Chairman's Thoughts



2011 was a banner year for the HOPP program. Our faculty secured more than \$16M in peer-reviewed funding and published over 100 papers in prestigious journals. With success comes popularity.

Nearly 300 trainees and staff worked in HOPP laboratories in 2011. We continue to recruit outstanding new faculty and added three new faces in 2011. For the first time in our history, the HOPP search committee identified three of our own MSKCC trainees as the top physicianscientist applicants to the program, a testament to the quality of individuals we now attract to MSKCC for their training. And we do not restrict ourselves to graduate student and postdoctoral fellows. In 2011, 19 top high school students from the New York City area completed summer research internships at HOPP labs. The highlight of the program was a lively poster session where students showed off their work to their parents and their high school teachers. We can hardly wait to see the excitement in these young faces next year!

The work of HOPP faculty continues to impact the clinical care of MSKCC patients. One compelling example is the thyroid cancer work of Dr. James Fagin. Dr. Fagin discovered that radioactive iodine therapy, which has been



widely used for decades to treat thyroid cancer, is not effective in patients whose tumors have mutations in a gene called BRAF. The reason is that these tumors fail to express a protein required to transport the radioactive iodine into the tumor cell so that it can be killed. However, Dr. Fagin learned that he could trick these tumors into expressing the iodine transporter by exposing them briefly to inhibitors of BRAF or the downstream protein MEK. In a remarkable series of experiments, first in mice then in MSKCC patients, he showed that these new drugs can make these resistant tumors sensitive to iodine, and potentially curable. He is leading an international clinical trial that could lead to the approval of this strategy as a new treatment for thyroid cancer. His story is one of several examples of HOPP's success.

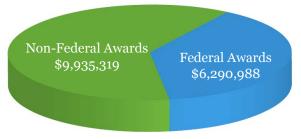
This is one of many HOPP projects that exemplify our progress in cancer research. With our successful recruitment of top tier physicianscientists, acquisition of grant funding from both federal and private agencies, and our training programs to educate the translational researchers of the future, we believe that our best days are ahead of us.

Charles L. Sawyers, M

Chair, Human Oncology and Pathogenesis Program Investigator, Howard Hughes Medical Institute

SELECTED FINANCIAL AND METRICS DATA

2011 HOPP Competitive Grant Awards



Total Competitive Grant Awards in 2011 for HOPP Investigators and Staff = \$16,226,307

Total Number Of Lab Staff

	2008	2009	2010	2011
Faculty	8	10	13	16
Clinical Attendings	7	8	9	12
PostDoc Fellows	34	42	53	82
Clinical Fellows	11	14	22	27
Visiting Investigators	4	4	6	10
Graduate Students	6	8	14	18
Research Technicians	21	30	41	58
Volunteers	3	15	53	79
TOTAL:	94	131	211	302

Number of Publications

Author position	2011
First	18
Mid	86
Last	21
Annual Total	125

HOPP THINKS... OPPORTUNITIES

With a goal to create new opportunities for collaboration and training, HOPP developed a T32 training program and welcomed the addition of three new faculty members.

Translational Research Oncology Training (TROT) Program

In 2011, Dr. Charles Sawyers launched an exciting fellowship program that offers a unique opportunity for early-career fellows conduct scientists to build a solid foundation in the field of oncology. The goal of the Translational Research Oncology

Training (TROT) Program is to support postdoctoral PhD scientists in developing a comprehensive understanding of basic science and the ability to translate new ideas into meaningful clinical applications. The two-year fellow a structured lead a stru

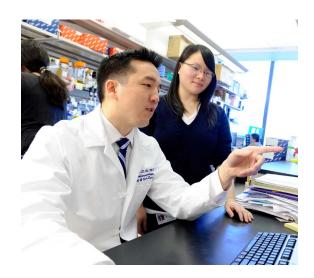
two-year fellowship is designed to provide a structured learning environment where fellows conduct a research project under the mentorship of a successful independent scientist while receiving guidance from a clinician who can provide a medical perspective.

Additional information can be found on the TROT website.

"Translational cancer research is critically dependent on successful collaboration between outstanding clinicians and laboratory scientists who share common goals and language.

TROT will catalyze these interactions by exposing postdoctoral trainees in leading cancer research laboratories at MSKCC to the world of clinical translation. We are extremely excited about this new program."

Charles Sawyers, HOPP Chair



SPOTLIGHT ON BROOKE SYLVESTER



Simultaneous to the launch of the TROT Program, HOPP was delighted to have Brooke Sylvester, PhD, of the Solit Lab, appointed as one of the two inaugural fellows.

Could you tell us about your research project? We are interested in determining whether differences exist in the genetic profiles of primary and metastatic lesions and whether such differences functionally contribute to the metastatic phenotype.

The TROT Program gives you access to attend lectures, seminars, and discussions with experienced translational researchers across the institution. What can you tell us about this? The exposure has been amazing. I have been able to attend several Grand Rounds, the colorectal cancer disease management team meetings, and the colorectal cancer translational group meetings. My clinical advisor, Dr. Martin Weiser, allowed me to visit his surgical clinic and observe procedures.

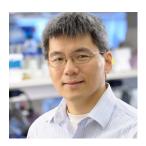
How has being a TROT fellow affected your experience here? The fellowship has definitely had a positive impact upon my experience here. It has reinforced my decision to come to MSKCC and, specifically, HOPP to do my postdoctoral training. I feel pretty secure that this training will make me a stronger scientist in the long term. I am grateful to Dr. Sawyers for the opportunity to be a part of this program.

New Faculty

Learn more about our faculty by visiting www.mskcc.org/HOPP.

YU CHEN, MD, PHD

Assistant Member Assistant Attending, Department of Medicine

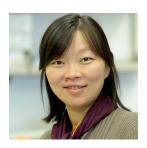


There has been enormous progress in our understanding of cellular signaling pathways that are aberrantly activated during tumorigenesis. These

pathways eventually lead to modulation of transcription factors that result in an oncogenic transcriptional program. How upstream signaling modulates downstream transcription factors and how these factors govern an oncogenic transcriptional program is often not well understood. ETS family transcription factors have recently been found to be overexpressed through translocation in over half of all prostate cancers. Dr. Chen's laboratory research is primarily focused on understanding upstream signals that cooperate with ETS transcription factors in prostate cancer pathogenesis, using in vitro and mouse models. Moreover, his laboratory is interested in identifying and understanding novel transcription factors that underlie the pathogenesis of distinct prostate cancer subtypes and other distinct solid tumor types.

PING CHI, MD, PHD

Assistant Member Assistant Attending, Department of Medicine



The Chi laboratory is interested in understanding how the tissue/cell lineage-dependent cellular context contributes to oncogenesis, e.g., why do activating KIT mutations

preferentially give rise to gastroinstinal stromal tumor (GIST) in familial GIST patients, despite the presence of KIT mutations in melanocytes, germ cells, and hematopoietic stem cells? Clearly, the tissue/cell lineage-specific cellular contexts matter in oncogenesis, and they are generally determined by transcription factors working on the chromatin landscape employing both genetic and epigenetic mechanisms. The Chi laboratory focuses on discovering and understanding the mechanisms of the critical factors involved in the cellular context determination in distinct cancer types with a primary focus on sarcomas and melanomas. She uses multimodality approaches, e.g., transcriptome analyses, epigenome mapping, and murine models to understand the pathogenic mechanisms and to develop biomarkers and targeted therapies in cancer.

SARAT CHANDARLAPATY, MD, PHD

Assistant Member Assistant Attending, Department of Medicine



Dr. Chandarlapaty's research focuses on understanding the integration and dysregulation of signal transduction pathways that are aberrantly activated in

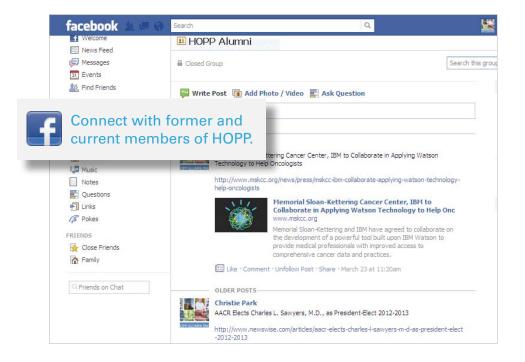
most cancers. His current research centers on determining how the PI3K/AKT/mTOR pathway regulates itself and other signaling networks and the functional significance of this feedback and cross talk in tumorigenesis and resistance to PI3K/AKT/mTOR directed therapies. His efforts include characterization of feedback and crosstalk pathways among the different subtypes of breast cancer, preclinical development of pharmacologic strategies to overcome feedback-mediated resistance, early-phase clinical investigations combining inhibition of PI3K/AKT/mTOR with feedback upregulated receptor tyrosine kinases in HER2+ breast cancer patients, and analysis of human tumor samples to more comprehensively understand therapeutic resistance to targeted therapy in cancer.

HOPP THINKS... SOCIALLY

This year, HOPP furthered its thinking about social media and focused more on how it interacts socially with external and internal audiences. As a result, HOPP has a new alumni Facebook page, has reformatted internal and external websites, and has a refreshing new look for the newsletter.

Alumni Facebook Page

Facebook's popularity is remarkable. With over 100 million users worldwide, more institutions are using Facebook to reach out to their alumni. Given HOPP's growth and the social network market's fast-changing pace, HOPP leaders felt it was necessary to create a means of communication that would support connectivity among new and old members of the program. The page provides alumni with information about faculty and lab member accomplishments, photos from HOPP-related events, and updates on programmatic changes. Currently, access to the page is by invitation only.



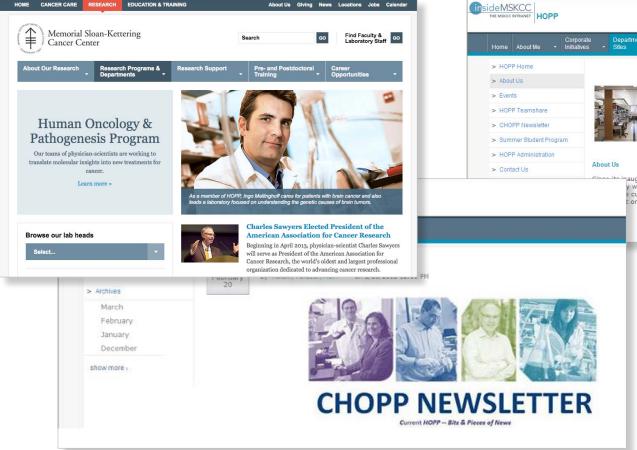
Where Are They Now?

In 2011, many HOPP fellows moved on to faculty or senior level positions at other institutions. Below is brief listing of some of our HOPP Alumni and their new careers.

Lab	Alumnus Position
Bastian	Mustafa Mert Sozen, Assistant Professor in Turkey
Brennan	Nicholas Szerlip, MD, Assistant Professor, Department of Neurosurgery, Wayne State University Medical School
Fagin	Aime Franco, PhD, Assistant Professor, Department of Physiology & Biostatistics, University of Arkansas Medical Sciences
Levine	Nicole Kucine, MD, Assistant Professor, Department of Pediatrics, Weill Cornell Medical College
Levine	Outi Kilpivaara, PhD, Senior Scientist, Department of Medical Genetics, Biomedicum, Helsinki
Sawyers	Trever Bivona, MD, PhD, Assistant Professor, Hematology and Oncology, UCSF
Sawyers	Nicola Clegg, PhD, Research Project Manager, Novartis Institutes for Biomedical Research, Emeryville, CA
Sawyers	Yu Chen, MD, PhD, Assistant Member, HOPP, MSKCC

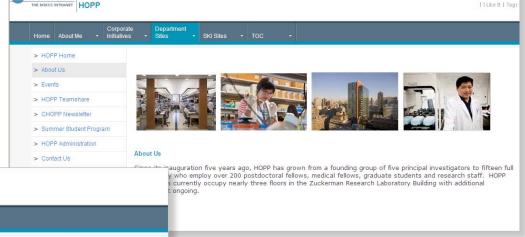
MSKCC.org

This past November, Public Affairs was proud to unveil the new look of MSKCC.org. HOPP's new page offers user-friendly navigation and easy access to Memorial Sloan-Kettering's social media channels. Engaging photographs, and videos involving faculty and HOPP events are carefully placed on pages to enhance the user's experience.



Inside 2

In 2011, HOPP worked closely with Information Systems to launch the program's first Intranet webpage, Inside 2. The new page provides the MSKCC community with a chance to stay up to date with contact information through our lab directory. The site also helps users locate and view information faster by maintaining an archive of important events through our CHOPP Newsletter and announcements page.



CHOPP Newsletter

HOPP's monthly newsletter migrated to Inside 2 in November 2011. The new blog style of the newsletter encourages reader commentary and interaction. Readers can leave comments, share links, or e-mail each other about posts that interest them. Also, archived newsletters are easily accessible from the main page's navigation menu.

HOPP THINKS... COLLABORATIVELY

In an effort to support translational research between MSKCC and its counterparts, HOPP participated and led several events that embody our vision of innovation, learning, and collaboration.

2011 Summer Student Program

The HOPP Summer Student Program is designed for high school students who are interested in pursuing a career in biomedical sciences. In 2011, the program provided 19 students with a chance to find out more about careers in translational research. Under the leadership of Ederlinda Paraiso, HOPP Administrator, members of the administrative team created a robust curriculum that provided students with the opportunity to spend time in the labs conducting research experiments and also attend enriching training sessions and tours designed to sustain their curiosity for science. This

was the HOPP administration's first year running a formalized program — some key features include an online application system, training sessions, team-building activities, welcome packets for the students and mentors, and a poster session. Overall, the program was a great success and feedback was collected from students and mentors throughout the summer through various means. The feedback has helped form new objectives for improving the program in 2012.

Feedback from PIs, mentors, and students indicates that the program was a success!



2011 SUMMER STUDENT VIDEO ON YOU TUBE

Visit our website for more information about the <u>program and application requirements.</u>



ST2C

STAND UP TO CANCER

Dr. David Solit is a member of the Melanoma Cancer Research Dream Team. They were successfully awarded the prestigious Stand Up to Cancer Dream Team Award for their project "Personalized Medicine for Patients with BRAF Wild-Type (BRAFwt) Cancer." This project brings together multiple institutions to determine a course of treatment for patients based on the genetic makeup of their melanomas.



Front Row (from left): Aphrothiti Hanrahan, Efsevia Vakiani, Moriah Nissan, Federica Catalanotti; Middle Row: Alexis Jones, Manickam Janakiraman, David Solit, Philip Kim, Brooke Sylvester; Back Row: Julian Agin-liebes, Gopakumar Iyer, Hickmat Al-Ahmadie



SU2C VIDEO ON YOU TUBE



External Advisory Board

Since 2007, Dr. Sawyers has relied on his External Advisory Board to provide him with advice and direction on the strategic planning of the program. This year, the meeting was held on November 29, 2011. As in previous years, faculty recruitment was a main topic of discussion, as well as presentations from three junior faculty members. Drs. Ping Chi, Jason Huse, and Sarat Chandarlarpaty presented on recent work and the future of their labs. Other topics of discussion included initiatives

in genomics, the Pathology Chair search, and laboratory space in Zuckerman Research Center.

The committee concluded that HOPP has continued its rapid and impressive development under Dr. Sawyers' exemplary leadership and is one of the "crown jewels" of MSKCC.

Find out more about the <u>EAB and its</u> members.

HOPP THINKS... TOGETHER

In 2011, members of the program worked together, outside of MSKCC walls, to make other meaningful contributions to the community. Faculty formed a Cycle for Survial team, and members of the administrative team participated in events to help raise awareness about cancer prevention and research.

Cycle for Survival



Cycle for Survival is a national indoor relavstyle cycling event dedicated to raising funds in support of cancer research. Co-founded in 2007 by Dave Linn and Jennifer Goodman Linn, Cycle donates every dollar raised directly to Memorial Sloan-Kettering Cancer Center for research on rare cancers. To date, the annual event has raised over \$9 million, and in the

past five years alone, it has funded 25 clinical trials and research studies.

In 2011, Dr. Ross Levine participated on Team HOPP, a single bike team captained by Mrs. Barbara Solit. The team dedicated their time to honor those affected by rare cancers, and to support the research Cycle for Survival makes possible at MSKCC. Next year, Dr. Levine will captain Team HOPP in what has become the one of the fastest growing fundraisers worldwide.

Step Up Harlem! Health and Activity Fair

Step Up Harlem! is sponsored by the City College of New York and Memorial Sloan-Kettering Cancer Center's Partnership for Community Outreach Program (PCOP). This year the fair was held on Saturday, September 24 in the schoolyard of P.S. 175 in Harlem. PCOP is funded by a grant from the National Cancer Institute, and the partnership uses the combined resources of both institutions to develop and evaluate innovative research, training, and health outreach initiatives that reduce the impact of cancer in medically underserved communities.

Erika Bernardino, HOPP Program Coordinator, has been a member of PCOP for two years. This year, she volunteered in setting up and running different tables at the fair. Step Up Harlem! is a free community event geared toward helping families learn about healthy eating habits and maintaining a physically active lifestyle — both of which are important aspects of cancer prevention. The fair also provided screenings for hypertension and diabetes and appointment scheduling for mammography screenings.

For additional information about the partnership, visit www.ccnymskccpartnership.org.



HOPP THINKS... SUSTAINABILITY

In 2011, members identified areas where HOPP could become more eco-friendly and responsible. What seemed like small sacrifices in common areas have become paramount in reducing the Center's impact on the environment.

Lab Audit Program

The HOPP lab audit program is a departmental initiative created to respond proactively to rules and regulations mandated by MSKCC's Biosafety Service and the NYC Fire Department. The first audit was performed in April 2011.

The program's primary objective is to assure all HOPP labs sustain compliance to safety rules by preparing the laboratories for actual inspections. The secondary objective is to raise staff awareness and knowledge that is gained firsthand by experiencing the inspection process and reiterating safety rules. The program provides HOPP labs with constructive recommendations for maintaining a safe lab work environment and avoiding violation fines. More recently, the implementation of this program has led to discussions on how labs can support MSKCC's mission to be "greener" and reduce the amount of waste produced in laboratories.

INSPECTION PLAN:

- Each month, two labs are randomly selected for an audit
- There is a minimum three-month break in between inspections
- Each lab is inspected by two Research Technicians from other laboratories

HOPP's Eco-Responsibility

QUICK FACTS:

- Over 90% of HOPP computers participate in the Center's Computer Shutdown Program
- The Administrative team made a conscious effort to save paper by setting up all printers to print double sided.
- All the HOPP Research Secretaries work together to save paper by collecting reusable paper for the floor's printing needs. Piles of this scrap paper can be found at each of the Research Secretary's desks.



"In order to be more eco-friendly, I use all the non-confidential leftover paper from printing jobs, or intact packing slips and fax confirmations for use in my own printer as well as for reimbursement purposes. Although it

seems like a small contribution, I find that I go through the scrap paper supply quite fast, which indicates how much paper we still use, even in this digital age."

Farzeen Aslam - Research Secretary, ZRC 7



Green Initiative

In February of 2011, HOPP introduced its first "Green Initiative," called *Think Before You Drink*. This campaign focuses on motivating HOPPers to bring in their own washable cups and mugs to reduce the use of paper cups in the break rooms. One of the HOPP floors has not ordered paper cups since the initiative began in February. Two-thirds of HOPP now uses their own washable cups.

2011 ACHIEVEMENTS

Charles Sawyers and David Solit were featured in an *Oncology* Times article called "The Melanoma Rollercoaster Continues: Resistance with B-RAF Inhibitor PLX4032 Takes Unexpected Turn"

JANUARY FEBRUARY

Cameron Brennan and the work of his laboratory were featured on Cancer.gov and Cancer.gov/espanol for his case study in The Cancer Genome Atlas Data Portal

The Cancer Genome Atlas

David Solit was inducted as a new member of the American Society for Clinical Investigation (ASCI)

APRIL

Timothy Chan was featured in a podcast discussing a new way to predict breast cancer metastasis

David Solit was featured in an online interview on Clinical and Translational Science Network (CTSciNet) called "Finding & Exploiting Cancer's Weaknesses"



▲ David Roy from Timothy Chan's lab was awarded the Howard **Hughes Medical Student Fellowship**



▲ Charles Sawyers, Chair of HOPP, was named a co-recipient of the 2011 American Society for Clinical Investigation's Stanley J. Korsmeyer Award

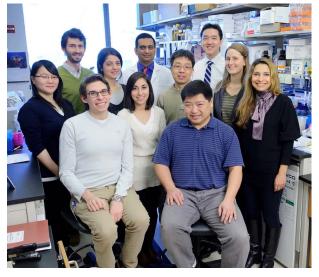


Ian Ganly from Timothy Chan's lab was featured in a Reuters Health article "Doctors overusing thyroid cancer treatment: study"

MARCH

Christopher Park received the Department of Defense's **BMFRP** New Investigator Award for his work in blood cancers in a project titled "Functional Role of microRNAs in Hematopoietic Stem Cells in Myelodysplastic Syndromes"

James Fagin was featured in USA Today article called "Radiation risk from Japan puts prevention plans to test"



▲ Timothy Chan and members of his laboratory published "Breast Cancer Methylomes Establish an Epigenomic Foundation for Metastasis" in Science

2011 ACHIEVEMENTS

MAY

Ross Levine received the Boyer Clinical Research Award, presented at the MSKCC Convocation ceremony



▲ Marc Ladanyi was a featured physician in the documentary "Getting Personal: The Shifting Landscape of Cancer Care," which aired on the Discovery Channel

JUNE

Matthew Bott and Tatsuo Ito from Marc Ladanyi's lab published an article in *Nature Genetics* called "The nuclear deubiquitinase BAP1 is commonly inactivated by somatic mutations and 3p21.1 losses in malignant pleural mesothelioma"



William Polkinghorn from Charles Sawyers' lab received the Prostate Cancer Foundation Creativity Award, which supports imaginative and innovative thinking. The PCF Award recognizes his exceptionally novel project with great potential to produce breakthroughs for detecting and treating prostate cancer

Phil Iaquinta from Charles
Sawyers' lab received the
Prostate Cancer Training
Award from the Department
of Defense Prostate Cancer
Research Program of the
Office of the Congressionally
Directed Medical Research
Programs



Ingo Mellinghoff and a team of researchers were awarded a five-year ICMIC grant through the P50 funding mechanism from the NIH. Dr. Mellinghoff is one of the leaders of Project 4, focusing on imaging in glioblastomas, and was influential in the design of the program as a whole

AUGUST



JULY

Ross Levine was promoted to Associate Attending, Memorial Hospital, and Associate Member, MSKCC

David Solit was promoted to Associate Attending, Memorial Hospital, and Associate Member, MSKCC

James Hsieh received a five-year Uo1 grant award from the NCI/NIH for his work in leukemia research for his project titled "Molecular Mechanisms of Impaired DAN Damage Response in Leukemia Pathogenesis"

Timothy Chan received a five-year Ro1 Grant Award from the NCI/NIH for his work in brain cancers and for his project titled "Molecular Function of the widely inactivated phosphatase PTPRD in the molecular pathogenesis of glioma"

2011 ACHIEVEMENTS

SEPTEMBER

James Fagin was voted the new Presidentelect of the American Thyroid Association



Charles Sawyers, along with a team of MSKCC researchers and clinicians was awarded a five-year NIH P50 SPORE in Prostate Cancer grant

Charles Sawyers received the Distinguished Alumni Award Visit from Montgomery Bell Academy (Nashville, TN)

NOVEMBER

Jason Huse recieved the AACR Landon Foundation Award for personalized cancer medicine

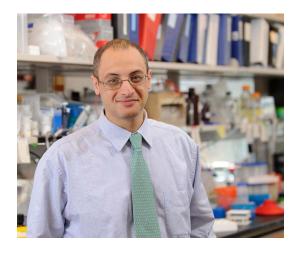
Ingo Mellinghoff recieved the James S. McDonnell Award Research Award

Ingo Mellinghoff recieved the Biology Grant Award from National Brain Tumor Society

Charles Sawyers was named the Thomas Reuters Citation Laureate for development of imatinib and dasatinib treatment for leukemia Several lab and faculty members of HOPP labs published "Genomic dissection of the EGFR/PI3K pathway reveals frequent deletion of the EGFR phosphatase PTPRS in head and neck cancers" in Proceedings of the National Academy of Sciences USA

Stephen Chung from Christopher Park's lab presented at the MSKCC Annual Postdoctoral Symposium

Mabel Ryder from James Fagin's lab presented at the 81st Annual American Thyroid Association Conference



▲ Omar Abdel-Wahab from Ross Levine's lab received the NIH Ko8 Mentored Physician Scientist Award



DECEMBER

■ Debyani Chakravarty from Cameron Brennan's lab was featured in a *Center News* article titled "<u>MSKCC Staff Rises to the</u> Challenge of Hurricane Irene" David Solit and the Melanoma Cancer Research Dream Team were awarded the prestigious Stand Up To Cancer Dream Team Award for their Project "Personalized Medicines for Patients with BRAF Wild-Type (BRAFwt) Cancer"

READ MORE ON MSKCC.ORG/HOPP



Charles Sawyers Elected President of the American Association for Cancer Research

Beginning in April 2013, physician-scientist Charles Sawyers will serve as President of the American Association for Cancer Research, the world's oldest and largest professional organization dedicated to advancing cancer research.

Pictured: Charles Sawyers



Genetic Profiling Could Help Doctors Make More-Accurate Leukemia Prognoses

Researchers have identified a set of genetic abnormalities that can enhance prognostic accuracy and aid treatment selection for people with acute myelogenous leukemia (AML).

Pictured: Ross Levine



New Medical Strides against Prostate Cancer

The success of an experimental prostate cancer treatment is an example of how academic research centers are playing a larger role in drug development, the *Wall Street Journal* reports.

Pictured: Charles Sawyers & Howard Scher



Genetic Study Identifies Mutations in Pediatric Cancers

Memorial Sloan-Kettering researchers have performed the first large-scale genetic analysis of several pediatric cancers, identifying mutations and potential targets for therapies to treat the cancers.

Pictured: Marc Ladanyi & Laetitia Borsu

LABORATORY MEMBERS

Please visit our <u>contact list</u> on Inside 2 for a full listing of all our lab heads and as well lab members

ADMINISTRATIVE TEAM

An <u>administrative org chart</u> is avialable on Inside 2 for your reference.

CONTACT INFORMATION

The Human Oncology & Pathogenesis Program (HOPP)

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