ISMRM 2010

From Bench to Bedside to Bench: Translation of Animal Models to Clinical Practice

Multimodality Radionuclide, Fluorescence, Bioluminescence Small-Animal Imaging including Animal Models for DCE-MRI and DWI MRI

Thursday 7 AM: Jinha Park, M.D., Ph.D.

Educational Objectives

- Review the imaging modalities available for small animal models
- Evaluate the utility of pre-clinical models prior to clinical trials
- Evaluate the literature to understand the imaging characteristics of cancer which may lead to improved knowledge of the basic mechanisms of cancer and treatment response

PRESENTATION SUMMARY:

Pre-clinical or animal models of disease and drug response have been essential for many of the most recently approved oncology drugs. Data obtained in large cohorts of xenograft or transgenic models of human cancer require considerable expense and effort to generate. Recent development of small animal imaging scanners has allowed us to image the pre-clinical model system non-invasively and reproducibly for biodistribution and drug response. We will examine several imaging systems and compare their relative strengths and weaknesses. Some small animal imaging can be translated to human clinical trials while others may be more difficult to translate. The discordance of some human clinical trial results with pre-clinical investigations will be reviewed. We will evaluate the literature with particular respect to the strengths and limitations of small animal pre-clinical imaging prior to clinical trials imaging. The understanding of the clinical imaging results could lead to lines of investigation utilizing the same small animal imaging modalities to improve our understanding of the basic mechanisms of cancer.