Houston-based Polish Scientists Received Over $10 Million Grant from the National Institute of Health to Study the Biology of Bladder Cancer: A Common Human Malignancy

Bogdan Czerniak, M.D., Ph.D., Professor of Pathology at The University of Texas MD Anderson Cancer Center is a principal investigator of a recently awarded grant from the National Institute of Health to study the biology of early bladder cancer, which is expected to provide the foundation for more effective early detection, prevention, and therapies of this common human malignancy. Dr. Czerniak received his medical degree from Pomeranian Medical University in Szczecin, Poland and completed his doctoral and habilitation studies in the same institution. He did his residency in the United States at Montefiore Medical Center, New York followed by fellowship at Memorial Sloan Kettering Cancer Center in New York. Dr. Czerniak is an expert genitourinary, soft tissue, and skeletal pathologist who has been working at MD Anderson for more than three decades. In this grant, he closely collaborates with Dr. Marek Kimmel who is a Professor of Statistics and Bioengineering at Rice University in Houston. Dr. Kimmel received his Master of Science in Control Engineering and completed his doctoral studies in the Silesian University of Technology in Gliwice. He completed his habilitation in mathematics in the Jagiellonian University in Krakow and specializes in mathematical models of evolution of biological cells, with emphasis on cancer.

Bladder cancer is the 5th most common human malignancy related to tobacco smoking and exposure to industrial and environmental chemical carcinogens. It is responsible for 3% of cancer-related deaths and affects more than 430,000 people worldwide with nearly 80,000 new cases each year in the United States.

Dr. Czerniak pioneered the approach of histologic and multi-platform genomic mapping on the whole-organ scale that facilitates comprehensive characterization of early initiating events of bladder carcinogenesis. This approach is a unifying team of this highly collaborative and interactive program which involves the following three projects:

Project 1: Understanding the Development of Bladder Cancer from Field Effects
Project Lead: Bogdan Czerniak (MD Anderson Cancer Center, Houston, TX)
Project 2: The Role of Nuclear Receptors Signaling in Bladder Cancer
Project Lead: Cathy Mendelsohn (Columbia University, New York, NY)
Project 3: Identifying Molecular Vulnerabilities to Improve Interferon Gene Therapy in Bladder Cancer
Project Lead: Colin Dinney; Project Co-Lead: David McConkey (Rochester University, Rochester, NY)

The projects are assisted by three cores which provide the foundation to translate the studies to human bladder cancer samples and their clinical characteristics with the analytical core facilitating complex and comprehensive analysis of genomic data to translate them into clinical relevance:
Administrative Core
Core Lead: Bogdan Czerniak
Pathology Core
Core Lead: Charles Guo; Co-Lead: Bogdan Czerniak
Biostatistics and Bioinformatics Core
Core Lead: Peng Wei; Co-Lead: Marek Kimmel

Of major importance is a collaboration between biological studies of all three projects and a group of mathematicians co-led by Peng Wei, Professor of Biostatistics at MD Anderson Cancer Center, and Marek Kimmel, Professor of Statistics and Bioengineering at Rice University. Analytical team involves a group of scientists from the Department of Biostatistics at MD Anderson, Departments of Statistics at Rice University, Houston, as well as Columbia University, New York, and Silesian University of Technology in Gliwice, Poland. Completion of this project will provide comprehensive molecular characterization of early phases of bladder carcinogenesis as well as the understanding of mechanisms responsible for its therapeutic vulnerabilities.