Basic Studies in Lynch Syndrome and DNA Mismatch Repair

Wednesday, December 14, 2011
12:00 PM - 1:00 PM

Creighton University Medical Center • Morrison Seminar Room
601 North 30th Street • Omaha, Nebraska

QUESTIONS: CALL HEALTH SCIENCES CONTINUING EDUCATION 402-280-1830

Speaker:
C. Richard Boland, MD, AGAF
Chief, Division of Gastroenterology
Department of Internal Medicine
Baylor University Medical Center
Dallas, Texas

C. Richard Boland, M.D., is Chief of Gastroenterology at Baylor University Medical Center (BUMC) in Dallas Texas. He was born and raised in upstate New York, received his undergraduate degree from the University of Notre Dame, and an M.D. from Yale Medical School. He has career-long interest, beginning with M.D. thesis in colon cancer research, specifically focusing on the initial causes of colon cancer and familial cancer syndromes. His academic career began at the University of California, San Francisco (UCSF), moved to the University of Michigan as Section Chief in GI at the Ann Arbor VA in 1984, and later to Professor of Medicine and Chief of the GI Division at the University of California, San Diego (UCSD) in 1995. His position at BUMC is principally focused on research consisting of a laboratory-based research program, and new clinical programs designed to accelerate the transition of basic concepts into diagnostic, preventive, and treatment approaches for clinical medicine. Dr. Boland's initial research training was with Young S. Kim, M.D. at UCSF, focused on the glycoprotein alterations that occur in colon cancer. He initially identified unique alterations in mucin structure associated with malignant and premalignant disease states in the colon. After moving to the University of Michigan, his research included establishing a model to study gastric mucous cell physiology in vitro, and studies of upper gastrointestinal cancer.

In 1990, he changed the focus of his research to the molecular genetics of colon cancer following a sabbatical with Andrew Feinberg, M.D., at which time he resumed work initiated while a medical student on Lynch Syndrome (hereditary nonpolyposis colorectal cancer, Lynch Syndrome). He was among the first gastroenterologists to work in the area of microsatellite instability, and his laboratory developed the first in vitro models for the study of Lynch Syndrome, using stable chromosome transfer to correct DNA mismatch repair deficiencies in cultured cells. At this time, Dr. Boland continues to work on hereditary colon cancer, is working on the mechanisms by which inflammation predisposes to cancer in the gastrointestinal tract, and his laboratory has identified a transforming virus associated with colorectal cancer. This DNA polyomavirus, JC virus, encodes a T antigen, similar to that in SV40, which has long been used to transform cells in laboratory models. This virus is present in nearly all colon cancers, and is also present in the gastrointestinal tracts of most healthy individuals. His group has been able to induce chromosomal instability (CIN) by infecting normal cells with this virus, and tranfection of the virus in a plasmid can induce CIN in diploid cell lines as well. He has published over 220 papers, been elected into the Association of American Physicians, and has trained numerous post doctoral fellows who have followed him into the study of colorectal cancer.

Disclosure: Dr. Boland has a financial relationship or affiliation with the following organization that include Grant/Research Support: National Cancer Institute and Consultant: Myriad Genetics. However no conflict of interest exists for this presentation.

OBJECTIVES
At the conclusion of this presentation, the participants should be able to:

Illustrate how cellular models of defective DNA mismatch repair provided insight into the clinical behavior of Lynch Syndrome tumors and those with the acquired form of defective DNA

Explain how specific defects in the DNA mismatch repair system alter the response of colorectal cancers to conventional cancer chemotherapy

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