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Lewis C. Cantley, PhD

Meyer Director, Sandra and Edward Meyer Cancer Center at Weill Cornell Medical College/Ronald P. Stanton Clinical Cancer Program at NewYork-Presbyterian
lec2014@med.cornell.edu

Stephen G. Emerson, MD, PhD

Director, Herbert Irving Comprehensive Cancer Center NewYork-Presbyterian/Columbia University Medical Center
semerson@columbia.edu

David M. Nanus, MD

Chief, Hematology and Medical Oncology NewYork-Presbyterian/Weill Cornell Medical Center Associate Director for Clinical Services, Sandra and Edward Meyer Cancer Center at Weill Cornell Medical College/Ronald P. Stanton Clinical Cancer Program at NewYork-Presbyterian
dnanus@med.cornell.edu

Gary K. Schwartz, MD

Chief, Hematology and Oncology Associate Director, Herbert Irving Comprehensive Cancer Center NewYork-Presbyterian/Columbia University Medical Center
gks2123@cumc.columbia.edu

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Eminent Clinicians and Scientists Expanding Breadth of Cancer Expertise at NewYork-Presbyterian

NewYork-Presbyterian/Columbia University Medical Center Experimental Therapeutics

Richard D. Carvajal, MD, is Director of the Experimental Therapeutics/Phase 1 Program and Melanoma Service in Medical Oncology at NewYork-Presbyterian/Columbia University Medical Center. Prior to joining NewYork-Presbyterian/Columbia, Dr. Carvajal was Director of Developmental Therapeutics at Memorial Sloan Kettering Cancer



Dr. Richard D. Carvajal

Center. “Dr. Carvajal has spearheaded the development of important treatments that have transformed the lives of patients with rare cancers,” says Gary K. Schwartz, MD, Chief of Hematology/Oncology and Associate Director of the Herbert Irving Comprehensive Cancer Center. “With his experience and talent for innovation, we look forward to his future contributions to patient-centered health care. He brings with him a wealth of knowledge on the development of new agents for patients with a wide range of tumor types, including rare cancers. But, more important, he brings the compassion and humanism that characterize the doctors at NewYork-Presbyterian/Columbia.”

Dr. Carvajal has extensive clinical expertise in melanomas and leadership experience in the development and conduct of early-stage clinical trials for patients with advanced cancers and in the development of novel therapies for rare cancers. His work has focused on uncommon, difficult-to-treat cancers, such as uveal melanomas, mucosal melanomas, and acral melanomas. His approach combines the study of the underlying biology of cancer with personalized medicine in which genetic profiles of tumors are used to match individual patients with promising therapies.

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NewYork-Presbyterian/Weill Cornell Medical Center Radiation Oncology

Silvia C. Formenti, MD, an international expert in the use of radiation therapy for the treatment of cancer, has been appointed Radiation Oncologist-in-Chief at NewYork-Presbyterian/Weill Cornell Medical Center and Chair of the newly established Department of Radiation Oncology at Weill Cornell Medical College. Dr. Formenti has also been named the Associate Director of Radiation Oncology at the Sandra and Edward Meyer Cancer Center at Weill Cornell Medical College.



Dr. Silvia C. Formenti

A recognized leader in radiation oncology and breast cancer research, Dr. Formenti’s groundbreaking work has transformed the paradigm in radiation biology, demonstrating the efficacy of combining radiotherapy with immunotherapy to control cancer cell growth in solid tumors. She has translated preclinical work into clinical trials in metastatic breast cancer, lung cancer, and melanoma, and has opened a new field of application for radiotherapy, whereby localized radiation can be used as an adjuvant to immunotherapy of solid tumors and lymphomas.

Dr. Formenti, who most recently served as Chair of Radiation Oncology at New York University Langone Medical Center, will expand and enhance the existing radiation oncology program at Weill Cornell, building upon its already distinguished reputation of excellence in translational research to better investigate, target, and treat individual patients’ unique cancers. Faculty will investigate precision medicine approaches to radiation oncology, focusing on combining radiotherapy with

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Expanding Breadth of Cancer Expertise at NewYork-Presbyterian

Experimental Therapeutics *(continued from page 1)*

“When I started my fellowship in 2004, we were at the early stages of being able to identify specific genetic driver alterations and match them with the relevant small molecule inhibitors to achieve clinical benefit in our patients with cancer,” says Dr. Carvajal. “The past decade has been spent trying to determine how best to utilize these small molecules and other agents targeting various tumor signaling pathways. Over the past five years, our ability to develop drugs that specifically manipulate different areas of the immune system and the responses that we’ve seen with immunologic checkpoint inhibitors have been dramatic, leading to an acceleration in the development of additional immunologic treatment strategies. The large number of novel agents in development, both targeted and immunologic in nature, coupled with our ability to achieve a deep molecular understanding of each patient’s individual tumor and immunological makeup, permits us to really deliver precision medicine and precision immunotherapy. By properly matching biology and novel agents, we can achieve dramatic clinical benefits even in these early, first-in-man clinical trials. Before 2011, I very rarely used the word cure for patients with advanced melanoma. It was always control. But with some of these new immunologic agents, cure is a very real possibility.”

Dr. Carvajal’s research has led to the first positive clinical trials of drugs for a number of cancers, including imatinib (Gleevec®), which was effective in treating patients with melanomas that have a mutation in the KIT gene, and selumetinib, which shrank tumors in half of treated patients with metastatic uveal melanoma, a disease that affects only 2,000 to 3,000 people each year.

“Before 2011, I very rarely used the word cure for patients, for instance, with advanced melanoma. It was always control. But with some of these new immunologic agents, cure is a very real possibility.”

– Dr. Richard D. Carvajal

“Ten years ago, limited treatments were available to those with rare forms of cancer,” **Stephen G. Emerson, MD, PhD**, Director of the Herbert Irving Comprehensive Cancer Center. “Since then, we have made significant progress in our ability to provide care to these patients. Dr. Carvajal and his colleagues will continue leading the effort to find novel therapies for these diseases and to advancing personalized medicine.”

Dr. Carvajal has been involved in over 50 clinical trials of novel cancer drugs, and serves as co-chair of the International Rare Cancer Initiative Uveal Melanoma Working Group, a joint initiative of the National Cancer Institute, the European Organization for Research and Treatment of Cancer, and Cancer Research UK to enhance international collaboration in the conduct of clinical trials for uveal melanoma. He received his medical degree from New York University School of Medicine and completed his residency at the University of Michigan Medical Center in Ann Arbor and his fellowship at Memorial Sloan Kettering Cancer Center in New York.

For More Information

Dr. Richard D. Carvajal • carvajalr@columbia.edu

Radiation Oncology *(continued from page 1)*

immunotherapy and other modifiers of the tumor microenvironment to design advanced treatments and therapies that are tailored to each patient’s individual tumor.

“Dr. Formenti is a tireless crusader for innovation in the field of radiation oncology, and we are delighted that she will be spearheading these efforts for us,” says **Steven J. Corwin, MD**, CEO of NewYork-Presbyterian Hospital. “Her leadership, expertise and commitment to the combined use of tumor radiation and immunotherapy tailored to patient-specific genetics will not only transform cancer care and treatment at NewYork-Presbyterian, but will also help us move closer to a cure.”

“Combining radiotherapy with immunotherapy is exquisitely interdisciplinary work, leveraging the most modern integration of pathology, imaging, surgery, medical oncology, and radiation oncology.”

– Dr. Silvia C. Formenti

“Combining radiotherapy with immunotherapy is exquisitely interdisciplinary work, leveraging the most modern integration of pathology, imaging, surgery, medical oncology, and radiation oncology,” Dr. Formenti says. “The culture and collegiality at NewYork-Presbyterian/Weill Cornell and Weill Cornell Medical College provide the best setting to enable these cutting-edge research approaches.”

The new Department of Radiation Oncology will empower scientists to conduct high-impact basic, clinical, and translational research, and in particular, investigators will engage in radio-biological research, exploring the effects of ionizing radiation on tumor and normal tissue with findings translated into preclinical models that can lead to improved, personalized patient care.

Funded by the National Institutes of Health, the Department of Defense Breast Cancer Research program, and the Breast Cancer Research Foundation, Dr. Formenti has focused her research endeavors on personalized oncology – designing more effective, targeted treatments tailored to individual patients by combining radiotherapy with immunotherapy. Her laboratory discovered that this combination therapy overrides cancer’s ability to hijack the normal immune response that rejects tumor cells, creating a vaccine against the disease that is specific to each individual patient’s tumor. When applied to an experimental model of metastatic breast cancer, she found that this therapy was not only effective against primary tumors, but it also prevented the disease from spreading to the lungs by leveraging acquired immune memory. Dr. Formenti is investigating how this breakthrough, by tailoring the therapy to the specific molecular characteristics of individual tumors, can be rapidly adopted to treat patients suffering from various forms of metastatic cancer.

Dr. Formenti has published more than 170 scholarly papers in journals, including the *Journal of the American Medical Association* and the *Journal of Clinical Oncology*.

For More Information

Dr. Silvia C. Formenti • formenti@med.cornell.edu

NewYork-Presbyterian Hospital Expands Expertise in Brain Cancer

Dr. Howard Fine Leads New Brain Tumor Center at NewYork-Presbyterian/Weill Cornell

Howard A. Fine, MD, an internationally renowned brain tumor expert, has joined NewYork-Presbyterian/Weill Cornell Medical Center as Director of the Brain Tumor Center and Chief of the newly established Division of Neuro-Oncology in the Department of Neurology at NewYork-Presbyterian/Weill Cornell. Dr. Fine also serves as Associate Director for Translational Research in the Sandra and Edward Meyer Cancer Center at Weill Cornell Medical College.

With a nearly three-decade long career devoted exclusively to patients with brain tumors, Dr. Fine is establishing a state-of-the-art research and clinical program that will advance cutting-edge treatments for patients with these challenging diseases. Prior to joining Weill Cornell, the eminent clinician/researcher built two of the nation's leading neuro-oncology programs, the Dana-Farber Cancer Institute Center for Neuro-Oncology at Harvard Medical School and the Neuro-Oncology Branch at the National Institutes of Health. Dr. Fine most recently served as Deputy Director of the Cancer Center and Director of the Brain Tumor Center at NYU Langone Medical Center.



Dr. Howard A. Fine

Dana-Farber Cancer Institute and Harvard Medical School in Boston. He has served on the editorial boards of *Neuro-Oncology* and the *Journal of Clinical Oncology*. His numerous awards and honors include the Community Leadership Award for Service from the National Brain Tumor Society, the National Service to America Award, and the National Cancer Institute Director's Gold Star Award for vision, leadership, and advice in designing cancer programs for the future using neuro-oncology as a model.

In assuming his new position at Weill Cornell, Dr. Fine reflected on his distinguished career that began at a time when, he says, very little was known about brain tumors. "When I

first started, the field of neuro-oncology was several decades literally behind where we were in other tumors and cancers as far as our understanding of the biology of the tumors we were trying to treat, and even in areas as basic as how you conduct clinical research," says Dr. Fine. "It's fair to say we were basically in the dark ages. That's all dramatically changed. It is an exciting time now because we are on the cusp of developing a whole new generation of therapies based on our growing knowledge base of tumor biology. We have not only caught up to our colleagues working in the other fields of cancer and tumor, in many ways we also know more about brain tumors and their molecular and genetic causes than we do with many other tumors."

A prolific researcher, Dr. Fine has continuously led a basic and translational science laboratory and participated in more than 100 brain tumor clinical trials. He has also authored over 200 scholarly articles, reviews, and book chapters in subjects related to neuro-oncology and brain tumors, most recently *New Strategies in Glioblastoma: Exploiting the New Biology*, which was published in the February 2015 issue of *Clinical Cancer Research*.

"Glioblastomas are probably the single most lethal tumors, and these are the ones that I spent my career studying," says Dr. Fine. "There have been very few, if any, advances in this disease since we recognized it a century ago. The median survival is only about 15 months despite aggressive neurosurgery, radiation, and chemotherapy. However, with preclinical and biologic advances and a better infrastructure in place, the pharmaceutical industry and the private sector have become very interested. In the whole field, the wagons have been circled, the forces have been gathered, and I think we are really poised scientifically, politically, financially, and organizationally to make major inroads in the treatment of this disease."

According to Dr. Fine, the last five years have seen an explosion in the understanding of the genetic and molecular underpinnings of glioblastomas leading to renewed optimism about potential new therapeutic approaches. Several of the most promising include oncogenic signal transduction inhibition, angiogenesis inhibition,

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"In the whole field, the wagons have been circled, the forces have been gathered, and I think we are really poised scientifically, politically, financially, and organizationally to make major inroads in the treatment of glioblastoma."

— Dr. Howard A. Fine

"The recruitment of Dr. Fine will be transformational for the Department of Neurology and the clinical neuroscience programs at NewYork-Presbyterian Hospital and Weill Cornell Medical College," says **Matthew E. Fink, MD**, Neurologist-in-Chief at NewYork-Presbyterian/Weill Cornell. "He brings knowledge and expertise to a specialized area that we have not pursued in the past, and he will help a key program, the Brain Tumor Center of the Meyer Cancer Center, fulfill its mission and vision."

"Dr. Fine will collaborate with our world-class neurosurgeons in translating research to the clinical setting, particularly in the area of precision and personalized therapies," says **Philip E. Stieg, PhD, MD**, Neurosurgeon-in-Chief at NewYork-Presbyterian/Weill Cornell. "Through these interdisciplinary collaborations, we hope to develop new, highly effective treatments for patients with difficult brain tumors."

Dr. Fine received his medical degree at the Mount Sinai School of Medicine in New York City, completed an internship and residency in Internal Medicine at the University of Pennsylvania in Philadelphia, and a fellowship in Medical Oncology at the

NewYork-Presbyterian/Columbia Brain Tumor Center Welcomes New Faculty

The Brain Tumor Center, co-directed by neurosurgeon **Jeffrey N. Bruce, MD**, Director of the Bartoli Brain Tumor Research Laboratory, and **Andrew B. Lassman, MD**, Chief of the Division of Neuro-Oncology at NewYork-Presbyterian/Columbia, has recently welcomed the following specialists.

Fabio M. Iwamoto, MD, has been appointed Deputy Director of the Division of Neuro-Oncology, charged with developing the Division's clinical and translational research components. Dr. Iwamoto has particular expertise in the diagnosis, management, and treatment of brain and spinal cord tumors, as well as neurological complications of cancer. Most recently he served as attending physician and an investigator at the Neuro-Oncology Branch, a trans-institute branch of the National Cancer Institute and National Institute of Neurological Disorders and Stroke, in Bethesda, Maryland. While there,



Dr. Fabio M. Iwamoto

Dr. Iwamoto was a principal investigator in early phase clinical trials for brain tumors and worked with laboratory and computational scientists in several translational projects in brain tumors.

Dr. Iwamoto earned his medical degree at the Federal University of Parana, Brazil, followed by a residency in neurology at NewYork-Presbyterian/Weill Cornell and a fellowship in neuro-oncology at Memorial Sloan Kettering Cancer Center.

Teri N. Kreisl, MD, whose clinical interests include primary brain tumors and metastatic disease affecting the central nervous system, joins the Division from the Neuro-Oncology Branch of the Center for Cancer Research at the National Cancer Institute where she was a Tenure Track Clinical Investigator with a research focus on molecular imaging in brain tumors. Dr. Kreisl also served as Fellowship Director and Medical Director for the Neuro-Oncology Branch. She



Dr. Teri N. Kreisl

served as principal investigator for numerous Phase 1 and 2 clinical trials for the treatment of primary brain tumors and will continue similar research efforts with the Division of Neuro-Oncology at Columbia University.

Dr. Kreisl earned her medical degree from Weill Cornell Medical College, followed by a residency in neurology at NewYork-Presbyterian/Weill Cornell where she became Chief Resident. Dr. Kreisl went on to pursue a fellowship in neuro-oncology at Memorial Sloan Kettering Cancer Center. She is board certified in neurology.

Yazmín Odia, MD, MSc, specializes in the diagnosis and management of primary central nervous system tumors, as well as metastatic brain tumors and neurologic complications of systemic cancers. She previously served as both clinical and research fellow in neuro-oncology and neurology consultant at the National Institutes of Health. She also has clinical trial and translational research experience through various NIH-funded training grants. Dr. Odia's current research focuses on the potential prognostic and predictive role of cMYC expression in gliomas using retrospective pathologic cohorts.



Dr. Yazmín Odia

Dr. Odia completed her medical training at the University of Chicago, Pritzker School of Medicine, a Master of Science in Clinical Research at the Mayo Graduate School in Rochester, and a neurology residency at the Johns Hopkins Hospitals, where as Chief Resident she received both the Jay Slotkin Award for Excellence in Research and the Guy M. McKhann Award for Excellence in Teaching.

For More Information

Dr. Fabio M. Iwamoto • fi2146@cumc.columbia.edu
 Dr. Teri N. Kreisl • tnk2109@cumc.columbia.edu
 Dr. Yazmín Odia • yo2240@cumc.columbia.edu

Dr. Howard Fine *(continued from page 3)*

targeting canonical stem cell pathways in glioblastoma stem cells, and immunotherapy.

"Glioblastomas are incredibly complex genetic tumors," says Dr. Fine. "I don't think we are going to find one single gene that is going to turn off these tumors, but rather that there are biochemical pathways that drive them. I believe the answer will lie in understanding these critical pathways and identifying how to block them. This will likely involve several drugs hitting different points along that pathway or maybe even concurrent pathways."

Having founded and led prestigious brain tumor programs

in both government and academia, Dr. Fine sees this point in his career as pivotal. "The Weill Cornell Brain Tumor Center will offer its patients the highest level of comprehensive state-of-the-art care delivered by nationally renowned clinical experts from multiple disciplines. We will define our success by how far we can move the field forward scientifically and make a major difference for patients."

For More Information

Dr. Howard A. Fine • haf9016@med.cornell.edu

NewYork-Presbyterian/ Columbia University Medical Center Thoracic Oncology

Naiyer A. Rizvi, MD, an internationally recognized leader in the treatment of lung cancer and immunotherapy drug development, is Director of Thoracic Oncology and Immunotherapeutics in Medical Oncology at NewYork-Presbyterian/Columbia. Dr. Rizvi joined the Hospital from Memorial Sloan Kettering Cancer Center, where he directed research in thoracic immunotherapy.



“Groundbreaking’ and ‘revolutionary’ often overstate the case, but they truly apply to the impact of the new immunotherapy agents that target the PD-1 pathway for non-small cell lung cancer.”

— Dr. Naiyer A. Rizvi

“Dr. Rizvi’s research of antibodies that can reinvigorate T cells to recognize lung cancer cells as foreign and destroy the cancer cells has been a major development in thoracic oncology,” says Dr. Gary Schwartz. “We are excited that he has joined us to lead our program in thoracic oncology and to integrate his years of experience and breadth of knowledge in treating patients with all types of cancer that could respond to immunotherapies.”

Dr. Rizvi has led key trials using immune checkpoint blockade therapy which unleash a patient’s own T cells to kill tumors, an approach that is revolutionizing cancer treatment. He continues this research with a focus on developing new immunotherapy agents and immunotherapy combinations to reshape the landscape of cancer therapy.

One of the latest immunotherapies to reach the market is a drug called nivolumab (Opdivo®), which the FDA recently approved for the treatment of patients with advanced squamous non-small cell lung cancer (NSCLC). “‘Groundbreaking’ and ‘revolutionary’ often overstate the case, but they truly apply to the impact of the new immunotherapy agents that target the PD-1 pathway for NSCLC by disabling the PD-1 protein on T cells and suppressing T cell activity,” says Dr. Rizvi.

Dr. Rizvi led the trial recently published in *Lancet Oncology* that was key to approval of nivolumab for squamous lung cancer. “When I first started treating patients with nivolumab in 2008, it was hard to imagine how dramatically this could help patients who were resistant to all of our standard treatments,” says Dr. Rizvi. “We have some patients who are still alive many years after taking this drug, with no evidence of cancer. This has never been seen with standard lung cancer treatment.”

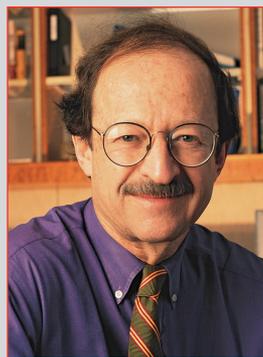
While some patients with NSCLC respond well to PD-1 inhibitors, others do not. Dr. Rizvi and his colleagues thought that the cancers that had accumulated the most DNA damage were more likely to have worn out the immune system and would likely be helped the most by PD-1 inhibitors. They tested this by

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NewYork-Presbyterian/ Weill Cornell Medical Center Cancer Genetics

Harold E. Varmus, MD, former Director of the National Cancer Institute at the National Institutes of Health and co-winner of the Nobel Prize, joined Weill Cornell Medical College as the Lewis Thomas University Professor of Medicine. Dr. Varmus, who is internationally recognized for his research on retroviruses and the genetic basis of cancer, also will partner with the New York Genome Center as a Senior Associate Core Member to promote the use of cancer genomics throughout the New York region.

At Weill Cornell, Dr. Varmus will continue to conduct research on fundamental aspects of cancer in collaboration with investigators at the Sandra and Edward Meyer Cancer Center, led by Lewis C. Cantley, PhD. By working with the New York Genome Center, Dr. Varmus will endeavor to amplify work on cancer genomes and its application to cancer care through its consortium of member institutions.



“Technological advances have enabled scientists to conduct comprehensive genomic studies that are revealing detailed portraits of cancer cells, sparking new opportunities to develop next-generation therapies, diagnostics, and prevention strategies.”

— Dr. Harold E. Varmus

“This is a remarkable time in cancer research,” says Dr. Varmus. “Technological advances have enabled scientists to conduct comprehensive genomic studies that are revealing detailed portraits of cancer cells, sparking new opportunities to develop next-generation therapies, diagnostics, and prevention strategies.”

Dr. Varmus began his tenure as Director of the National Cancer Institute in July 2010. He previously served as President and Chief Executive Officer of Memorial Sloan Kettering Cancer Center from 2000 to 2010, and Director of the National Institutes of Health from 1993 to 1999.

Dr. Varmus’s laboratory will continue to focus on lung adenocarcinoma and the cancer-driving mutations found in that disease. In his seminal work, conducted during 23 years as a faculty member at the University of California San Francisco Medical School, Dr. Varmus, his collaborator J. Michael Bishop, MD, and their colleagues demonstrated the cellular origin of the oncogene of a chicken retrovirus. Their discovery led to the isolation of many cellular genes that normally control growth and development and are frequently mutated in human cancer. Drs. Varmus and Bishop were awarded the 1989 Nobel Prize for Physiology or Medicine for this discovery.

Speaking on precision medicine, Dr. Varmus says he “foresees a large computationally based network of information that informs a different way to characterize and name diseases. A taxonomy built

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Advances in Oncology

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Expanding Breadth of Cancer Expertise at NewYork-Presbyterian *(continued from page 5)*

Thoracic Oncology

sequencing tumor DNA from both responders and non-responders to treatment with pembrolizumab (Keytruda®), a PD-1 inhibitor.

Among their findings, published in March 2015 in *Science*, was that patients with a great deal of DNA damage were far more responsive to treatment than those with less DNA damage. “We were able to use advances in sequencing technology to study the entire exome – the protein-coding genes of the genome – of tumors from patients with NSCLC who were treated with pembrolizumab. We found that the more genetically damaged the tumor was, the more likely the patient was to respond to PD-1 inhibitors.

“This is an important first step toward being able to predict who will respond to PD-1 inhibitors and could be a new way to think about precision medicine based on the sequencing of tumor DNA,” says Dr. Rizvi. “This collaboration among clinical researchers, geneticists, and immunologists shows how a team of scientists can work together to help patients fight cancer.”

A native of Canada, Dr. Rizvi received his medical degree from the University of Manitoba, where he also completed his residency. He completed a fellowship at Beth Israel Hospital/Harvard Medical School. He has authored or co-authored more than 60 peer-reviewed papers, books, and book chapters. He currently sits on the editorial board of *OncoImmunology*.

For More Information
Dr. Naiyer A. Rizvi • nar2144@columbia.edu

Cancer Genetics

on a new set of facts about the origins and mechanisms of disease that then prompts more accurate diagnoses, better treatments, better outcomes – over what I envision will be many decades. We would like to be able to identify the common genetic drivers of each tumor.”

Despite the challenges, the precision medicine approach to cancer has its successes, says Dr. Varmus. “In lung adenocarcinoma, for example, the array of mutations is complex but we can see that there are some important commonalities. When those genes are studied in depth, it has been possible to identify a number of therapeutic agents that have had a beneficial effect in patients with widespread disease.

“Tremendous benefits have accrued from carrying out genetic analyses of this tumor type, which 10 to 15 years ago was nearly impossible to treat effectively once the disease expanded beyond the surgeon’s reach.”

Dr. Varmus is a member of the National Academy of Sciences and the Institute of Medicine and is involved with several initiatives to promote science and health in developing countries. The author of more than 350 scientific papers and five books, he also co-chaired President Obama’s Council of Advisors on Science and Technology and served on the World Health Organization’s Commission on Macroeconomics and Health.

For More Information
Dr. Harold E. Varmus • varmus@med.cornell.edu