Test Before You Treat

CCR researcher Frank Gonzalez, Ph.D., is recognized for the development of a life-saving diagnostic test to identify cancer patients that may experience 5-fluorouracil toxicity.

Frank Gonzalez, Ph.D., Chief of CCR’s Laboratory of Metabolism, and his former fellow Pedro Fernandez-Salguero, Ph.D., now a professor in Spain, received the 2011 Federal Laboratory Consortium National Award for Excellence in Technology Transfer for developing and transferring a life-saving diagnostic test to the marketplace. The test has been nonexclusively licensed to several companies in Europe and the United States. Before administering the drug 5-fluorouracil (5-FU), it is now possible to screen patients for a mutation that puts them at risk for life-threatening toxicity.

Gonzalez and Fernandez-Salguero determined the molecular basis for 5-FU-linked toxicity. They discovered a splicing mutation in the dihydropyrimidine dehydrogenase (DPD) gene, which is normally involved in the degradation of the drug. Patients’ sensitivity to 5-FU is directly correlated with a mutated DPD gene and low DPD activity levels, resulting in the accumulation of 5-FU in the body.

In the United States, approximately 275,000 cancer patients receive this drug annually. The transfer of this technology through nonexclusive licenses has enabled the wide dissemination of the diagnostic test. “As a result of these multiple licenses,” noted Gonzalez, “many patients around the world can avoid being treated by a drug that may prove to do them more harm than good.”

To learn more about Dr. Gonzalez’s research, please visit his CCR Web site at http://ccr.cancer.gov/staff/staff.asp?Name=gonzalez.

Staff News at CCR

Glenn Merlino, Ph.D.

Glenn Merlino has been named a Deputy Director of CCR. Merlino received his Ph.D. from the University of Michigan in 1980 and began his career at NCI as a Postdoctoral Fellow under Ira Pastan, M.D. He was named Chief of CCR’s Laboratory of Cell Regulation and Carcinogenesis in 2004 and Co-Chief of CCR’s Laboratory of Cancer Biology and Genetics in 2006. Merlino’s research career has made contributions in the areas of receptor tyrosine kinase signaling, oncogenic transformation, transcriptional regulation, cell cycle regulation, multiple drug resistance, and genomic instability. He was the first to report the amplification/arrangement of the EGFR gene in human cancer. Using transgenic mouse models, he was among the first to show that growth factors could function in vivo as oncogenes. Currently, Merlino and his colleagues in the Cancer Modeling Section—using genetically engineered mouse models of human cancer—are seeking to elucidate the complex molecular programs governing melanomagenesis and progression.

newly tenured CCR scientists

Stefan Ambs, Ph.D., M.PH.
Laboratory of Human Carcinogenesis

Daniel Fowler, M.D.
Experimental Transplantation and Immunology Branch

Kevin Gardner, M.D., Ph.D.
Laboratory of Receptor Biology and Gene Expression

Dennis Hickstein, M.D.
Experimental Transplantation and Immunology Branch

Ola Landgren, M.D., Ph.D.
Medical Oncology Branch

Yun-Xing Wang, Ph.D.
Structural Biophysics Laboratory
new tenure-track scientists

Christina M. Annunziata, M.D., Ph.D.
Christina Annunziata is now a tenure-track investigator in CCR’s Medical Oncology Branch. Her research investigates NF-κB signaling in an ovarian cancer model, and she maintains her clinical focus in the translational clinical studies of ovarian cancer.

Isaac Brownell, M.D., Ph.D.
Isaac Brownell joins CCR’s Dermatology Branch. His research focuses on the regulation of stem cells in the skin and the use of mouse genetics to model carcinogenesis in the skin.

Udayan Guha, M.B.B.S, Ph.D.
Udayan Guha joins CCR’s Medical Oncology Branch. His clinical interest is thoracic malignancies and his research interest is studying cancer-signaling networks using integrated proteomics, genomics, and mouse modeling approaches.

Rosandra N. Kaplan, M.D.
Rosie Kaplan joins CCR’s Pediatric Oncology Branch. She is a clinician and physician-scientist with active translational and clinical research interests focused on the mechanism of cancer metastasis.

Teri N. Kreisl, M.D.
Teri Kreisl is now a tenure-track investigator in CCR’s Neuro-Oncology Branch. Her research focuses on imaging biomarkers in primary brain tumors.

Ashish Lal, Ph.D.
Ashish Lal joins CCR’s Genetics Branch. His laboratory focuses on elucidating the function of specific cancer-associated microRNAs using molecular and genetic approaches. His lab is also investigating the role of mutations in tumor suppressor proteins such as p53 on microRNA biogenesis in cancer cells.

Daniel R. Larson, Ph.D.
Dan Larson joins CCR’s Laboratory of Receptor Biology and Gene Expression. His laboratory focuses on the regulation and function of RNA in a cell-biological context, including transcription, splicing, post-transcriptional processing, and decay.

Jayne Stommel, Ph.D.
Jayne Stommel joins CCR’s Laboratory of Molecular Pharmacology. Her research focuses on oncogenic kinase signaling in glioblastoma multiforme.

Philip Tofilon, Ph.D.
Philip Tofilon joins CCR’s Radiation Oncology Branch. His research investigates radiation-induced translational control of gene expression, as well as the radiobiology of glioblastoma stem cells.

Christopher Westlake, Ph.D.
Chris Westlake joins CCR’s Laboratory of Cell and Developmental Signaling. His research investigates membrane trafficking pathways important in ciliopathy, diseases linked to primary cilia dysfunction, and cancer.