions: An HR-MAS Magnetization Transfer Study.**
*D. Morvan, J.G. Huber, F. Kwiatkowski and J.C. Madelmont.*
Inserm U484, Metabolic Explorer and Centre Jean-Perrin, Clermont-Ferrand, France.

***2078.*** **Comparison of Continuous Wave Theory to Pulsed Multicentre MT Data.**
*A. Ramani and P.S. Tofts.*
University College London, London, UK.

***2079.*** **Estimation of Magnetization Transfer Rates From PACE Experiments With Pulsed Saturation.**
*S. Ropele, R. Stollberger, F. Ebner, H-P. Hartung and F. Fazekas.*
Karl-Franzens University, Graz, Austria.

***2080.*** **$^{19}$F Off-Resonance $T_{1\rho}$ as Intermolecular Interaction MRI Contrast for Halothane in Brain.**
*H. Zhang, L. Li, B. Tom, Y.J. Shen and A.M. Wyrwicz.*
ENH Research Institute, Evanston, IL, USA.

***2081.*** **$T_2$ at 1.5 Tesla is Shorter in Gray Matter than in White Matter in the Occipital Lobe of Normal Human Brain.**
*J. Zhou, X. Golay, R. Kauppinen, M. Kraut, J. Pekar and P.C.M. van Zijl.*
Johns Hopkins University School of Medicine and Kennedy Krieger Institute, Baltimore, MD, USA and University of Kuopio, Kuopio, Finland.

***2082.*** **Effect of pH on the NMRD Profiles of Ferritin and Ferritin-like Particles Solutions.**
*Y. Gossuin, A. Roch, R.N. Muller and P. Gillis.*
University of Mons-Hainaut, Mons, Belgium.

***2083.*** **The Utility of NC100150 Injection for the Assessment of Soft Tissue Blood Volume.**
*L.O. Johansson, A. Bjornerud and H. Ahlström.*
Nycomed Imaging A/S, Oslo, Norway and Uppsala University Hospital, Uppsala, Sweden.

***2084.*** **A Quantitative Comparison of a Multiple Gradient/Spin Echo Imaging Method With C-P-M-G for Measuring the Contribution of Brain Iron to the Transverse Relaxation Rate at 3T.**
*J.M. Wild, K. Wachowicz, W.R.W. Martin and P.S. Allen.*
University of Alberta, Edmonton, Alberta, Canada.

***2085.*** **Theory for Nonexponential Decay of CPMG Signals in Tissues with Strong Magnetic Inhomogeneities.**
*J.H. Jensen and R. Chandra.*
New York University School of Medicine, New York, NY, USA.

# Musculoskeletal MR Imaging: Clinical Applications

Hall C
Monday: 14:00 – 16:00

***2086.*** **Can MR at 0.5 T Detect Moderate to Severe Chondromalacia in Young Adult Patients That is Potentially Treatable at Arthroscopy?**
*B.P.M. ter Braak, P.W.J. Vincken, A.R. van Erkel, E.G. Coerkamp, W.M.C. Mallens and J.L. Bloem.*
Leiden University Medical Center, Leiden, The Netherlands and Westeinde Hospital and Leyenburg Hospital, The Hague, The Netherlands.

***2087.*** **Correlation Between Enhancement of Repaired Meniscus After Gd-DTPA Intravenous Injection and Findings at Second-Look Arthroscopy.**
*H. Tanaka, K. Nakanishi, K. Nakata, M. Hamada, H. Yoshimura, N. Fujita, N. Hirabuki and H. Nakamura.*
Osaka University, Osaka, Japan.

***2088.*** **Grade 2 Mensical Abnormalities in the Knee on MR: Clinical Follow Up of Six Months.**
*P.W.J. Vincken, B.P.M. ter Braak, A.R. van Erkel, T.P.W. de Rooy, I. Lim A Po and J.L Bloem.*
Leiden University Medical Center, Leiden, the Netherlands and Westein de Hospital and Leyenburg Hospital, the Hague, the Netherlands.

***2089.*** **Dynamic MR Imaginbg of the Hip in Legg-Calvé-Perthes Disease: Comparison with Arthrography.**
*D. Weishaupt, G.U. Exner, P.R. Hilfiker, B. Marincek and J. Hodler.*
University Hospital Zurich and Balgrist Klinik, Zurich, Switzerland.

***2090.*** **Physical Examination of Shoulder Instability Combined with MRI: Initial Experience in 43 Patients.**
*C.F. Beaulieu, M.F. Dillingham, D.K. Hodge, K. Butts, G.E. Gold, G.H. Thabit III, A.L. Ladd and A.G. Bergman.*
Stanford University School of Medicine, Stanford, CA, USA and Sports, Orthopedics, and Rehabilitation, Menlo Park, CA, USA.

***2091.*** **Optimizing Indirect MR Arthrography of the Knee Using Pulsed Low-Intesity Ultrasound - Initial Experience.**
*D. Weishaupt, M.E. Schweitzer, N.M. Rawool, L.N. Nazarian, W.B. Morrison and A.A. Winder.*
Thomas Jefferson University Hospital, Philadelphia, PA, USA and Exogen Inc, Piscataway, NJ, USA.

***2092.*** **Septic and Nonseptic Olecranon Bursitis: MR Imaging Characteristics.**
*W.B. Morrison, M.A. Medynski, M.E. Schweitzer, J.A. Carrino, T.G. Sanders and W.N. Snearly.*
Thomas Jefferson University Hospital, Philadelphia, PA, USA; Wilford Hall Medical Center, San Antonio, TX, USA and Brigham and Women's Hospital, Boston, MA, USA.

***2093.*** **MRI of the Ankle in Asymptomatic Professional Ballet Dancers.**
*W.B. Morrison, M.E. Schweitzer, D. Weishaupt and J. Peterson.*
Thomas Jefferson University Hospital, Philadelphia, PA, USA.

***2094.*** **Longitudinal MR Imaging of the Achilles Tendon Disorders.**
*P.T. Karjalainen, K. Soila, H.K. Pihlajamäki, P.J.F. Tirman and H.J. Aronen.*
Helsinki University Central Hospital, Helsinki, Finland; Mt Sinai Medical Center, Miami Beach, FL, USA and San Francisco MR Imaging Center, San Francisco, CA, USA.

***2095.*** **MR-Arthrography vs MRI in the Evaluation of the Lateral Compartment of the Ankle.**
*G. Valeri, C. Ferrara, R. Nittoli, P. Ercolani, T. Piva, E. Fioretti, E. De Nigris and A. Giovagnoni.*
University of Ancona, Ancona, Italy and University of Modena, Modena, Italy.

***2096.*** **Dynamic Contrast-Enhanced MR Imaging in the Characterization of Synovial Sarcoma.**
*C.S.P. van Rijswijk, P.C.W. Hogendoorn, A.H.M. Taminiau and J.L. Bloem.*
Leiden University Medical Center, Leiden, The Netherlands.

**2097.** **Giant Cell Tumor of Bone: Enhancement Pattern On MR Imaging.**
*W.B. Morrison, W.N. Snearly, K.D. Elsass, K.M. McCabe, J.A. Carrino, T.G. Sanders and T.W. Parsons.*
Thomas Jefferson University Hospital, Philadelphia, PA, USA; Wilford Hall Medical Center, San Antonio, TX, USA and Brigham and Women's Hospital, Boston, MA, USA.

## Musculoskeletal MR Imaging

Hall C
Tuesday: 13:30 – 15:30

**2098.** ***In-Vivo*** **Index Finger Moment Arms and Tendon Lines of Action from High-Resolution MRI.**
*N.K. Fowler, A.C. Nicol, B. Condon and D. Hadley.*
University of Strathclyde and Southern General Hospital, Glasgow, UK.

**2099.** ***In-vivo*** **Stress-Strain Dynamics of Flexor-Extensor Units of the Human Ankle During an Isometric Contraction Using Phase Contrast MRI.**
*S. Sinha, A. Lai and V.R. Edgerton.*
University of California, Los Angeles, CA, USA.

**2100.** **Functional Skeletal Muscle Imaging Using RF Tagging and Isometric Exercise.**
*E.G. Walsh, B.R. Newcomer, K. Landers, N. Davis and G.M. Pohost.*
University of Alabama, Birmingham, AL, USA.

**2101.** **Functional Joint Imaging: A New Technique Integrating MRI and Biomotion Studies.**
*P. Lang, G. Alexander and T.P. Andriacchi.*
Stanford University, Stanford, CA, USA.

**2102.** **Knee Joint Meniscus Fibril Architecture Determined by Diffusion Tensor Microscopy.**
*E.W. Hsu, T.P. Vail, F. Guilak and L.A. Setton.*
Duke University and Duke University Medical Center, Durham, NC, USA.

**2103.** **The Importance of Timing of Post-Contrast MRI in Rheumatoid Arthritis- A Study of MRI-Determined Synovial Membrane Volumes and Joint Fluid Enhancement During the First 60 Minutes After Intravenous Gadolinium-DTPA.**
*M. Østergaard and M. Klarlund.*
Hvidovre Hospital, University of Copenhagen, Copenhagen, Denmark.

**2104.** **Evaluation of Erosions, Synovitis and Effusions in Wrist and Finger Joints in Rheumatoid Arthritis: A Comparison of High Resolution Ultrasonography, Magnetic Resonance Imaging and Conventional Radiography.**
*M. Szkudlarek, M. Østergaard, M. Court-Payen, K.E. Jensen, M. Klarlund, T. Klausen, I. Lorenzen and C. Strandberg.*
University of Copenhagen Hvidovre and Herlev Hospitals, Copenhagen, Denmark.

**2105.** **Oral Creatine Supplementation Facilitates Rehabilitation of Muscle Disease Atrophy.**
*P. Van Hecke, P. Hespel, B. Op't Eijnde, E. Richter, P. Greenhaff, V. Labarque, S. Dymarkowski and M. Van Leemputte.*
Katholieke Universiteit Leuven, Belgium; University of Copenhagen, Copenhagen, Denmark, and Queens Medical Centre, University of Nottingham, Nottingham, UK.

**2106.** **H-1 Double Quantum Filtered NMR Imaging Can Depict Maturation and Ordering of Collagen Fibers in Regenerating Tendon.**
*K. Ikoma, Y. Kusaka, Y. Seo, H. Takamiya, Y. Hirasawa and T. Morimoto.*
Kyoto Prefectural University of Medicine, Kyoto, Japan.

***2107.*** **Quantitative Correlation of Contrast Enhanced and $T_2$-Weighted MRI of Electroporation Injury.**
*J. Hannig, G.S. Karczmar, D. Zhang, M. Zamora, G.S. Abramov, D.A. Kovar and R.C. Lee.*
The University of Chicago, Chicago, IL, USA.

***2108.*** **Intracellular Acidification and Volume Increases Explain $^1$H $T_2$ Increases During Exercise.**
*B.M. Damon, C.D. Gregory, K.L. Hall, H.J. Stark and M.J. Dawson.*
University of Illinois, Urbana-Champaign, Urbana, IL, USA.

***2109.*** **Effects of Temperature on Multi-Component $T_2$ Relaxation of *In Vivo* Skeletal Muscle.**
*C.L. Devine, G. Saab and R.T. Thompson.*
St. Joseph's Health Care Center, London, Ontario, Canada.

***2110.*** **Orthogonal Fusion: Improving Resolution for Multispectral Segmentation of Musculoskeletal Structures.**
*J. Tamez-Pena, K. Parker, E. Kwok, G. Suk Seo and S.M.S. Totterman.*
University of Rochester Medical Center, Rochester, NY, USA.

## Musculoskeletal MR Imaging: Articular Cartilage

Hall C
Tuesday: 13:30 – 15:30

***2111.*** **Quantitative Spatial Analysis of Articular Cartilage Proteoglycans Using GdDTPA$^{2-}$ - Enhanced $T_1$ Imaging.**
*M.T. Nieminen, J. Rieppo, M.J. Silvennoinen, J. Töyräs, J.M. Hakumäki, M.M. Hyttinen, H.J. Helminen and J.S. Jurvelin.*
University of Kuopio and Kuopio University Hospital, Kuopio, Finland.

***2112.*** **Sodium and Gd-DTPA$^{2-}$ Enhanced MRI in the Quantitation of Proteoglycans in Cartilage.**
*A. Borthakur, E.M. Shapiro, S. Kudchodkar, J.B. Kneeland and R. Reddy.*
University of Pennsylvania, Philadelphia, PA, USA.

***2113.*** ***In vivo* Quantification of Gd(DPTA)$^{2-}$ -Uptake in Cartilage of Healthy Volunteers.**
*L.E. Olsson, C-J. Tiderius, P. Leander, H. de Verdier, O. Ekberg and L. Dahlberg.*
Malmö University Hospital, Malmö, Sweden.

***2114.*** **Effect of Charge on Transport and Distribution of Contrast Agents in Cartilage.**
*A.M. Gillis, J.T. Samosky, M.L. Gray and D. Burstein.*
Beth Israel Deaconess Medical Center, Boston, MA, USA and Massachusetts Institute of Technology, Cambridge, MA, USA.

***2115.*** **$T_2$ Maps and Water Distribution of Human Articular Cartilage *In Vitro* and *In Vivo*.**
*S. Lüsse, N. Karger, M. Heller and C-C. Glüer.*
Klinikum an der CAU zu Kiel, Kiel, Germany.

***2116.*** **Cartilage $T_2$ Dynamics During Compression.**
*J.H. Kaufman, R.R. Regatte, U. Duvvuri, J.S. Leigh and R. Reddy.*
University of Pennsylvania School of Medicine, Philadelphia, PA, USA.

***2117.*** **$^2$H DQF Spectroscopic Imaging of the Distribution of the Order Parameter of Water in Cartilage.**
*H. Shinar, L. Tsoref, U. Eliav, K. Ikoma, Y. Seo and G. Navon.*
Tel Aviv University, Tel Aviv, Israel and Kyoto Prefectural University of Medicine, Kyoto, Japan.

***2118.*** **Driven Equilibrium Imaging of Articular Cartilage in the Wrist.**
*G.E. Gold, B.A. Hargreaves, T. Blair, G.R. Garcia, D. Nishimura and D. Resnick.*
Stanford University, Stanford, CA, USA; Palo Alto Veterans Affairs Medical Center, Palo Alto, CA, USA and University of California, San Diego CA, USA.

***2119.*** **MR Imaging's Unique Capacity to Visualize Macroscopic Structure in Articular Cartilage: Imaging of Striations in Oblique Planes.**
*D. Goodwin, H. Zhu and J.F. Dunn.*
Dartmouth Medical School, Hanover NH, USA.

***2120.*** **3D-Echo-Planar DEFT Imaging of Knee Cartilage.**
*B.A. Hargreaves, J.M. Pauly, G.E. Gold, J. Tsai, P.K. Lang, S.M. Conolly and D.G. Nishimura.*
Stanford University, Stanford, CA, USA.

***2121.*** ***In vivo*** **Spin-lock Imaging of Articular Cartilage in the Human Knee at 1.5T.**
*U. Duvvuri, S.R. Charagundla, M. Mody, J. Kaufman, R. Rizi, J.B. Kneeland, J.S. Leigh and R. Reddy.*
University of Pennsylvania, Philadelphia, PA, USA.

***2122.*** **Relationship Between $T_1$ and $T_2$ and Indentation Displacement in Human Patellar Cartilage: Visualization of Indenter Tip Size Effect by Correlation Mapping.**
*W.C. Bae, L.M. Lottman, R.L. Sah and L.R. Frank.*
University of California, San Diego, CA, USA.

***2123.*** **Magnetization Transfer: A Surrogate for Immunohistochemical Staining of Collagen in Cartilage?**
*A.C. Bageac, M.L. Gray, N.M. Menezes, A.R. Poole and D. Burstein.*
Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, USA; Shriners Hospital for Children, McGill University, Montreal, Quebec, Canada and Massachusetts Institute of Technology, Cambridge, MA, USA.

***2124.*** **Effect of Orientation on Cartilage $T_2$: *In Vivo* Determination of the Magic Angle Effect Using $T_2$-Mapping of Femoral Cartilage.**
*T.J. Mosher, H. Smith, B.J. Dardzinski, V.J. Schmithorst and M.B. Smith.*
The Penn State University College of Medicine, Hershey, PA, USA and Children's Hospital Medical Center and University of Cincinnati College of Medicine, Cincinnati, OH, USA.

***2125.*** **The Effect of Proteoglycans on Water Relaxation: A Study of $T_1\rho$ Relaxation in Nanomelic Cartilage.**
*U. Duvvuri, T.J. Mosher, R. Regatte, H.E. Smith, Q. Chen, J.S. Leigh and R. Reddy.*
University of Pennsylvania, Philadelphia, PA, USA and The Penn State University College of Medicine, Hershey, PA, USA.

***2126.*** **Gadolinium Enhanced Imaging of the Effect of Therapeutic Agents on Matrix Formation in Cartilage.**
*E.F. Petersen, K.J. Nusz, C. Galban, K.W. Fishbein, W.E. Horton and R.G.S. Spencer.*
Johns Hopkins School of Medicine, Baltimore, MD, USA; Northeastern Ohio Universities College of Medicine, OH, USA and National Institute on Aging, National Institutes of Health, Baltimore, MD, USA.

***2127.*** **Application of an Flexible Loop-Gap Resonator for MR Imaging of Articular Cartilage at 3.0T.**
*J. Tsai, S. Ashjaee, C. Tsai, E. Adalsteinsson, T. Brosnan, P. Lang, B. Hargreaves, M. Alley and D. Spielman.*
Stanford University School of Medicine, Stanford, CA, USA.

# Musculoskeletal MR Imaging: Bone Structure and Marrow

Hall C
Wednesday: 13:30 – 15:30

**2128. Characterization of Disease Status in Magnetic Resonance Bone Marrow Scanning of Leukemia.**
*D. Ballon, J. Dyke, L.H. Schwartz, E. Lis, E. Schneider and A.A. Jakubowski.*
Memorial Sloan-Kettering Cancer Center, New York, NY, USA and Pfizer, Inc., Groton, CT, USA.

**2129. Quantitative Measurement of Bone Marrow Composition Using a Multi-Echo Gradient-Echo Sequence and 3-Point Dixon Processing.**
*E. Kozawa, H.K. Song, F.W. Wehrli, M. Takahashi and L. Hilaire.*
University of Pennsylvania Medical Center, Philadelphia, PA, USA.

**2130. High Resolution MR Imaging and Texture Analysis to Differentiate Osteoporotic Bone Structure.**
*A. Berg, M. Rotter, H. Langenberger, S. Grampp and E. Moser.*
Universität Wien, Wien, Austria.

**2131. The Application of the Vertebra-Disc Ratio in a Population of Patients with Gaucher's Disease.**
*E.J.P. Vlieger, M. Mass, E.M. Akkerman, C.E.M. Hollak, J.M.F.G. Aerts and G.J. den Heeten.*
University of Amsterdam, Amsterdam, the Netherlands.

**2132. Is Cancellous Bone Architecture in the Distal Radius Associated with Vertebral Fracture Load?**
*F.W. Wehrli, B. Gomberg, S.N. Hwang, H.K. Song and P.J. Snyder.*
University of Pennsylvania, Philadelphia, PA, USA.

**2133. MRS/MRS Study of the Effect of Dexamethasone on Trabecular Bone Architecture, Growth Plate and Bone Marrow in the Rabbit.**
*M. Takahashi, F.W. Wehrli, L. Hilaire and B. Zemel.*
University of Pennsylvania Medical Center and Children's Hospital of Philadelphia, Philadelphia, PA, USA.

**2134. Subvoxel Processing: A New Method for Alleviating Partial Volume Blurring in MR Images of Trabecular Bone.**
*S.N. Hwang and F.W. Wehrli.*
University of Pennsylvania Medical Center, Philadelphia, PA, USA.

**2135. Characterization of Trabecular Bone Micro-Architecture in the Knee in Osteoarthrosis Using High-Resolution MRI.**
*O. Beuf, S. Ghosh, D.C. Newitt, T.M. Link, L.S. Steinbach, M. Reis, N. Lane and S. Majumdar.*
University of California, San Francisco, CA, USA and Bioengineering Graduate Group, UCSF-UC Berkeley, Berkeley, CA, USA.

**2136. Magnetic Resonance Imaging Derived Measurement of the Biomechanical Properties of Trabecular Bone in the Calcaneus.**
*S. Majumdar, D. Newitt, B. van Rietbergen, M. Bredella, G. von Ingersleben, S. Harris, C. Chesnut, H. Genant and B. MacDonald.*
University of California, San Francisco, CA, USA; ETH, Zurich, Switzerland; University of Washington, Seattle, WA, USA and SmithKline Beecham Pharmaceuticals, Collegeville, PA, USA.

**2137. Algorithm for Measuring Cortical Bone Thickness from High-Resolution MR Images.**
*B.R. Gomberg, P.K. Saha, H.K. Song and F.W. Wehrli.*
University of Pennsylvania, Philadelphia, PA, USA.

**2138. Delineation of Metastases and Accompanying Edema in Pathologic Fractures.**
*E. Spüntrup, A. Bücker, G. Adam and R.W. Günther.*
University of Technology, Aachen, Germany.

# MR Imaging of the Spine

Hall C
Wednesday: 13:30 – 15:30

**2139.** **Direct Correlation of Post-Mortem Body MRI, Axial High Resolution MRI and Histopathology of the Spinal Cord in Multiple Sclerosis.**
*E. Bergers, J. Bot, P. van der Valk, W. Kamphorst, J.C. Castelijns, F. Barkhof, J.C.A. De Groot and C.H. Polman.*
Academic Hospital "Vrije Universiteit", Amsterdam, the Netherlands.

**2140.** **The MR Features of Spinal Cord Epidermoids.**
*M. Zhu, J. Dai and Z. He.*
Beijing Neurosurgical Institute, Beijing, China.

**2141.** **in Vivo MRI of the Transient and the Facilitated Repair of the Lesion in Severed Rat Spinal Cord.**
*S. Xu, Z. Fuks, N. Kalderon and J.A. Koutcher.*
Memorial Sloan-Kettering Cancer Center and Sloan-Kettering Institute for Cancer Research, New York, NY, USA.

**2142.** **Line Scan Diffusion Tensor Imaging of the Adult Spinal Cord.**
*H. Mamata, Y. Mamata, F.A. Jolesz and S.E. Maier.*
Brigham and Women's Hospital, Harvard Medical School, Boston, MA, USA.

**2143.** **Mono and Biexponential Behavior of Water Diffusion in Mouse Spinal Cord Measured with High Field Gradients.**
*P.N. Venkatasubramanian, B.C. Tom and A.M. Wyrwicz.*
ENH Research Institute and Northwestern University, Evanston, IL, USA.

**2144.** **Vertebral Compression Fractures: Differentiation Between Benign and Malignant Lesions with Diffusion-Weighted Single-Shot Echo Planar MR Imaging.**
*K. Nakagawa, H. Sakuma, Y. Ichikawa, K. Kitagawa, I. Kadoya, T. Hirano, N. Kawada, K. Matumura and K. Takeda.*
Matsusaka Central Hospital, Matsusaka, Japan and Mie University School of Medicine, Tsu, Japan.

**2145.** **The Scottish Malignant Spinal Cord Compression Audit Observations on the MRI Findings of a Multicentre Study Involving 273 Patients.**
*N.C. McMillan, D. Summers, D.A. Collie, L. Graham, L. Slider and P. Levac.*
Western Infirmary, Glasgow, UK; Western General Hospital, Edinburgh, UK and Ninewells Hospital, Dundee, UK.

**2146.** **Planimetric Assessment of Spinal Cord Atrophy in Diabetes.**
*S. Eaton, I.D. Wilkinson, N.D. Harris, P. Greenwood, S. Rajbhandari, J. Ward, S. Tesfaye and P.D. Griffiths.*
University of Sheffield and Royal Hallamshire Hospital, Sheffield, UK.

**2147.** **A Magnetic Resonance Imaging Study of the Cervical Cord of CADASIL Patients.**
*M.A. Rocca, S. Müller-Schunk, J. Herzog, M. Dichgans, M.A. Horsfield, M. Filippi and T.A. Yousry.*
Scientific Institute H San Raffaele, University of Milan, Milan, Italy; Klinikum Grosshadern, Munich, Germany and University of Leicester, Leicester, UK.

**2148.** **Multi-Parametric MRI Studies of Multiple Sclerosis Patient Spinal Cord Specimens at 4.7 Tesla.**
*J.C.J. Bot, E.L.A. Blezer, J.A. Castelijns, K. Nicolay, W. Kamphorst and F. Barkhof.*
Academic Hospital "Vrije Universiteit", Amsterdam, The Netherlands and University Medical Center, Utrecht, The Netherlands.

**2149.** **Dynamic Contrast-Enhanced Magnetic Resonance Imaging of Experimental Spinal Cord Injury.**
*M. Bilgen, R. Abbe and P.A. Narayana.*
University of Texas at Houston Medical School, Houston, TX, USA.

*2150.* **Longitudinal *In Vivo* Magnetization Transfer Measurements To Assess Acute Experimental Spinal Cord Injury in the Rat.**
*P.J. Gareau, L.C. Weaver and G.A. Dekaban.*
The John P. Robarts Research Institute, London, Ontario, Canada.

*2151.* **Spontaneous Functional Recovery Following Spinal Cord Injury: *In Vivo* MRI, Behavioral, and Histopathological Studies.**
*R. Abbe, R. Vang, M. Bilgen and P. Narayana.*
University of Texas-Houston Medical School, Houston, TX, USA.

*2152.* **NMR Properties of Rat Sciatic Nerve Following Trauma.**
*G.J. Stanisz, R. Midha, C.A. Munro and R.M. Henkelman.*
University of Toronto and Sunnybrook and Women's College Health Sciences Centre, Toronto, Ontario, Canada.

*2153.* **$T_2$ Changes and Walking Disability in Rat Sciatic Nerve Following Compression Injury.**
*F.A. Howe, S.A. Cudlip, J.R. Griffiths and B.A. Bell.*
St. George's Hospital Medical School and Atkinson Morley's Hospital, London, UK.

## Breast MR Imaging

Hall C
Tuesday: 13:30 – 15:30

*2154.* **Design of a High Risk Screening Study for Occult Breast Cancer in Radiographically Dense Breasts Using Magnetic Resonance Imaging with Lesion Localization Capability.**
*D. Ballon, M.E. Robson, C.F. Maier, E. Schneider and E.A. Morris.*
Memorial Sloan-Kettering Cancer Center, New York, NY, USA; General Electric Medical Systems, Milwaukee, WI, USA and Pfizer, Inc., Groton, CT, USA.

*2155.* **Incidental Enhancing Lesions (IEL) Detected during Contrast-Enhanced Breast Magnetic Resonance (MR) Imaging Scans: Incidence and Clinical Impact.**
*L.L. Schmelzel, D.M. Ikeda, B.L. Daniel, R.L. Birdwell, R.J. Herfkens, A.M. Sawyer-Glover, A. Thrush and G.H. Glover.*
Stanford University School of Medicine, Stanford, CA, USA.

*2156.* **Heterogeneity Based Accurate Differentiation Between Malignant and Benign Breast Tumours Using Logistic Regression.**
*B. Issa, D.L. Buckley and L.W. Turnbull.*
Hull Royal Infirmary, Hull, UK; UAE University, Al-Ain, UAE and University of Florida, Gainesville, FL, USA.

*2157.* **MRI vs. Histologic Measurement of Breast Cancer Following Chemotherapy: Comparison with X-Ray Mammography, Ultrasound, and Palpation.**
*P.T. Weatherall, G.F. Evans, G.J. Metzger, H.M. Saborrian and M.A. Leitch.*
University of Texas Southwestern Medical Center, Dallas, TX, USA and Philips Medical Systems, Dallas, TX, USA.

*2158.* **Elementary Clinical Estimation of DWI and ADC Value in Differentiating Benign and Malignant Breast Lesions.**
*Y. Guo, Z.L. Cai, Y.G. Cai, Y.G. Gao, N.Y. An, L. Ma and X.Y. Ma.*
PLA General Hospital, Beijing, China and GE Medical Systems China, Beijing, China.

*2159.* **Apparent Diffusion Coefficient- An Additional Feature to Increase Specificity in the Classification of Breast Lesions.**
*F.A. Lucas-Quesada, S. Sinha and U. Sinha.*
University of California, Los Angeles, CA, USA.

*2160.* **Response of Breast Carcinoma to Chemotherapy - MR Permeability Changes Using Histogram Analysis.**
*A.R. Padhani, C. Hayes, L. Assersohn, T. Powles, M.O. Leach and J.E. Husband.*
Institute of Cancer Research and The Royal Marsden NHS Trust, Sutton, Surrey, UK.

*2161.* **Neural Network-Based Classification of Signal-Time Curves Obtained from Dynamic MR Mammographic Image Series.**
*R. Lucht, M.V. Knopp and G. Brix.*
Federal Office for Radiation Protection, Neuherberg, Germany and German Cancer Research Center, Heidelberg, Germany.

*2162.* **Morphological Analysis of FSPGR Breast Images Using Neural Network Computer Vision.**
*A. Knowles, P. Gibbs and L.W. Turnbull.*
Hull Royal Infirmary, Hull, UK.

*2163.* **Improved Classification of Breast DCE-MRI Using a Neural Network Ensemble.**
*A. Knowles, P. Gibbs and L.W. Turnbull.*
Hull Royal Infirmary, Hull, UK.

*2164.* **Neural Network Analysis and Visualization of Dynamic Contrast Enhanced MR Images.**
*G. Torheim, D. Axelson, A. el Wahad Bidar, K.A. Kvistad and O. Haraldseth.*
Norwegian University of Science and Technology, Trodheim, Norway and Queen's University, Kingston, Ontario, Canada.

*2165.* **Dynamic MR Imaging of Breast Cancer: Correlation Between MR Findings and Histological Subtypes.**
*K. Kitagawa, H. Sakuma, T. Hirano, I. Kadoya, A. Ishihara, N. Kawada, K. Matsumura and K. Takeda.*
Matsusaka Central Hospital, Matsusaka, Japan and Mie University School of Medicine, Tsu, Japan.

*2166.* **Non Invasive Monitoring of Breast Cancer Response to Neoadjuvant Chemotherapy by Using MRI Measurement of the Extraction-Flow Product.**
*J.P. Delille, P.J. Slanetz, E.D. Yeh, M.T. Foley, D.B. Kopans and L. Garrido.*
Massachusetts General Hospital, Boston, MA, USA.

*2167.* **Evaluation of Neoadjuvant Chemotherapy Response and Prediction of Survival in Locally Advanced Breast Cancer Using Contrast-MRI.**
*N. Hylton, L. Esserman, S. Partridge, E. Heumann, E. Kaplan, L. Beccaria, E. Proctor, N. Bruce, M. Kuerer, D. Tripathy, E. Sickles and N. Weidner.*
University of California, San Francisco, CA, USA.

*2168.* **Early Effects of Breast Conservation Therapy Assessed with MRI of the Breast.**
*M. Müller-Schimpfle, A. Wersebe, C. Belka, T. Clauss, N. Weidner and C.D. Claussen.*
University Hospital, Tuebingen, Germany.

*2169.* **Functional Breast Imaging: Comparison of Pharmacokinetic MR and [$^{18}$F] Fluorodeoxyglucose PET Mapping.**
*G. Brix, M. Henze, M.V. Knopp, R. Lucht, J. Doll, H. Junkermann, H. Hawighorst and U. Haberkorn.*
Federal Office for Radiation Protection, Neuherberg, Germany and German Cancer Research Center, Heidelberg, Germany.

*2170.* **Assessment of Gd-BOPTA as a New Contrast Agent for MR Mammography Dose Finding and Comparison of with Gd-DTPA.**
*M.V. Knopp, J. Radeleff, F. Floemer, H. Junkermann, C. Seebass, S. Delorme, A. La Noce, I. Salerio and G. van Kaick.*
German Cancer Research Center (dkfz), Heidelberg, Germany; The Ohio State University, Columbus, OH, USA; University of Heidelberg, Heidelberg, Germany and Bracco, Milan, Italy.

*2171.* **Clinical Testing of the 3TP Method for Breast MRI Diagnosis.**
*F. Kelcz, H. Degani, D. Grobgeld and E. Furman-Haran.*
University of Wisconsin, Madison, WI, USA and Weizmann Institute of Science, Rehovot, Israel.

*2172.* **Dynamic Magnetic Resonance Mammography Using Interleaved Dual-Echo 3D Gradient Echo Imaging.**
*J.R. Reichenbach, S. Wurdinger, M. Bock and W.A. Kaiser.*
Friedrich-Schiller Universität, Jena, Germany and Deutcheskrebsforschungzentrum, Heidelberg, Germany.

*2173.* **Image Registration of Serial 3D MR Breast Data Using Local Parameters.**
*J.R. Reichenbach, J. Hopfe, R. Lucht, W.A. Kaiser and M.E. Bellemann.*
Friedrich-Schiller-University and University of Applied Sciences, Jena, Germany and Federal Office for Radiation Protection, Neuherberg, Germany.

*2174.* **Breast Magnetic Resonance Elastography: A New Reconstruction Technique Using MRI Derived Constraints.**
*A. Samani, J. Bishop, J. Sciarretta and D. Plewes.*
University of Toronto, Toronto, Ontario, Canada.

*2175.* **Automated Three Dimensional Finite Element Mesh Generation Technique of Patient-Specific Breast Using MRI Data.**
*A. Samani, J. Bishop, J. Sciarretta and D. Plewes.*
University of Toronto, Toronto, Ontario, Canada.

*2176.* **Quantitative Assessment of Compartmental Models Used in Contrast Enhanced MRI of the Breast.**
*T.S. Ahearn, T.W. Redpath, S.I.K. Semple, F.J. Gilbert and F. Wallis.*
University of Aberdeen and Grampian University Hospitals NHS Trust, Aberdeen, UK.

*2177.* **Spatio-Temporal Bandwidth-Based Segmented Acquisition for Dynamic 3D Contrast-Enhanced Breast MRI.**
*S. Krishnan, J.A. Fessler and T.L. Chenevert.*
University of Michigan, Ann Arbor, MI, USA.

## Ventilation and Perfusion MRI in the Lung

Hall C
Wednesday: 13:30 – 15:30

*2178.* **Mapping $T_1$ Changes in Oxygen-Enhanced Ventilation Imaging in the Human Lung Using MIR.**
*V.M. Mai, Q. Chen, A.A. Bankier, H. Hatabu and R.R. Edelman.*
Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, USA.

*2179.* **Oxygen-Enhanced Ventilation MR Imaging of the Lung Using ECG-Gated Half-Fourier FSE at 0.5 T.**
*K. Nakamura, S. Kawanami, M. Miyazaki, S. Sugiura, A. Yamamoto, T. Onoda, K. Kumamoto, Y. Matsufuji and H. Nakata.*
University of Occupational and Environmental Health, School of Medicine; Toshiba Medical Division, Kyoritsu Hospital; Toshiba Medical Systems Co., LTD. and Toshiba Medical Kyushu Service Co., Japan.

*2180.* **Strain Mapping Lung Parenchyma During Physiological Deformation Using Spin Inversion Tagging.**
*V.J. Napadow, Q. Chen, V. Mai, A. Bankier, R.J. Gilbert and R. Edelman.*
Massachusetts Institute of Technology, Cambridge, MA, USA and Beth Israel Deaconess Hospital, Boston, MA, USA.

*2181.* **Rapid Xenon Exchange in the Lung: Depolarization of $^{129}$Xe in the Blood Induces Gas-Phase Signal Loss.**
*K. Ruppert, J.R. Brookeman, K.D. Hagspiel, B. Driehuys and J.P. Mugler III.*
University of Virginia School of Medicine, Charlottesville, VA, USA and Nycomed-Amersham Imaging, Durham, NC, USA.

*2182.* **Correlation of Ventilation/Perfusion Scanning Using Hyperpolarized $^{3}$He and Arterial Spin Tagging MRI with Multiple Inert Gas Elimination Technique.**
*R.R. Rizi, D.A. Lipson, D.A. Roberts, J. Baumgardner, M. Aranda, S. Ahn, H.H. Hatabu, B. Marshall, M.D. Schnall and J.S. Leigh.*
University of Pennsylvania, Philadelphia, PA, USA.

*2183.* **A Single-Acquisition Imaging Strategy in Oxygen-Sensitive $^{3}$He-MRI.**
*A.J. Deninger, R. Surkau, B. Eberle, M. Ebert, B. Escat, T. Großmann, G. Hanisch, K. Markstaller and E. Otten.*
University of Mainz, Mainz, Germany.

*2184.* **Diffusion Imaging of Hyperpolarised Helium-3 in the Human Lung, with CPMG Sequences at 0.1 T.**
*E. Durand, G. Guillot, L. Darrasse, G. Tastevin and P.J. Nacher.*
U2R2M Orsay, France and Laboratoire Kastler-Brossel, Paris, France.

*2185.* **SNR Analysis of Orthogonal Encoding Methods for Hyperpolarized Noble Gas MRI.**
*L. Zhao, A.K. Venkatesh, M.S. Albert and L.P. Panych.*
Brigham & Women Hospital, Harvard Medical School, Boston, MA, USA.

*2186.* ***In Vivo*** **Imaging of Encapsulated Laser-Polarized Helium 3.**
*V. Callot, J. Brochot, E. Canet, H. Humblot, M. Viallon, A. Briguet, H. Tournier and Y. Crémillieux.*
Université Claude Bernard Lyon1-CPE, Villeurbanne, France; Hôpital de la Croix-Rousse, Lyon, France; Bracco Research, Geneva, Switzerland and Institut Laüe-Langevin, Grenoble, France.

*2187.* **Intermolecular Dipole-Dipole Relaxation of $^{129}$Xe Dissolved in Water: Implications for Spin Polarization-Induced NOE in the Lungs.**
*I.E. Dimitrov, R. Reddy and J.S. Leigh.*
University of Pennsylvania, Philadelphia, PA, USA.

*2188.* **Optical Flow Imaging of Rat Lung Dynamics Using Hyperpolarized Noble Gas MRI.**
*L. Zhao, A.K. Venkatesh, G.P. Zientara, F.A. Jolesz, M.S. Albert and L.P. Panych.*
Brigham & Women Hospital, Harvard Medical School, Boston, MA, USA.

*2189.* ***In Vivo*** **MRI at 0.015 Tesla Using Hyperpolarized Xenon.**
*A.K. Venkatesh, L.V. Kubatina, A.X. Zhang, C-H. Oh, D. Balamore, F.A. Jolesz and M.S. Albert.*
Brigham and Women's Hospital, Boston, MA, USA; Korea University, Seoul, Korea and Nassau Community College, Garden City, NY, USA.

*2190.* **Using $^{129}$Xe Gas Exchange Measurements to Determine Surface Area to Volume Ratios in Porous Media.**
*R.W. Mair, S. Patz, J.P. Butler, D. Hoffmann, G.P. Topulos and R.L. Walsworth.*
Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, USA and Brigham & Women's Hospital, Harvard Medical School and Harvard School of Public Health, Boston, MA, USA.

*2191.* **$^{19}$F-MRI of Perflubron for Quantitative Imaging of Oxygen Tension During Partial Liquid Ventilation.**
*S. Laukemper-Ostendorf, W.G. Schreiber, K. Bürger, A. Scholz, K. Markstaller, B. Eberle, N. Weiler, M. Quintel, W. Dick and M. Thelen.*
Johannes Gutenberg-University, Mainz, Germany and University of Mannheim, Mannheim, Germany.

# Pre-Clinical Applications of Pulmonary MRI

Hall C
Wednesday: 13:30 – 15:30

*2192.* **Developing Safe Breathing Protocols for Hyperpolarized Noble Gas MRI.**
*M.P. Ramirez, L.V. Kubatina, K.C.E. Sigaloff, M.A. Donahue, A.K. Venkatesh and M.S. Albert.*
Brigham and Women's Hospital, Harvard Medical School, Boston, MA, USA.

*2193.* **MR Signal Intensity of the Lung Parenchyma: Comparison with Spirometrically Monitored Lung Volumes.**
*A.A. Bankier, C. O'Donnell, V.M. Mai, M. Zhang, R.R. Edelman and Q. Chen.*
Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, USA.

*2194.* **Arterial Spin-Tagging Perfusion MRI is a Sensitive Method for the Detection of Pulmonary Embolism.**
*D.A. Roberts, W.B. Gefter, A. Alavi, R.R. Rizi, D.A. Lipson, H. Palevsky, J. Hansen-Flaschen, H.H. Hatabu and M.D. Schnall.*
University of Pennsylvania Medical Center, Philadelphia, PA, USA.

*2195.* **Demonstration of an Alveolar-Size Gradient in the Healthy Human Lung: A Study of the Reproducibility of Hyperpolarized $^{3}$He Diffusion MRI.**
*M. Salerno, J.R. Brookeman, E.E. de Lange, J. Knight-Scott and J.P. Mugler III.*
University of Virginia School of Medicine, Charlottesville, VA, USA.

*2196.* **Understanding the Pathogenesis of Preterm Lung Disease Using Magnetic Resonance Imaging.**
*E.W. Adams, S.J. Counsell, J.V. Hajnal, J. Allsop, L. Al Nakhib, A.H. Herlihy, A. Thornton and A.D. Edwards.*
Imperial College School of Medicine, Hammersmith Hospital, London, UK.

*2197.* **MRI in Pediatric Pulmonary Disease - Steady State Free Precession Projection (SSFPP) MRI as an Alternative to the Pediatric Chest Roentgenogram? Presentation of a Clinical Study.**
*M. Wagner, B. Böwing, W. Rascher, M. Deimling, R. Kuth and T. Rupprecht.*
Hospital for Sick Children, University of Erlangen and Siemens AG, Erlangen, Germany.

*2198.* **Determination of Regional Lung Volumes by $^{3}$Helium-Magnetic Resonance Imaging ($^{3}$He-MRI) in Healthy Volunteers and Patients After Unilateral Lung Transplantation.**
*K. Markstaller, B. Eberle, J. Lill, M. Puderbach, W. Schreiber, N. Weiler, R. Surkau, M. Thelen and H-U. Kauczor.*
Johannes Gutenberg University, Mainz, Germany.

*2199.* **ECG-Gated MR Imaging of the Lung Parenchyma Using 2D Short-Echo-Spacing Half-Fourier FSE.**
*S. Kawanami, K. Nakamura, M. Miyazaki, S. Sugiura, K. Kumamoto, Y. Matsufuji and H. Nakata.*
University of Occupational and Environmental Health, Fukuoka, Japan and Toshiba Medical Co., Tochigi, Japan.

*2200.* ***In-Vivo*** **MR Imaging of Gravity Dependent Intensity Gradients in Human Lungs.**
*A.A. Bankier, V.M. Mai, M. Zhang, R.R. Edelman and Q. Chen.*
Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, USA.

*2201.* **Gravity-Dependent Perfusion of the Lung Demonstrated with FAIRER Magnetic Resonance Imaging.**
*S.D. Keilholz-George, J. Knight-Scott, J.M. Christopher, V.U. Mai and S.S. Berr.*
University of Virginia, Charlottesville, VA, USA.

*2202.* **True FISP Imaging of Lung Parachymia at 0.2 Tesla.**
*M. Deimling.*
Siemens Medical Systems, Erlangen, Germany.

***2203.*** **An Ultra-Fast MR Grid Tagging Sequence for Assessment of Regional Pulmonary Deformation.**
*Q. Chen, V. Mai, A. Bankier, V. Napadow and R. Edelman.*
Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, MA, USA.

***2204.*** **Imaging Pulmonary Blood Flow Pattern and Regional Perfusion Deficit Using Phase Sensitive Inversion Recovery.**
*V.M. Mai, K.D. Hagspiel, Q. Chen, T. Altes, J.M. Christopher, S.S. Berr, M. Zhang, A. Bankier and R.R. Edelman.*
Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, USA and University of Virginia, Charlottesville, VA, USA.

***2205.*** **Pulmonary Oedema in Rat Induced by Allergen Challenge: Non-Invasive Assessment by MRI.**
*N. Beckmann, B. Tigani, D. Ekatodramis, R. Borer, L. Mazzoni and J. Fozard.*
Novartis Pharma Inc., Basel, Switzerland.

***2206.*** **HE-3 MRI in Healthy Smokers, Non-Smokers, and Lung Transplant Recipients: Comparison with Pulmonary Function Tests.**
*H-U. Kauczor, W. Schreiber, K. Markstaller, J. Lill, M. Puderbach, N. Weiler, B. Eberle, G. Hanisch, D. Guenther, T. Grossmann, A. Deninger and M. Thelen.*
University of Mainz, Mainz, Germany.

***2207.*** **Lung Cancer: Blood Supply and Hemodynamic Changes Evaluated with MR Perfusion Imaging of Differential Phase Subtraction of Pulmonary Circulation.**
*J. Miao, Y. Yang, Z. Li, W. Cai, Y. Tao, Y. Hu and X. Ma.*
Shanghai First People's Hospital, Shanghai, China and GE Medical System, Hongkong, China.

***2208.*** **Inversion of the Ventricular Septum Convexity in Diastole: A Sensitive and Specific Sign of Pulmonary Hypertension.**
*J.T. Marcus, A.V. Noordegraaf, H.J. Smit, A.C. Van Rossum and A. Boonstra.*
University Hospital Vrije Universiteit, Amsterdam, The Netherlands.

***2209.*** **Demonstration of Abnormal Hemodynamics in Experimental Radiation Pneumonitis With Contrast Enhanced Perfusion MR Imaging.**
*N. Ogasawara, K. Suga, K. Ito, H. Okazaki, K. Takano, S. Koike, N. Tanaka, T. Matsumoto and N. Matsunaga.*
Yamaguchi University School of Medicine, Ube, Japan.