

Bringing Epigenetic Therapy to the Forefront of Cancer Management

Dream Team Leader:

Stephen B. Baylin, M.D., Deputy Director of the Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins University

Co-Leader:

Peter Jones, Ph.D., Distinguished Professor of Urology and Biochemistry & Molecular Biology, University of Southern California



Stephen B. Baylin, M.D., is deputy director of The Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins and the Virginia and D.K. Ludwig professor of oncology and medicine. He is chief of the Cancer Biology Division and associate director for research of the center.

Baylin attended Duke University, where he earned his medical degree in 1968 and completed his internship and first year residency in internal medicine. He then worked for two years at the National Heart and Lung Institute of the National Institutes of Health (NIH). In 1971, Baylin joined the departments of oncology and medicine at Johns Hopkins University School of Medicine.

His research interests include cellular biology and genetics of cancer, specifically epigenetics or genetic modifications other than those in DNA that can affect cell behavior, and silencing of tumor suppressor genes and tumor progression. His research has looked at the mechanisms through which variations in tumor cells derive, and cell differentiation in cancers such as medullary thyroid carcinoma and small cell lung carcinoma.

Baylin's honors include the 2004 National Investigator of the Year Award from the NCI SPORE program; the 2005 Jack Gibson Visiting Professorship, University of Hong Kong Queen Mary Hospital, Hong Kong; the 2005 Shubitz Cancer Research Prize from the University of Chicago; the 2008 Raffaele Tecce Memorial Lecture, Rome, Italy; the 2008 David Workman Memorial Award from the Waxman Foundation; and the Kirk A. Landon-AACR Prize for Basic and Translational Cancer Research.

Baylin has served on the American Association for Cancer Research Board of Directors from 2004 through 2007, and is an associate editor of *Cancer Research*. He has also presented frequently at AACR conferences and chaired the special conference on "DNA Methylation, Imprinting and the Epigenetics of Cancer." Baylin has authored or co-authored more than 350 publications.



Peter A. Jones, Ph.D., D.Sc., is director of the University of Southern California/Norris Comprehensive Cancer Center, director of the Urological Research Laboratories and distinguished professor of biochemistry and molecular biology and urology at the Keck School of Medicine of University of Southern California. Jones also holds the H. Leslie and Elaine S. Hoffman cancer research chair at the University of Southern California.

Born, raised and educated in the former Rhodesia (now Zimbabwe),

Jones received his doctorate in biochemistry from the University of London in 1973. He joined the University of Southern California in 1977, where he attained the rank of professor in 1985 and became director of the cancer center in 1993.

Jones' research concerns how cancer-related genes become heritably silenced during carcinogenesis, resulting in functional inactivation. The primary focus of his research is on DNA cytosine methylation and how this process interacts with chromatin structure to ensure heritable silencing. He is also interested in translating basic scientific discoveries into clinical treatments, specifically for people with bladder cancer. He and his colleagues are working on drugs that can reverse silencing and turn genes back on again, and designing strategies where this kind of epigenetic therapy can be applied to the treatment of human cancers.

A past president of the AACR and deputy editor of *Cancer Research*, Jones is the author of more than 250 journal publications and book chapters and serves on several national and international committees, panels and editorial boards. He has received a variety of honors, including the University of Southern California Associates Award for Creativity in Research and Scholarship and the Outstanding Investigator Grant from the National Cancer Institute. Recently, Jones, along with his colleague Stephen B. Baylin, M.D, deputy director of The Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins, received the Kirk A. Landon-AACR Prize for Basic and Translational Cancer Research.

Targeting PI3K in Women's Cancers

Dream Team Leader:

Lewis C. Cantley, Ph.D., Chief of the Division of Signal Transduction at Beth Israel Deaconess Medical Center

Co-Leaders:

Charles Sawyers, M.D., Director of the Human Oncology and Pathogenesis Program at Memorial Sloan-Kettering Cancer Center

Gordon B. Mills, M.D., Ph.D., Chair, Department of Systems Biology, University of Texas M. D. Anderson Cancer Center



Lewis C. Cantley, Ph.D., is a professor of systems biology at Harvard Medical School and chief of the division of signal transduction at Beth Israel Deaconess Medical Center, a major teaching hospital of Harvard Medical School in Boston. Cantley joined the faculty of Harvard Medical School in 1992, when he was also appointed to chief of the division of signal transduction in the department of medicine at the former Beth Israel Hospital. In 2007, he was appointed director of the cancer center.

A summa cum laude graduate of West Virginia Wesleyan College, Cantley obtained a doctorate in biophysical chemistry from Cornell University in 1975. He completed postdoctoral research at Harvard from 1975 through 1978 when he joined the department of biochemistry and molecular biology as an assistant professor. Prior, Cantley was professor of physiology at Tufts University School of Medicine. He is a member of the American Academy of Arts and Sciences and the National Academy of Sciences, and serves on the editorial boards of the journals *Cell* and the *Journal of Cell Biology*. He is the recipient of the 2005 Pezcoller Foundation-American Association for Cancer Research International Award for Cancer Research, for his leadership in the field of signal transduction, including the discovery of phosphoinositide 3-kinase (PI3K).

In addition, research from Cantley's laboratory has revealed that PI3K is also a significant factor in insulin signaling and in immune cell signaling. As a result, pharmaceutical intervention in the PI3K pathway is being explored in a variety of diseases, such as cancer, diabetes and immune diseases.



Charles L. Sawyers, M.D., is an investigator at the Howard Hughes Medical Institute and chairman of the Human Oncology and Pathogenesis Program at Memorial Sloan-Kettering Cancer Center. He is a past president of the American Society of Clinical Investigation, serves on the nominating committee of the American Association for Cancer Research and on the National Cancer Institute's Board of Scientific Counselors.

Sawyers attended Princeton University for his undergraduate degree, received his medical degree from Johns Hopkins University School

of Medicine in 1985 and completed his postdoctoral studies at the University of California, Los Angeles. He was associate editor for two of the AACR's journals *Cancer Research* and *Clinical Cancer Research*, and currently serves on the editorial board of *Cancer Cell*.

Sawyers' research focuses on molecular therapy, with special emphasis on signaling pathway abnormalities in cancer cells as targets for drug therapy. He has received numerous awards for his research including the Emil J. Freireich Award, the AACR-Richard and Hinda Rosenthal Foundation Award, the David A. Karnofsky Award, the Dorothy P. Landon-AACR Prize for Translational Cancer Research and the Bristol-Myers-Squibb "Freedom-to-Explore" Award. Sawyers is also a member of the Institute of Medicine.



Gordon B. Mills, M.D., Ph.D., is the Ann Rife Cox chair of gynecology, chair of the department of systems biology in the Division of Cancer Medicine and co-head of the Kleberg Center for Molecular Markers of the University of Texas M. D. Anderson Cancer Center.

Mills received his doctoral degree in biochemistry and his medical degree from the University of Alberta. In 1985, he joined the faculty of the University of Toronto where he became associate professor in the obstetrics and gynecology, immunology, and clinical biochemistry departments; he also served as director of oncology research at the Toronto Hospital. Mills joined the University of Texas M. D. Anderson Cancer Center in 1994 where he is a professor in the departments of medicine, immunology and tumor biology, as well as chair for the newly created department of systems biology. He also co-directs the Robert J. Kleberg, Jr. & Helen C. Kleberg Center for Molecular Markers.

Mills' research focuses on the PI3K pathway, lysophospholipids, the genomics and genetics of women's cancers, and identifying and characterizing a number of potential oncogenes and tumor suppressor genes. He holds more than 20 patents in novel technologies and molecular biomarkers, was the founding head of the M. D. Anderson Cancer Center Technology Review Committee, and has contributed more than 400 papers to *Nature*, *Cell*, *Oncogene*, *Cancer Research* and *Clinical Cancer Research*, among others.

An Integrated Approach to Targeting Breast Cancer Molecular Subtypes and Their “Resistance” Phenotypes

Dream Team Leaders:

Joe Gray, Ph.D., Life Sciences Division Director Lawrence Berkeley National Laboratory
Dennis Slamon, M.D., Ph.D., Director of Clinical/Translational Research at UCLA’s Jonsson
Comprehensive Cancer Center



Joe W. Gray, Ph.D., has been director of the Division of Life Sciences and associate laboratory director for life and environmental sciences at Lawrence Berkeley National Laboratory since 2003. He is also an adjunct professor in the department of laboratory medicine at the University of California, San Francisco, School of Medicine, program co-leader of breast oncology at the UCSF Helen Diller Family Comprehensive Cancer Center, and sits on the National Cancer Institute Board of Scientific Advisors.

Gray received his engineering degree from the Colorado School of Mines in 1968 and his doctorate in physics from Kansas State University in 1972. The same year, he began research in the Biomedical Sciences Division of the Lawrence Livermore National Laboratory and became cytophysics section leader 10 years later. Gray joined UCSF as professor of laboratory medicine in 1991 and held that position until 2003. He also served as director of resource for molecular cytogenetics at Lawrence Berkeley National Laboratory.

The Gray Laboratory at the Lawrence Berkeley National Laboratory explores mechanisms by which genomic, transcriptional and proteomic abnormalities occur in selected cancers, elucidates how these abnormalities contribute to cancer pathophysiology and assesses the ways in which these abnormalities influence responses to experimental therapies.

Gray has published his work in *Cancer Research*, *Nature*, *Clinical Cancer Research*, *Cancer Cell* and *Science*, among others. He has received numerous awards for his research including the E. O. Lawrence Award from the U.S. Department of Energy, the Curt Stern Award from the American Society for Human Genetics, a Distinguished Achievement Award from the Colorado School of Mines, an Alumni Fellow Award from Kansas State University, an honorary Doctor of Medicine from Tampere University, the Komen Foundation Brinker Award for Scientific Distinction and the 2008 Team Science Award from the American Association for Cancer Research.



Dennis Slamon, M.D., Ph.D., serves as director of clinical/translational research at University of California, Los Angeles Jonsson Comprehensive Cancer Center and director of the Revlon/UCLA Women’s Cancer Research Program. He is a professor of medicine, chief of the division of hematology/oncology and executive vice chair for research in the UCLA Department of

Medicine. Slamon is also the director of the medical advisory board for the National Colorectal Cancer Research Alliance.

In 1975, Slamon graduated with honors from the University of Chicago's Pritzker School of Medicine with both his medical degree and his doctorate in cell biology. He completed his internship and residency at the University of Chicago Hospitals and Clinics, and became chief resident in 1978. One year later, he became a fellow in the division of hematology/oncology at UCLA.

For more than 20 years, Slamon has devoted his life to research that has brought about a revolution in breast cancer diagnosis and treatment. His clinical research led to the development of trastuzumab (Herceptin), a breakthrough drug that has been shown to extend the survival of women with a particularly aggressive form of breast cancer.

Slamon has won numerous research awards, including the Warren Alpert Foundation Scientific Prize, the 2007 Gairdner Foundation International Award, the Translational Medicine Award by the USCD-Salk Institute, the Bristol-Myers Squibb Oncology Millennium Award, and the Dorothy P. Landon-AACR Prize for Translational Cancer Research. In 2004, the American Cancer Society presented him with the Medal of Honor, the top award bestowed by the organization.

The Circulating Tumor Cells Chip

Dream Team Leader:

Daniel Haber, M.D., Ph.D., Director of the Massachusetts General Hospital Cancer Center

Co-Leader:

Mehmet Toner, Ph.D., professor of biomedical engineering, Harvard Medical School



Daniel Haber, M.D., Ph.D., is director of the Massachusetts General Hospital Cancer Center and the Isselbacher/Schwartz professor of oncology at Harvard Medical School. Haber attended college at Massachusetts Institute of Technology. He received his medical and doctoral degrees at Stanford in 1983, completed an internal medical residency at Massachusetts General Hospital, clinical oncology training at Dana Farber Cancer Institute, and a postdoctoral research fellowship at MIT, joining the Harvard Medical School faculty in 1991 as assistant professor at the MGH Cancer Center.

Haber's laboratory interests have focused on the area of cancer genetics, including the etiology of the pediatric kidney cancer Wilms tumor and genetic predisposition to breast cancer. In collaboration with MGH Bioengineering Professor Mehmet Toner, Ph.D., Haber's group has recently established the application of a novel microfluidic technology for quantifying and purifying rare circulating tumor cells from the blood of patients with various epithelial cancers. The further development and clinical application of this nanotechnology constitutes the basis for the proposal supported by Stand Up To Cancer.

Haber is on the editorial boards of *Cell* and *Cancer Cell*, and has served as genetics editor for the *New England Journal of Medicine*. He has been elected to the American Association of Physicians, the American Society for Clinical Investigation, and the board of directors of the American Association for Cancer Research. Haber has been honored with the Doris Duke Distinguished Clinical Scholar Award and a Professorship from the National Foundation for Cancer Research, a MERIT Award from the National Cancer Institute, a Dream Team Award from the Prostate Cancer Foundation, the Emil Freireich Award from M. D. Anderson Cancer Center, the Sternlicht Award from Case Western Reserve, and the Hinda Rosenthal Award for Translational Research from AACR. He was appointed to the Howard Hughes Medical Institute in 2008.



Mehmet Toner, Ph.D., has a joint appointment as professor of surgery and health sciences and technology at Harvard Medical School, Massachusetts General Hospital. He serves as a member of the senior scientific staff at the Shriners Hospital for Children and is co-founder of the Center for Engineering in Medicine. Toner is founder of the NIH BioMicroElectroMechanical Systems Resource Center at Massachusetts General Hospital, where he is also director of the Biomedical Engineering Research and Education Program for physicians.

Born in Istanbul, Turkey, Toner received a Bachelor of Science degree from Istanbul Technical University in 1983 and a Master of Science degree from the Massachusetts Institute of Technology in 1985, both in mechanical engineering. He completed his doctorate in medical engineering at the Harvard-MIT Division of Health Sciences and Technology in 1989. He joined the faculty at the Massachusetts General Hospital and Harvard Medical School as an assistant professor of biomedical engineering in 1989, and was promoted to associate professor in 1996 and to professor in 2002.

In 1994, he was recognized with the YC Fung Faculty Award in Bioengineering from the American Society of Mechanical Engineers. In 1995, he received the Whitaker Foundation Special Opportunity Award. In 1997, he won the John F. and Virginia B. Taplin Faculty Fellow Award given by Harvard and MIT. Toner is a fellow of the American Institute of Medical and Biological Engineering. He serves on the scientific advisory boards of multiple biotechnology and medical device companies.

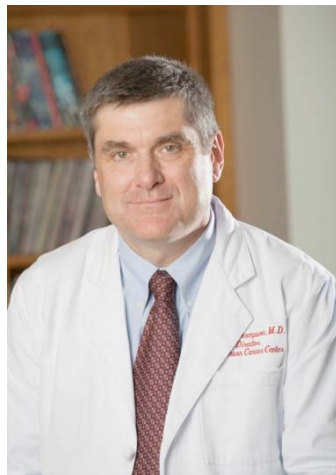
Toner is internationally recognized for his multidisciplinary approach to biomedical problems in the areas of low-temperature biology and biostabilization, tissue engineering and artificial organs, and microsystems bioengineering in clinical medicine and biology. He has received funding from the National Institutes of Health, National Science Foundation, U.S. Department of Defense Advanced Research Projects Agency, Whitaker Foundation, National Textile Center, and others. He has published more than 200 scientific publications and has delivered more than 350 scientific presentations.

Cutting Off the Fuel Supply

A New Approach to the Treatment of Pancreatic Cancer

Dream Team Leaders:

Craig B. Thompson, M.D., director, Abramson Cancer Center at the University of Pennsylvania
Daniel Von Hoff, M.D., Senior Investigator and Physician in Chief at Translational Research Genomics Institute (TGen)



Craig B. Thompson, M.D., is the director of the Abramson Cancer Center, associate vice president for cancer services at the University of Pennsylvania Health System, director of the Abramson Family Cancer Research Institute and the John H. Glick professor of medicine and cancer biology at the University of Pennsylvania School of Medicine in Philadelphia.

Thompson attended college at Dartmouth and continued his graduate studies at Dartmouth Medical School. He received his medical degree from the University of Pennsylvania in 1977 and completed his residency at Harvard's Peter Bent Brigham Hospital. In 1982, he was appointed to assistant professor of medicine at the Uniformed Services University of the Health Sciences and a year later became a fellow in hematology and oncology at the Fred Hutchinson Cancer Research Center at the University of Washington. Thompson joined the University of Michigan's Department of Medicine in 1987; he then became an investigator at Howard Hughes Institute and director of the Knapp Center at the University of Chicago. Thompson joined the Abramson Family Cancer Research Institute as scientific director in 1999.

Thompson's research currently focuses on studying how alterations in the control of cell metabolism contribute to cancer cell development and survival. Previously, he has contributed to the development of new treatments for autoimmune diseases and leukemia.

Active in many American Association for Cancer Research programs, Thompson presently serves on the board of directors and as a member of the council of scientific advisors. He is also on the editorial board for *Molecular Cancer Research*. Thompson was co-chairperson of the AACR's 2008 Annual Meeting program committee, chairperson of the 2008 nominating committee and has served on multiple award committees. In 2005, he was elected to the National Academy of Sciences.



Daniel D. Von Hoff, M.D., F.A.C.P., is physician-in-chief and director of translational research at TGen (Translational Genomics Research Institute) in Phoenix, Ariz.; chief scientific officer for US Oncology and for Scottsdale Healthcare Clinical Research Institute and clinical professor of medicine at the University of Arizona.

Von Hoff graduated from Carroll College and received his medical degree from Columbia University College of Physicians and Surgeons. He completed his internship and residency at the University of California, San Francisco, and a fellowship at the National Cancer Institute. Von Hoff became a professor in the departments of medicine and cellular and structural biology at the University of Texas Health Science Center, San Antonio. In 1989, he became the founding director of the Institute for Drug Development at the Cancer Therapy and Research Center in San Antonio and later became director of the cancer center and professor of medicine at the University of Arizona.

Von Hoff's major interest is in the development of new anticancer agents. He and his colleagues were involved in the beginning of the development of many of the agents we now use routinely. At present, Von Hoff's work concentrates on the development of molecularly targeted therapies for patients with pancreatic and other advanced cancers.

He is currently serving a six-year term on the National Cancer Advisory Board and has served on the FDA's Oncology Advisory Committee. Von Hoff is a past president of the American Association for Cancer Research, was on the AACR and the American Society of Clinical Oncology's Board of Directors, and is a fellow of the American College of Physicians. Von Hoff is the founder of *Investigational New Drugs - The Journal of New Anticancer Agents* and is editor-in-chief of *Molecular Cancer Therapeutics*. He was the associate editor for two AACR journals, *Clinical Cancer Research* and *Cancer Research*.
