Molecular Pathobiology of Prostate Cancer

A. M. De Marzo, M.D., Ph.D. [1]
[1]Johns Hopkins University, Baltimore, MD, United States

Prostatic adenocarcinoma is extremely common in Western nations, representing the second leading cause of cancer death in American men. The recent application of increasingly sophisticated molecular approaches to the study of prostate cancer in this "post-genomic" era has resulted in a rapid increase in the identification of somatic genome alterations as well as germline heritable risk factors in this disease. These findings are leading to a new understanding of the pathogenesis of prostate cancer and to the generation of new targets for diagnosis, prognosis, prediction of therapeutic response, and molecular imaging. Although we are still in the very early phase of clinical development, some of the molecular alterations identified in prostate cancer are being translated into clinical practice. The purpose of this lecture is to update practicing radiologists, and residents-in-training, regarding recent findings in the molecular pathobiology of prostate cancer. The focus will be on somatic molecular alterations associated with prostate cancer development and progression, with an emphasis on newer discoveries. In addition, recent studies in which new molecular diagnostic approaches have been applied in the clinic will be discussed.