

International Activities of NCI-Designated Cancer Centers

Summary Report
March 2014

This report is not a comprehensive summary of the international efforts of NCI-Designated Cancer Centers and not all of the efforts outlined in this report are NCI or NIH-funded. Rather, this report summarizes information that was provided by Cancer Centers who responded to requests from the NCI Center for Global Health for information on international activities. This is an ongoing data-collection effort, the data collection status for individual cancer centers can be found in Appendix A. Any additions or corrections are welcome. Please contact Rebecca Minneman (rebecca.minneman@nih.gov).

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Abramson Cancer Center - University of Pennsylvania

Institute-wide activities and consortia

- **BOTSWANA:** Penn has established a Center for AIDS Research (CFAR)¹ Core in Botswana and there is currently a pilot project in AIDS-malignancies there.

Investigator-initiated activities

- **AFRICA:** Dr. Timothy Rebbeck is involved in an international consortium working on prostate cancer in men of African descent in Africa, Caribbean, Europe, and USA. This initiative started as an effort of the African Organization for Research and Training in Cancer (AORTIC), for which Dr. Rebbeck has been serving as the research committee chair. They have a very active working group to develop pathology resources in Africa (involving UICC, INCTR, IAEA, IARC, Afrox, ASCP and others), and a working group to develop education and resources for project management (involving IAEA, UICC and others). They have built a cancer consortium of five institutions that involves a public-private partnership of labs and hospitals and have now developed a bio-bank of tumors on which they will be starting some molecular marker work in Dakar, Senegal focused on prostate, gastric, and cervical cancers.
- **WORLDWIDE:** Dr. Rebbeck is also involved in The Consortium of Investigators of Modifiers of BRCA1/2 that represents 41 countries on 6 continents.

Albert Einstein Cancer Center - Yeshiva University

Related Link: [Albert Einstein College of Medicine Global Health Center](#)²

Institute-wide activities and consortia

- **INDIA:** Einstein works in systems and health care structure and capacity building in India. Most of the capacity building research is focused around HIV/AIDS research capacity building.
- **RWANDA:** Einstein has a National Cancer Institute (NCI)/Fogarty International Center (FIC)-funded D43 AIDS capacity building program in Rwanda entitled "[Developing Rwandan Research Capacity in Cervical Cancer and Other HIV-Associated Malignancies](#)", of which Dr. Anastos is the Principal Investigator (PI). The program has two main parts: (1) a multidisciplinary team investigating operational, clinical and translational questions in cervical cancer in HIV+ women and (2) extension of the population-based cancer registry (PBCR) to allow linkage to the computerized HIV tracking system. Dr. Anastos also is the Director of Scientific Systems for We-Act Rwanda. Much of the highlighted work of Einstein's Global Health Center revolves around HIV and infectious disease related work in sub-Saharan Africa.

¹ Commonly used abbreviations are listed in Appendix B

² URLs are listed in Appendix C

- **UGANDA:** Many Einstein projects focus on Uganda. Examples include: Diabetes-focused medical education, community engagement and outreach, and capacity building.

Alvin J. Siteman Cancer Center - Washington University

Washington University has recently appointed a Vice Chancellor for International Affairs to assist the university in expanding its global outreach. Washington University currently has PIs working on collaborations in 37 countries.

Institute-wide activities and consortia

- **BRAZIL and LATIN AMERICA:** Project GUIA (Guide for Useful Interventions for Activity in Brazil and Latin America) was initiated in October 2005 to examine and promote evidence-based strategies to increase physical activity in Brazil and Latin America. The project is a cross-national and transdisciplinary collaboration between partners in the United States and Brazil including the Centers for Disease Control and Prevention, the Prevention Research Center in St. Louis, the Federal University of Sao Paulo, the Pan American Health Organization, and other important organizations at the national level in Brazil such as the Ministry of Health, CELAFISCS, and top research universities Federal University of Pelotas and Pontiff Catholic University of Parana. The mission of Project GUIA is to assess evidence-based strategies for promoting physical activity at the community level in Brazil and Latin America.
- **WORLDWIDE:** Washington University established a Global Health Scholars in Medicine Program. This expands global health education of residents during their time at Washington University.

Investigator-initiated activities

- **BRAZIL:** Dr. Matthew Ellis' project in Brazil aims to evaluate the role of aromatase inhibitors in a population subset of Stage II or III premenopausal women. Aromatase inhibitors are much less toxic than standard chemotherapy and are also less expensive. Dr. Ellis and colleagues in Brazil are opening a Phase II clinical trial at the Perola Byington Hospital in Sao Paulo, Brazil where this endocrine therapy without chemotherapy in this population will be assessed. In the first step of this project, Dr. Ellis and his colleagues standardized a cost-effective approach for biomarker studies used in Breast Cancer providing better treatment options to the patients in the Brazilian Public Health system at an affordable cost. Dr. Ellis has built further collaborations with Campinas State University in the state of Sao Paulo, Brazil.
- **CHILE:** Dr. Cathy Roe is currently collaborating with doctors from Santiago, Chile on a project funded by the Ministry of Health of Chile entitled "Inverse Association Between Cancer and Alzheimer Disease: In Search of Biological Mechanisms."
- **SOUTH AMERICA:** Dr. Graham Colditz is an epidemiologist and internationally known leader in cancer prevention with a focus on understanding the preventable causes of chronic disease. Dr. Colditz also holds an NIH Fogarty Award from the Framework Program for Global Health Innovations. His FIC grant, [Cancer Control Research Training Summer Institute](#), trains oncologists in Guatemala. This project aims to: (1) develop a sustainable cancer research training course for future researchers in Guatemala and the U.S., (2) provide guidance and assist with interdisciplinary, inter-institutional cancer research protocol development by the National League Against Cancer of Guatemala (INCAN) and Washington University in St. Louis

postdoctoral trainees and (3) foster multidisciplinary mentored relationships and collaborations between diverse faculty and trainees from Washington University and INCAN, as well as create opportunities for future research projects.

- **VIETNAM:** Dr. Craig Allred is collaborating with Dr. Richard Love at OSU on a study that just finished accruing participants and is focused on women with receptor-positive breast cancer in Vietnam. Women were also recruited in the Philippines and China.

The Barbara Ann Karmanos Cancer Institute – Wayne State University

Institute-wide activities and consortia

- **JAPAN:** Working with the Educational Outreach and International Programs and the Graduate School at the Wayne State University, the Cancer Biology Graduate Program in the Department of Oncology has initiated a formalized collaborative program with Okayama University in Okayama, Japan for short-term exchanges (1-2 semesters) of graduate students in Cancer Biology. Although Dr. Manohar Ratnam has already hosted a PhD student from Okayama University from June-December 2013, the formalized collaboration between the universities will begin when Dr. Larry Matherly travels to Okayama University in early February 2014.
- **JAPAN and EUROPE:** Dr. Leonard Lipovich is an Assistant Professor, Center for Molecular Medicine and Genetics, and is the sole person in the entire State of Michigan participating in both FANTOM and ENCODE. As a full member of the FANTOM Consortium (Functional Annotation of Mammalian Genomes), based at RIKEN, Yokohama, Japan, since 2004, Dr. Lipovich studies cancer long non-coding RNAs (lncRNAs) by direct single-molecule sequencing. The overall goal of FANTOM is to quantitate the entire human promoterome at single-base resolution using Helicos RNAseq technology. Since 2011, Dr. Lipovich is also a funded member of the ENCODE (Encyclopedia of DNA Elements), the world's pre-eminent genomics collaboration. This is the direct successor to the original Human Genome Project. Scientists from the US, UK, Spain, and Japan participate in this project. His role in ENCODE is to show that primate-specific lncRNAs are functional in human breast cancer. Dr. Mary Ann Kosir of KCI is a collaborator on this project. Dr. Lipovich's work within and outside of these consortia has garnered international recognition, including; as an invited opening-session speaker, Regulatory RNA Workshop, Baeza, Spain, Nov 2013; invited Visiting Faculty Fellow, University of New South Wales, Australia, Oct 2013; invited speaker, RNA in Cancer Meeting, Univ. of Heidelberg (Germany) (June 2014), chair, The Royal Society Int'l Scientific Meeting on lncRNA (London, UK, Sep 2015), and solicited invited chair, Keystone Symposium on lncRNA Evolution and Function (Keystone, Colorado, Mar 2015).
- **QATAR:** Dr. Ramzi Mohammad, Professor of Oncology, is working to establish a state-of-the-art research center in Doha, Qatar (the gulf area) with an anticipated completion date of early 2015. This endeavor includes creation of a cancer center and a bio-bank. Dr. Mohammad is working to develop a strong relationship between Qatar and Karmanos Cancer Institute / Wayne State University on several levels including research collaboration, teaching, and training. Towards this end, several KCI faculty will be visiting the medical center in Qatar in the upcoming year including Drs. Philip Philip and Lawrence Lum. Additionally, several Karmanos Cancer Institute investigators (Drs. Azmi, Bollig-Fischer, Dou, and Wei) have submitted collaborative grants with faculty from Qatar.
- **WORLDWIDE:** The Metropolitan Detroit Cancer Surveillance System (MDCSS), for which Karmanos Cancer Institute / Wayne State University holds the contract (N01 PC-2010-00029, PI: Ann Schwartz, PhD, MPH) and provides funding, is a founding member of the NCI Surveillance, Epidemiology and End Results (SEER) Program. The MDCSS is also a member in the North American Association of Central Cancer Registries (NAACCR), a uniform standards-

setting professional organization including members from the United States and Canada. The MDCSS recently contributed to Cancer Incidence on Five Continents and International Incidence of Childhood Cancer, both publications of the World Health Organization (WHO) International Agency for Research on Cancer (IARC).

Investigator-initiated activities

- **ARGENTINA and SPAIN:** Dr. Robert Mathog is Professor and Chair of Otolaryngology and has been involved in international activities since 1986 including the “Sisters Program”. The “Sisters Program” is an international exchange program in which the Department of Otolaryngology – Head & Neck Surgery at Wayne State University shares information with international colleagues (residents and/or fellows) who rotate for a short-term through the department. Arrangements have been established with the Department of Otolaryngology between the School of Medicine, Buenos Aires, Argentina; the School of Medicine, Pamplona, Spain; the School of Medicine of Cordoba, Argentina; Austral University School of Medicine, Buenos Aires; Fundacion Arauz, Buenos Aires; ASALFA, Buenos Aires; SAV Sociedad Argentina de la Voz, Buenos Aires; and the University of Aconcagua, School of Medicine, Mendoza, Argentina. Wayne State University faculty are also invited from time to time to visit and teach at one of the participating institutions.
- **AUSTRALIA, BRAZIL, CANADA, EGYPT, GERMANY and SOUTH AFRICA:** Dr. Bonnie Sloane is a Distinguished Professor and Chair of Pharmacology and has had international collaborations for more than 30 years. She has hosted dozens of students (undergraduate and graduate), postdoctoral associates and visiting scientists from all over the world. Current activities include; (1) Dr. Sloane is hosting for eight months a visiting doctoral student, Ms. Suelem Demuner Ramalho, from the Universidade Federal de São Carlos, Brazil. Ms. Ramalho is testing the ability of cysteine protease inhibitors (purified from plants) in reducing progression of our 3D/4D breast cancer models, (2) Dr. Sloane has continuing collaborative interactions with Egyptian collaborators (Cairo University -- Dr. Mona Mostafa Mohamed; Ain Shams University – Dr. Mohamed El-Shinawi) on cytokines in macrophages as possible therapeutic targets in inflammatory breast cancer, (3) Dr. Sloane is a consultant on an NHRMC (Australian) grant on the endogenous cysteine protease inhibitor stefin A with Dr. Belinda Parker, a collaborator from Trobe University (Melbourne, Australia). She hosted Dr. Parker’s Ph.D. student for studies on cathepsin B in bone metastasis, featured on the cover of Cancer Research, and is a mentor on Dr. Parker’s postdoctoral student’s application for a DoD fellowship for Dr. Laura Edgington to continue studies on bone metastasis, (4) As a collaborator of Dr. Thomas Reinheckel’s of Albert Ludwigs University, Freiburg, Germany, Dr. Sloane served as an external examiner for the Ph.D. of his student, Dr. Fee Bengsch, part of her Ph.D. research was conducted in Dr. Sloane’s laboratory, (5) In October of 2013 Dr. Sloane was one of the faculty presenting two imaging workshops for student (graduate and postdoctoral) at the University of Cape Town (South Africa) in conjunction with the 8th General Meeting of the International Proteolysis Society, and (6) Closer to home, she has a continuing collaboration with Drs. Lisa Porter and Dora Cavallo-Medved of the Department of Biological Sciences at the University of Windsor on mechanisms underlying breast cancer progression.
- **CANADA:** Dr. Nebojsa Duric is a Professor of Oncology and is a co-founder of the International Imaging Center, established in 2011. This center is a joint effort between Wayne State University and Dr. Roman Maev of the University of Windsor (Windsor, Ontario, Canada). The center’s goal is to stimulate cross-border collaborations between Canada and the USA with a focus on imaging technologies. Additionally, the founders anticipate promoting collaborations with other countries in the future.

- **CANADA:** Dr. Lisa Porter, Associate Professor of Biological Sciences (University of Windsor), and Dr. Dora Cavallo-Medved, Adjunct Assistant Professor in the Pharmacology (Wayne State University), direct the Windsor Cancer Research Group (WCRG). The WCRG is an assembly of researchers and clinicians working together to create teams to strengthen our local cancer research programs, bridge collaborations with neighboring cancer centers (Karmanos Cancer Institute) and universities and enhance the reputation and connections with the Windsor/Essex Ontario community.
- **CANADA:** Dr. Jeffrey Zonder is an Associate Professor of Oncology and anticipates opening an investigator-initiated multi-center amyloidosis study that will include Princess Margaret Hospital in Toronto, Canada as a participating site.
- **CANADA, CZECH REPUBLIC, and ITALY:** Dr. Q. Ping Dou is a Professor of Oncology and works on several international projects including: (1) with Prof. Tak-Hang (Bill) Chan, McGill University, Canada, and The Hong Kong Polytechnic University in China on novel green tea polyphenol-based proteasome inhibitors as anticancer drugs, (2) with Profs. Boris Cvek and Zdenek Dvorak, Palacky University, Czech Republic, on reposition of the old drug disulfaram in cancer treatment, (3) with Prof. Dolores Fregona, University of Padova, Italy, on development of novel gold-containing complexes as potential proteasome inhibitors and anticancer drugs, and (4) with Prof. Arun Seth of University of Toronto in Canada on breast cancer-associated gene 2.
- **CANADA, NEW ZEALAND, AUSTRALIA, and PUERTO RICO:** Dr. Jeffrey Taub (Division Chief, Oncology and Professor of Pediatrics at Wayne State University / Karmanos Cancer Institute) is the study chair of the Children's Oncology Group (COG) AAML0431 phase III clinical trial, "Treatment of Down Syndrome Children with Acute Myeloid Leukemia (AML) and Myelodysplastic syndrome (MDS) Under the Age of 4 Years" which is the largest study designed to treat children with Down Syndrome and leukemia and is currently institutional review board (IRB) approved at 150 institutions, including 14 institutions in Canada, one in New Zealand, one in Puerto Rico and two in Australia. Leukemia samples from these patients are being sent to Children's Hospital of Michigan/Karmanos Cancer Institute as the coordinating reference laboratory for the correlative biology studies of the clinical trial.
- **CHINA:** Dr. Q. Ping Dou, Professor of Oncology, works on several projects with researchers in China including: (1) with Prof. Caifeng Bi, Ocean University of China, on bioinorganic chemistry, anticancer drug discovery, (2) with Prof. Jinbao Liu, Guangzhou Medical University, on Chinese medicine, natural proteasome inhibitors, and (3) with Prof. Bing Yan, Shandong University, on copper, nanoparticles, chemistry-biology combination approach for anticancer drug discovery. He also trains and co-mentors PhD students and research scientists from the institutes mentioned above.
- **CHINA:** Dr. Yubin Ge is an Assistant Professor of Oncology and is collaborating with colleagues (Drs. Yingjie Guo and Wei Kong) at the College of Life Science, Jilin University, Changchun, P.R. China on pancreatic cancer research and pediatric acute leukemia research.
- **CHINA:** Dr. Jiani Hu is an Associate Professor of Radiology and participates in a number of international collaborations to explore the potential of recently developed MRI techniques in diagnosis, prognosis and treatment of various cancers including: (1) with Changzhou First Hospital in Changzhou investigating renal cancer, (2) with Renji Hospital studying bladder and prostate cancer, (3) with Southwest Hospital in Chongqing investigating breast and liver cancer, (4) with Zhejiang Province Chinese Medical Hospital in Hangzhou studying breast cancer, (5) with The First Affiliated Hospital of Dalian Medical University in Dalian studying ovarian and uterus cancer, and (6) with The Affiliated Union Hospital of Tongji Medical School in Wuhan investigating pancreatic cancer.

- **CHINA:** Dr. Chunying Li is an Assistant Professor of Biochemistry & Molecular Biology and collaborates with Drs. Jing Liu and Peijie Chen at Shanghai University of Sport, Shanghai, China. The overall goal of their collaboration is to investigate the effects and mechanisms of traditional Chinese martial arts (such as Tai Chi, Qi Gong, etc.) on health promotion and rehabilitation in patients of certain diseases (such as lung cancer patients, chronic low back pain patients), aged populations with neurodegenerative disorders, and sex and age-matched healthy controls.
- **CHINA:** Dr. Douglas Ruden, Associate Professor and Director of Epigenomics at Institute of Environmental Health Sciences collaborates with Dr. Qi Niu at the Department of Medical Oncology, No. 309 PLA Hospital, Beijing, PR China. The focus of this collaboration is to find inexpensive ways to improve cisplatin chemotherapy treatments of a variety of cancers. This project was supported by the Scientific Research Foundation for the Returned Overseas Chinese Scholars, China State Education Ministry (No. 2007–1108) to Dr. Niu and National Institutes of Health grant ES012933 to Dr. Ruden.
- **CHINA:** Dr. Zeng-Quan Yang, Assistant Professor in Oncology, is collaborating with three universities (Shantou University Medical College, Norman Bethune College of Medicine of Jilin University and Jiangsu Normal University) in China, to investigate the fundamental mechanism by which dysregulation of the histone demethylase, GASC1 (Gene Amplified in Squamous Cell Carcinoma 1, also known as JMJD2C and KDM4C), contributes to tumorigenesis, and to establish it as a novel therapeutic target for human esophageal, breast and prostate cancers. To this end, one visiting scientist and one visiting PhD student from the Norman Bethune College of Medicine of Jilin University and the Jiangsu Normal University are currently working in his laboratory at Karmanos.
- **CHINA and NETHERLANDS:** Dr. Kang Chen, Assistant Professor in Obstetrics and Gynecology, studies the immune pathogenesis of infection and immunodeficiency and the regulation of host anti-tumor immune responses, with a focus on host humoral immunity against tumors. He has international collaborations with scientists in the Netherlands and China on *in vivo* imaging of immune cells in cancer and autoimmunity. His collaborators are funded by the European Research Council (ERC) and the Natural Science Foundation of China (NFSC). He has also been involved in activities in the NGO Committee on Human Settlements, in consultative relationship with the United Nations Economic and Social Council (ECOSOC) and in partnership with the UN Human Settlements Programme (UN-HABITAT) pertaining to sustainable urbanization and infectious disease prevention in urban settings.
- **GERMANY:** Dr. Maik Hüttemann, an Associate Professor in the Center for Molecular Medicine and Genetics, actively collaborates with Prof. Dr. Norbert Weissmann of the University of Giessen Lung Center (UGLC) studying the functional characterization of lung-specific cytochrome c oxidase subunit IV isoform 2. Additionally, Dr. Hüttemann collaborates with Prof. Dr. Katrin Marcus, Functional Proteomics, Center for Clinical Research, Ruhr-University Bochum, in the area of phosphoproteomic and functional characterization of mitochondrial proteins.
- **GERMANY:** Dr. Olivia Merkel is an Assistant Professor of Pharmaceutical Sciences and collaborates with Drs. Harald Renz and Holger Garn, University of Marburg, on T cell targeting. Additionally, she mentors MS and PharmD students from the laboratory of Dr. Ernst Wagner from the University of Munich. Currently, she is mentoring a student in the lab, who develops three-layered micelles for macrophage targeting.
- **ITALY:** Dr. Bollig-Fischer is an Assistant Professor of Oncology and collaborates with Dr. Vincenzo Manca at University of Verona, Department of Computer Science and Dr. Luca Marchetti, now at the Microsoft Research Center for Computational and Systems Biology at University of Trento, Italy. Together, they are working on advanced methods for computational modeling of intra-cellular oncogenic signaling processes using longitudinal systems-level data

sets. Objective: to model the known accurately that can be used for testing perturbations in silico and to discover unknown interactions. This collaboration has resulted in the publication of a book chapter in 'Applications of Membrane Computing in Systems and Synthetic Biology' (2014).

- **ITALY and SWEDEN:** Dr. Wei-Zen Wei is a Professor of Oncology and collaborates with investigators in Italy and Sweden to develop DNA vaccines targeting Her-2. She works with Dr. Guido Forni and Dr. Federica Cavallo of the University of Torino, Italy in preclinical development of Her-2 vaccines. This collaboration has grown into a clinical trial in Italy and a possible trial in the Karmanos Cancer Institute. Dr. Wei also collaborates with Dr. Rolf Kiessling at the Karolinska Institute, Sweden. One of their Her-2 DNA constructs has been tested in a Phase I trial in the Karolinska hospital.
- **THAILAND:** Dr. Michele Cote is an Associate Professor of Oncology and is examining the feasibility of studying lung cancer in nonsmokers in Thailand (a much larger proportion of their population when compared to USA, where much more lung cancer is associated with smoking) and building their capacity in cancer epidemiology through student/faculty education. In the summer of 2013, Dr. Cote was an invited speaker at the Thai NCI 45th Anniversary meeting in Bangkok, Thailand, where she lectured on, "Lung Cancer Epidemiology—Beyond Smoking". Additionally, Dr. Cote sponsored a J-1 Scholar from Khon Kaen, Thailand. Ms. Pratthana Yongsakulchai, a doctoral student from Khon Kaen University. Dr. Cote hosted Ms. Yongsakulchai and provided daily data analysis and writing mentorship. Ms. Yongsakulchai successfully defended her dissertation and is now a faculty member at a university in Thailand.
- **UNITED KINGDOM:** Dr. Malathy Shekhar is an Associate Professor of Oncology and worked with Dr. Andrew Westwell at Cardiff University, to generate a pharmacophore model by analyzing the consensus ubiquitin conjugating enzyme-ubiquitin binding sites.
- **WORLDWIDE:** Dr. Patricia LoRusso is Director of the Eisenberg Center for Experimental Therapeutics at Karmanos Cancer Institute and Professor of Oncology and collaborates with several international investigators on clinical trial development and implementation. For example, Dr. LoRusso has taught the FLIMS course held in Flims, Switzerland. This 'Methods in Clinical Cancer Research' Workshop was established to reverse the decline in numbers of clinical scientists. The major aim of the Workshop is to develop a strong, expanding base of well-trained clinical researchers by providing them with the training they need to develop and conduct better clinical/translational trial designs. Dr. LoRusso also taught a course during the September 2012 ACORD (Australia and Asia Pacific Clinical Oncology Research Development) Workshop. The ACORD Workshop maintains a substantial position in education for all disciplines of oncology due to its unique international focus, provision of hands-on collaboration and guidance by a world-renowned faculty. The ACORD faculty includes leading world experts in clinical trials design and oncology. The Workshop is committed to strengthening clinical trial design to promote continuing success in oncology research in the Australian and Asia Pacific regions. Finally, Dr. LoRusso teaches an annual international clinical trials workshop for third world countries, which has included courses in Zambia and Zimbabwe.

The Cancer Therapy & Research Center (CTRC) at the University of Texas Health Science Center at San Antonio (UTHSCSA)

Institute-wide activities and consortia

- **VIETNAM:** The CTRC has developed a relationship with three pediatric cancer programs in Ho Chi Minh City (HCMC), Vietnam. A group of businessmen sponsored a site visit of CTRC Pediatric Hematology-Oncologists including Drs. Chatch Assanasen, Steve Weitman, and Gail Tomlinson, who confirmed limited infrastructural support for pediatric oncology clinical care,

education, and research. These deficiencies have resulted in 5% survival rates of childhood cancer in Vietnam compared with >80% in the US. To create a long-term commitment to remedy this problem, the UT South East Asian Pediatric Hematology Oncology (UTSEAPHO) program was developed to collaborate with Vietnamese pediatric oncology programs. UTSEAPHO members include pediatric oncologists, pathologists, basic scientists, and nurses. The team has made several trips to HCMC, meeting with health ministers, hospital directors, and physicians providing: 1) local didactic conferences, 2) collaborative research programs and (3) on-line, real-time tumor boards with CTRC pediatric specialists. In mid-2013, three Vietnamese physicians traveled to San Antonio for educational mini-fellowships and to develop clinical pathways for pediatric cancers. A second group will be visited in late 2013 and attended the Children's Oncology Group meeting. Two additional groups are expected to participate in this mini-fellowship program in 2014.

- **NEPAL:** Dr. Robert Quinn, Chair of Orthopedic Surgery at the UTHSCSA and a CTRC member, is working with Grande National Hospital, Kathmandu, Nepal to set up an educational and research program in orthopedic oncology.

Investigator-initiated activities

- **BRAZIL:** Dr. Luiz Penalva is working on collaborative projects with Drs. Pedro Galente (Hospital Sirio Liabanes, Sao Paulo), Dr. Roger Chamas (Cancer Institute, Sao Paulo), and Dr. Keith Yamamoto (University of Sao Paulo)
- **CANADA, UNITED KINGDOM:** Dr. Ankherst is also part of a project with Dr. Ruth Etzioni at the Fred Hutchinson Cancer Research Center, which is analyzing five international cohorts for active surveillance of prostate cancer. One of the cohorts is based in England and one in Canada.
- **CHINA:** Dr. LuZhe Sun is a visiting professor of Wenzhou Medical University. He has been collaborating with Drs. Changjiang Huang and Qiaoqiang Dong in that university to investigate the effect of environmental agents on DNA repair and mammary stem cell function, and assisted in training a number of Master and PhD students of Drs. Huang and Dong.
- **CHINA:** Dr. LuZhe Sun is a visiting professor of Nanjing Medical University. He has been collaborating with Dr. Shui Wang in that university to investigate the role of estrogen signaling and aging in breast carcinogenesis and trained one of his Master students. Dr. Sun has also been collaborating with Dr. Beicheng Sun in that university to investigate the role of transforming growth factor-beta signaling pathway in hepatocellular carcinoma progression and has trained one of his PhD students.
- **CHINA:** Through Agreement of Cooperation between Central South University (CSU) and The University of Texas Health Science Center at San Antonio, Dr. LuZhe Sun is training an MD student from CSU Medical School for his two-year research curriculum as a 7th year medical school student in Dr. Sun's laboratory.
- **FRANCE:** Dr. Luiz Penalva is working on collaborative projects with Dr. Michela Plateroti (University of Lyon)
- **GERMANY:** Dr. Luiz Penalva is working on collaborative projects with Dr. Stefan Schuster (University of Helle)
- **GERMANY:** Drs. Ian Thompson and Donna Ankherst are collaborating with the Deutsche Krebs Forschungszentrum (DKFZ), translated German Cancer Research Center and the Swedish Family-Cancer Database (SFCD) to incorporate detailed family history and genome-wide association single-nucleotide polymorphisms (SNPs) into the Prostate Cancer Prevention Trial Risk Calculator (PCPTRC).

- **GERMANY, ITALY:** Dr. Ankherst is working with Dr. Andrew Vickers at Memorial Sloan Kettering on dynamic models for prostate cancer prediction on biopsy based on ten international cohorts; one cohort is in Germany, and one in Milan, Italy. Another cohort is from the CTRC.
- **INDIA:** Drs. Michael Wargovich, Cara Gonzales and Spencer Redding are working with Nisarga, Ltd., in Sartara, India. This company supplies organically grown neem extract that is being used in oral cancer prevention studies at the CTRC.
- **PERU:** Dr. Amelie Ramirez is working with a team including Drs. Ed Trapido (Louisiana State University Medical Center), Graham Colditz (Washington University), Jon Kerner (Canadian Partnership Against Cancer) and Simon Sutcliffe (International Network for Cancer Treatment and Research-Canada) in developing cancer prevention and health promotion activities in Lima, Peru.

Case Comprehensive Cancer Center - Case Western Reserve University

Institute-wide activities and consortia

- **AFRICA:** The [Case Center for AIDS Research \(CFAR\)](#) is the only NIH-funded CFAR in the mid-Western United States and is in partnership with the Joint Clinical Research Center (JCRC) in Kampala, Uganda. They describe their relationship in their abstract thus: "As the first CFAR to make a major investment in international research, we have been able to expand a highly productive and long-standing (21 year) scientific relationship with Makerere University, Kampala. During the last period of the award there has been substantial investment in sophisticated CFAR core facilities at the JCRC in Kampala." The abstract lists HIV-associated malignancies as a research focus area. NCI funds a portion of this grant, along with six other institutes.

Chao Family Comprehensive Cancer Center - University of California, Irvine

Institute-wide activities and consortia

- **EUROPE, SINGAPORE:** The RObotic versus LAparoscopic Resection for Rectal cancer (ROLARR) trial (UCI-11-65) is an international, multicenter, prospective, randomized trial that compares outcomes of robot-assisted versus laparoscopic surgery for the curative treatment of rectal cancer. PI Dr. Alessio Pigazzi (SPT) directs the only North American trial site (others sites include Singapore and Europe). The primary aim is to determine whether robotic assistance facilitates rectal cancer resection, as measured by the need to convert to open surgery. The trial to date has accrued 20 patients at UCI (target of 50).
- **MIDDLE EAST:** The CFCCC is active in the Middle East. A [Middle East Cancer Consortium \(MECC\)](#) was established through an official agreement of the Ministries of Health of Cyprus, Egypt, Israel, Jordan, Turkey, and the Palestinian Authority. The objective of the MECC is to reduce the incidence and impact of cancer in the Middle East through the solicitation and support of collaborative research. Since its inception, MECC's major activities have been the Cancer Registry Project (CRP), the Small Grants Program, and the Palliative Care Project (PCP). The program is sponsored by NCI. Dr. Hoda Anton-Culver (CPP) chairs the steering committee of the MECC and aims to develop a training and research program for the six MECC countries. Dr. Zell (CPP) has served as Faculty member for MECC educational meetings in Istanbul (2005), Ankara (2012), and Izmir (2013).

- **TURKEY:** The Onco-Imaging and Biotechnology (OIB) Research Program at the Chao Family Comprehensive Cancer Center has active research programs in breast cancer research. Program Members host and train clinicians who study at the Aegean University Medical School (Ege Üniversitesi Tıp Fakültesi) in Izmir, Turkey on novel imaging techniques developed for breast cancer research.

Investigator-initiated activities

- **CHINA:** Dr. Stamos (CPP), with Dr. Alessio Pigazzi (SPT) and Dr. Joseph Carmichael (associate member) hosted two very special groups of highly prominent colorectal surgeons from various regions of China in June and again in November, 2013. These surgeons traveled from some of the largest cancer hospitals in China including Beijing Cancer Hospital, Fudan University Zhongshan Hospital, Guangdong General Hospital and Rui Jin Hospital, Shanghai Jiao Tong University School of Medicine. The visiting surgeons were able to practice their minimally invasive skills in colectomy and proctectomy procedures.
- **INDIA, ITALY, POLAND:** Dr. Krish Tewari (CPP) continues to lead four international trials through the Gynecologic Oncology Group (GOG) with UC Irvine as the parent GOG site. Two are in Poland, one in Dubai, and one in Milan.
- **ITALY:** Dr. Frank Meyskens (CPP) hosted the 7th International Conference on Clinical Cancer Prevention in Milan, Italy; also, with a Consensus Conference on Chemoprevention of Prostate Cancer.
- **MOROCCO:** Dr. Gregory Weiss of the Chemical Structural Biology (CSB) Research Program received an American Association for the Advancement of Science (AAAS)-administered grant from the US State Department and is still collaborating with Dr. Moulay Mustapha Ennaji of the University Hassan II Mohammedia in Casablanca, Morocco to jointly develop virus-electrode biosensors for early disease detection.
- **PERU:** Dr. Gregory Weiss (CSB) also continues to collaborate with Dr. Patty Garcia in the School of Public Health at the Universidad Peruana Cayetano Heredia in Peru to develop biosensors for early disease diagnostics. Dr. Weiss is also quite active internationally, serving most recently as the Co-Chair of the Global Young Academy (GYA), which includes 155 members from 55 countries who are around the age of 35 and nominated by their home national academies.
- **WORLDWIDE:** Drs. Lander and Donovan, of the Systems, Pathways and Targets (SPT) Research Program, co-organized an International Symposium on the Systems Biology of Stem Cells (June 9-11, 2013). The event hosted faculty from 11 (8% of total attendance) countries.
- **WORLDWIDE:** Several SPT members were instrumental in organizing Dr. Paolo Sassone-Corsi's (SPT) highly visible and interactive International Symposium on Epigenetic Control and Cellular Plasticity (Dec. 12-13, 2013) which was held at the Beckman Center of the National Academy of Sciences and Engineering and was fully booked.
- **WORLDWIDE:** Dr. Robert Bristow of the Cancer Prevention and Prognosis (CPP) Research Program hosted a continuing medical education (CME) Program in Cytoreductive Surgery for Ovarian Cancer and Peritoneal Surface Malignancies. 2014 will be the third year that this course is offered at UC Irvine. This event has hosted gynecologic oncologists from over 10 countries.
- **WORLDWIDE:** Lari Wenzel (CPP) is a featured speaker for the upcoming NCI-International Society of Quality of Life (ISOQOL) Webinar series entitled 'Best Practices for Integrating Patient-reported Outcomes (PROs) in Oncology Clinical Trials.'
- **WORLDWIDE:** Dr. Ulrike Luderer (CPP) has been awarded a NASA grant to work on the international space station, "Charged Particle Effects on the Ovary." Dr. Luderer's research will help NASA better understand the risks of space radiation to women's reproductive health and her research will focus on the effects of low dose particle exposure, and whether that induces

ovarian oxidative stress that causes premature ovarian failure and ovarian tumor formation on adult female mice. She will continue to fill in the gaps in the current understanding of the effects of space radiation on ovarian function and ovarian cancer in order to prevent and protect reproductive health in women astronauts.

City of Hope Comprehensive Cancer Center

Investigator-initiated activities

- **ASIA and CANADA:** Dr. Jeffrey Weitzel is part of US-Asian BRCA studies with Dr. Ava Kwong at the HK Hereditary Breast Cancer Family Registry. In addition, Dr. Weitzel is working with Dr. K. Metcalfe in Toronto on an individualized risk information system for BRCA carriers with breast cancer. Dr. Weitzel is also part of the Li Fraumeni Exploration Consortium with Dr. David Malki at the University of Toronto.
- **AUSTRALIA:** Dr. Edward Newman is working with Dr. Michelle Harrison at Royal Prince Alfred Hospital in Sydney on [Phase I Molecular and Clinical Pharmacodynamic Trials](#) of solid tumors.
- **AUSTRALIA:** Dr. Peter Lee is working with Dr. Peter Kim at the University of Sydney on modeling the immune response to cancer.
- **AUSTRALIA, CYPRUS, and UNITED KINGDOM:** Dr. Susan Neuhausen is involved in several international activities including: (1) COMPLEXO for gene discovery through next generation sequencing for breast and ovarian cancers with Dr. Melissa Southey at University of Melbourne in Australia; (2) a study on hereditary breast and ovarian cancers with Drs. Andreas Hadjisavvas and Kyriacos Kyriacou at the Cyprus Institute of Neurology and Genetics; and (3) the Consortium of Investigators of Modifiers of BRCA1 and BRCA2 and Evidence-based Network for the Interpretation of Germline Mutant Alleles (ENIGMA) for BRCA1 and BRCA2 carriers with Dr. Antonis Antoniou at the University of Cambridge in the UK.
- **CANADA:** Dr. Robert Morgan is collaborating with Dr. Amit Iza at Princess Margaret Hospital on GYN-clinical trials.
- **CANADA:** Dr. Karen Reckamp collaborates with Dr. Eleftherios Diamandis at the University of Toronto on lung cancer biomarkers.
- **CANADA:** Dr. Melanie Palomares is investigating risk reduction strategies for development of radiation-related breast cancer in a study entitled "[Low Dose Tamoxifen in Hodgkin Lymphoma Survivors for Breast Cancer Risk Reduction](#)" with Dr. David Hodgson at the University of Toronto.
- **CANADA, GERMANY and UNITED KINGDOM:** Dr. Nagarajan Vaidehi investigates GPCR stabilization for drug design with Dr. Christofer Tate at the MRC Laboratory of Molecular Biology in Cambridge, UK. Dr. Vaidehi also works with Dr. Christofer Tautermann from Boehringer Ingelheim GmbH in Germany on drug design for protein-protein interactions. Dr. Vaidehi has a collaboration with Dr. Eleftherios Diamandis from the University of Toronto in Canada on chemokine receptor drugs.
- **CHINA:** Dr. Binghui Shen is investigating cancer stem cells with Dr. Yingjie Wang at Zhejiang University School of Medicine.
- **CHINA:** Dr. Zuoming Sun is collaborating with Zhaofeng Huang at Sun Yat-Sen Medical School on and investigation of beta-catenin in T cell function. In addition, Dr. Sun is working with Dr.

Guo Ying at the Institute of Materia Medica on a project investigating PKC theta and ROR gamma as drug targets for autoimmunity.

- **CHINA:** Dr. Richard Yip is investigating the anti-cancer effect of herbal extracts from traditional Chinese medicine with Dr. Zhi-Xiu at the Chinese University of Hong Kong.
- **CHINA and GERMANY:** Dr. Hua Yu is collaborating with Dr. Thomas Blankenstein at the Max-Delbürck Center for Molecular Medicine in Germany on tumor-immune imaging. Dr. Yu is also working with Dr. Jie Liu at Huashan Hospital, Fudan University in China on premetastatic niches in human cancer. These projects include the [Role of STAT3 in Tumor Immune Evasion and Immune Suppression](#) and [Targeting STAT3 to Improve Immunotherapy](#).
- **CHINA and TAIWAN:** Dr. Yun Yen is conducting research with Drs. Shu Zhang at Zhejiang University, Jackie Peng at Taipei Medical University, and Andrew Cheng at National Taiwan University.
- **CHINA and TAIWAN:** Dr. Ren-Jang Lin is collaborating with Dr. Shwu-Bin Lin at the National Taiwan University on RNA processing inhibitors. Dr. Lin is also collaborating with researchers at Fujian Medical University in China. He is working with Dr. Aimin Huang investigating spliceosome function and with Dr. Jianda Hu on tumorigenic microRNA.
- **DENMARK:** Dr. Cy Stein is collaborating with Dr. Troels Koch of Santaris Pharma in Horsholm on LNA-based nucleic acid therapeutics.
- **DENMARK, GERMANY, NETHERLANDS and UNITED KINGDOM:** Dr. Leslie Bernstein is conducting a study on endometrial cancer and tamoxifen with Dr. Anthony Swerdlow at the Institute of Cancer Research in London and with Dr. Flora van Leeuwen at the Netherlands Cancer Institute. Dr. Bernstein is also takes part in the HEAL study with Dr. Cornelia Ulrich at the German Cancer Research Center. In addition, Dr. Bernstein takes part in the WECARE Study to investigate gene-environment interactions influencing susceptibility to breast cancer in women from the U.S. and Denmark.
- **FRANCE:** Dr. Carlotta Glackin is working with Dr. Ling Peng at Inserm in Marseille on a project investigating nanoparticle delivery of siTwist to breast and ovarian cancer.
- **FRANCE and SWEDEN:** Dr. Andrew Raubitschek is investigating dendrimers for TNA delivery with Dr. Ling Peng at Marseille University in France and is studying NK cell therapies with Dr. Evren Alici at the Karolinska Institute in Sweden.
- **GERMANY:** Dr. Larry Couture is working with Dr. Wolfram Zimmerman at the University of Gottingen on a study of pre-clinical hESC-derived cardiomyocytes in myocardial infarction and on a study entitled “CRIM Early Translational 3”.
- **GERMANY:** Dr. Don Diamond is working with investigators from the University of Wurzburg in Germany. He collaborates with Dr. Hermann Einsele on a project investigating CMV vaccines for transplant patients and with Dr. Andreas Rosenwald on WT1 expression in lymphoma.
- **GERMANY:** Dr. Fong Fong Chu is collaborating on the function of GPX2 in the gut with Dr. Regina Brigelius-Flohe at the German Institute of Human Nutrition.
- **GERMANY, ISRAEL, and NETHERLANDS:** Dr. Amrita Krishnan investigates randomized ZBEAM vs BEAM with Drs. Marielle Wondergem at VUMC Amsterdam in the Netherlands, Dr. Avichai Shimoni at Tel HaShomer University in Tel Aviv, Israel and Justing Haselkamp in Germany.

- **GERMANY and JAPAN:** Dr. Jack Shively is collaborating with Dr. Neumaier at the Institute for Clinical Chemistry in Germany on imaging and therapy with anti-CEA antibodies. Dr. Shively is also working with Hozo Yokoyama at Wakayama Medical University in Japan investigating the role of CEACAM1 in cancer.
- **JAPAN, NETHERLANDS, PORTUGAL and TAIWAN:** Dr. Shiu-an Chen is working with Dr. Natercia Teixeira at the University of Porto in Portugal on new drugs targeting endocrine resistance. Dr. Chen is also investigating the molecular basis of the chemopreventive effects of mushrooms with Dr. Anton Sonnenberg in the Netherlands. Dr. Chen has a collaboration with Dr. Ming-Feng Hou at Kaohsiung Medical University Cancer Center in Taiwan and Dr. T. Osako at Kumamoto City Hospital in Kumamoto, Japan investigating mechanisms of endocrine resistance.
- **POLAND:** Dr. Marcin Kortylewski is collaborating with Dr. Anna Kozłowska at the University School of Medical Sciences, Poznan on targeting Stat3/Nanog to overcome melanoma chemoresistance.
- **SINGAPORE, SWEDEN, and UNITED KINGDOM:** Dr. Ravi Bhatia is collaborating with Drs. Tessa Holyoake at University of Glasgow in the UK, Sonia Lain at Karolinska Institute in Sweden, and S. Tiong Ong at Duke-National University of Singapore on projects investigating leukemia stem cells.
- **SOUTH KOREA:** Dr. Joseph Kim is working with Dr. Han-Kwang Yang at the Seoul National University Hospital on a project involving gastric cancer.
- **SWEDEN:** Dr. Richard Jove works on translational and stem cell research with Dr. Karl Henrik Grinnemo at the Karolinska Institute.
- **SWITZERLAND:** Drs. David Colcher and Andrew Raubitschek are investigating anti-fibronectin EDB antibody constructs with Dr. Dario Neri at the Swiss Federal Institute of Technology (ETH).
- **TAIWAN:** Dr. Ya-Huei Kuo is collaborating with Dr. Chung-I Chang at Academia Sinica on HDAC inhibitors for Acute Myeloid Leukemia.
- **UNITED KINGDOM:** Dr. Arthur Riggs is working with Dr. Constanze Bonifer at the University of Birmingham on a study entitled "The histone methyltransferase KMT2B is required for RNA polymerase II association and protection from DNA-methylation at the *MagohB* CpG island promoter".
- **UNITED KINGDOM:** Dr. James Lacey participates in the Oxford Collaborative Group on Hormonal Factors in Breast/Ovarian/Endometrial Cancers with Dr. Valerie Beral at Oxford University.
- **UNITED KINGDOM:** Dr. David Horne is collaborating with Dr. Andrew Scott at the Ludwig Institute of Cancer Research in London on humanized Lewis-Y specific antibody-based delivery of STAT3 siRNA.

The Comprehensive Cancer Center of Wake Forest University

Institute-wide activities and consortia

- **WORLDWIDE:** Anthony Atala, MD is the Director of the Wake Forest Institute for Regenerative Medicine (WFIRM). The WFIRM Portfolio encompasses 90+ technologies, including Cell-based therapeutics (Muscle Precursor cells, Amniotic fluid stem cells, Placental

stem cells, Adipose stem cells, Peripheral blood stem cells; 150 cell types from 35 different tissue sources), Tissue/Organ based regeneration technologies (Kidney, Nerve regeneration, Heart valve, Blood vessel, Liver, Digit and Limbs etc.), Scaffold, Biomaterials and Bioreactor technologies and other Enabling technologies. WFIRM has developed a long list of domestic (57) and international (45) collaborations to enhance and facilitate innovative tissue engineering and regenerative medicine technologies to form a consolidated international network via actively conducting basic and translational/clinical research, scientific training, exchange programs and outreach.

Investigator-initiated activities

- **CANADA:** Suzanne Danhauer, PhD, an Associate Professor in Public Health Sciences, recently ran parallel pilot projects with Dr. S. Nicole Culos-Reed at University of Calgary on yoga for patients with brain tumors.
- **CANADA:** Thomas McLean, MD, an Associate Professor in Pediatric Hematology and Oncology, is a co-PI with Lee Dupuis RPh, ACPR, FCSHP, PhD at The Hospital for Sick Children Toronto, Ontario, for the SCUSF-1202 clinical trial: “A Randomized Controlled Trial of Acupressure to Control Chemotherapy-Induced Nausea (CIN) in Children Receiving Highly Emetogenic Chemotherapy”. Dr. McLean and Sharon Castellino, MD, also an Associate Professor in our Pediatric Hematology and Oncology Department, have collaborated with William Foulkes, PhD in Montreal on examining germline and somatic DNA for mutations in the DICER1 gene.
- **CANADA, AUSTRALIA and ENGLAND:** Allen W. Tsang, PhD is an Assistant Professor in Internal Medicine, Section on Molecular Medicine. The goal of his current research, supported by the Avon Foundation for Women, is to determine the extent to which infectious diseases increase a woman’s risk of developing breast cancer. His group works together with 50 other principal investigators from the United States, Australia, England and Canada as part of the Avon Breast Cancer Crusade Consortium. The research projects are exploring evidence for a contributory role in breast cancer causation for Human Papilloma Virus (HPV), Epstein - Barr virus (EBV), Bovine Leukemia Virus (BLV), Human Mammary Tumor Virus (HMTV), Mouse Mammary Tumor Virus (MMTV), Human Endogenous Retrovirus Type K (HERV-K), Cytomegalovirus (CMV) and *Chlamydia*, as well as searching for novel, as yet unidentified viruses.
- **CHINA:** Jianfeng Xu, MD, Dr.PH., Professor and Director of the Center for Cancer Genomics, has worked with colleagues in China to recruit prostate cancer patients and test association of genetic markers with prostate cancer risk and aggressiveness as part of an NCI funded study (Xu, PI). He and his colleagues found that a subset of prostate cancer risk-associated markers discovered in Caucasians were also associated with prostate cancer risk in Chinese. Similarly, one prostate cancer risk-associated marker discovered in Chinese was also associated with prostate cancer risk in Caucasians. Their findings were published in several peer-reviewed journals, including Nature Genetics. Huang Q, et al. A prostate cancer susceptibility allele at 6q22 increases RFX6 expression by modulating HOXB13 chromatin binding. *Nat Genet.* 2014 Feb;46(2):126-35. doi: 10.1038/ng.2862. Epub 2014 Jan 5. PMID: 24390282. In addition, Dr. Xu collaborated with Chinese colleagues in genetic studies of liver cancer, and they have identified novel genetic markers that are associated with liver cancer risk. These findings were published in a separate paper in Nature Genetics. Jiang DK, et al. Genetic variants in STAT4 and HLA-DQ genes confer risk of hepatitis B virus-related hepatocellular carcinoma. *Nat Genet.* 2013. Jan;45(1):72-5. doi: 10.1038/ng.2483. Epub 2012 Dec 16. PMID: 23242368.
- **DOMINICAN REPUBLIC and HAITI:** Jamie Bohl, MD, an Assistant Professor in Surgical Sciences - Oncology, has attended an international surgical mission with the St. Francis

International Medical Ministry out of Hartford, CT and sponsored by St. Francis Hospital every year for the last six years. The group has established a collaborative initiative with citizens of Dame Marie, Haiti. While on mission, they provide routine obstetrical care and general surgical care for citizens of Dame Marie. This is an annual trip that will continue every February including 2014. Residents, medical students and nurses from WFBH participate on a rotating basis.

- **GERMANY:** Edward Levine, MD, Professor and Chief of Surgical Sciences - Oncology, was invited to lead a discussion at the 8th International World Congress on Peritoneal Surface Malignancy bi-annual meeting attended by ~400 international surgeons in Berlin, Germany. Levine E. "Influence of Preoperative Systemic Chemotherapy Cytoreductive Surgery & Hyperthermic Intraperitoneal Chemotherapy for Peritoneal Carcinomatosis from Colorectal Cancer. Berlin, Germany. November 1, 2012.
- **HUNGARY and ROMANIA:** Between 2008 and 2013, a team of faculty based in the Departments of Social Sciences and Health Policy (Doug Easterling, PhD, Professor and Chair, Mark Wolfson, PhD, Professor, Erin Sutfin, PhD, Assistant Professor) and Family and Community Medicine (John Spangler, MD, Professor) served as co-investigators on the NCI/Fogarty-funded project, "Building Capacity for Tobacco Research in Hungary" (Kristie Long Foley, Davidson College, PI). They traveled to Hungary on numerous occasions to provide training and mentoring to 11 teams of Hungarian-based scientists, and provided additional support when those scientists visited Wake Forest. Collaboration between the Wake Forest scientists and their Hungarian colleagues has resulted in seven co-authored journal articles and nine co-authored conference presentations. In 2012, NCI/Fogarty awarded Dr. Foley a second grant to extend the capacity-building work to the Transylvania region of Romania, using both U.S.-based and Hungary-based scientists as mentors for tobacco control scientists based in Tirgu Mures and Cluj. The Wake Forest scientists continue to serve as co-investigators on the Romania project, focusing specifically on evaluating the capacity-building model.
- **IRELAND:** Michelle Naughton, PhD, a Professor in the Division of Public Health Sciences – Department of Social Sciences and Health Policy, presented a poster at the international Breast Cancer in Young Women Symposium in Dublin, Ireland. Naughton MJ, Paskett ED, Case LD, Van Zee K, Naftalis E, Sukumvanich P. "Mental Health Status After Breast Cancer Treatment: A Longitudinal Assessment of Survivors Diagnosed Prior to Age 40." Dublin, Ireland. November 9, 2012.
- **INDONESIA:** J. Mark Cline, DVM, PhD is a Professor in Comparative Medicine. The Section on Comparative Medicine has a long-standing collaborative training program with the Faculty of Veterinary Medicine and the Primate Research Center at Bogor Agricultural University (Institut Pertanian Bogor – IPB) in Indonesia. Many of these students have worked on projects relevant to cancer. Currently as part of this program, Fitriya Dewi, DVM, is working in the Cline laboratory in pursuit of a PhD in Molecular Pathology, studying the effects of dietary phytoestrogens on breast and reproductive system differentiation and development. Her work relates to the potential breast cancer preventive effects of soy isoflavonoids, in the context of the changing pattern of gene expression and differentiation in the developing breast, in nonhuman primates. The relevant grant is entitled "Soy and Estrogen Interactions in the Breast". The long-standing relationship between Wake Forest School of Medicine (WFSM) and IPB has recently been strengthened by a new collaboration in their T32 training program, whereby WFSM trainees will travel to IPB to do screening studies of chronic disease under the Laboratory Animal & Comparative Medicine Training grant from NIH. One such sub-project involves screening for breast cancer and cervical infections with oncogenic papillomaviruses in the IPB's large colony of cynomolgus monkeys.

- ***KENYA and SUB-SAHARAN AFRICA:*** J. Daniel Bourland, PhD is a Professor in Radiation Oncology and has gone to Kenya a number of times. He has visited schools and cancer centers to give talks on medical physics and radiation oncology. He is also a member of the American Association of Physicists in Medicine's African Affairs subcommittee, which attempts to facilitate the sharing of resources and to provide education in Africa (primarily in sub-Saharan Africa).
- ***MONGOLIA:*** Thomas McLean, MD, Associate Professor in Pediatric Hematology and Oncology will be traveling to Mongolia in September of 2014 to participate in a teaching conference on cancer.
- ***NORWAY:*** Gary Schwartz, PhD, MPH, PhD, Associate Professor in Cancer Biology, is working with a group of long-term collaborators, Drs. Steinar Tretli and Trude Robeson, on calcium and vitamin D in predicting ovarian cancer. This work follows a recent publication showing that, like prostate cancer, ovarian cancer can be significantly predicted by high calcium in serum. The group is now working to confirm this finding using a retrospective serum cohort from a population-based cohort in Norway, the JANUS cohort.
- ***SWEDEN:*** David Ornelles, PhD is an Associate Professor in Microbiology and Immunology, and his research has sprung from a collaborative effort with a physician/scientist from Sweden. Dr. Britt Gustafsson of the Karolinska Institute (Stockholm, Sweden), Dr. Linda Gooding of Emory University (Atlanta, Georgia), Dr. Charlese Benson (Atlanta, Georgia), and Dr. Ornelles have established a collaboration to test the hypothesis that the common species C adenoviruses are responsible for the initiating step in most acute childhood leukemias.
- ***SWEDEN, BELGIUM and NEW ZEALAND:*** Lance D. Miller, PhD, Associate Professor in Cancer Biology, has long-standing associations with a collaborative group of international investigators in the area of breast cancer genomics. Together, the group has curated and assembled a large relational database of >2,000 breast tumor expression profiles and corresponding clinical/patient data in order to facilitate "genome to mechanism" studies in breast cancer. Dr. Miller's primary collaborators in this effort include Dr. Jonas Bergh, MD, Professor of Oncology, Karolinska Institute (Stockholm, Sweden); Dr. Christos Sotiriou, MD, Associate Professor and Director of the Breast Cancer Translational Research Laboratory, Jules Bordet Institute (Brussels, Belgium); Dr. Michael Black, PhD, Associate Professor of Biochemistry (Statistics), University of Otago (Dunedin, New Zealand); and Dr. Cristin Print, Associate Professor of Molecular Medicine & Pathology, University of Auckland (Auckland, New Zealand). The collaborative group has published multiple peer-reviewed research articles in the last several years, including publications in *Genome Biology* (2013), *JNCI* (2012), *Molecular Cancer Therapeutics* (2012), *Breast Cancer Research* (2012) and *Cancer Research* (2011).
- ***SWITZERLAND:*** J. Mark Cline, DVM, PhD (Professor, Comparative Medicine), Lance Miller, PhD (Associate Professor, Cancer Biology) and Jeff Chou, PhD (Bioinformatician, Department of Biostatistics) have an international collaboration with the Division of Obstetrics and Gynecology of the University Hospital in Bern, Switzerland with Dr. Petra Stute. This collaboration has resulted in the publication of several papers, most recently, a longitudinal survey of gene expression patterns in the breast of nonhuman primates. Ongoing work with Drs. Cline, Miller and Chou focuses on angiogenesis in normal breast and breast cancer.
- ***URUGUAY:*** Leslie Poole, PhD, is a Professor in Biochemistry and has established a collaborative project working on peroxynitrite-modified human peroxiredoxin 2 (Prx2) with Dr. Ana Denicola at Laboratorio de Fisicoquímica Biológica, Instituto de Química Biológica, Facultad de Ciencias, Universidad de la República, Montevideo, Uruguay. Dr. Denicola's graduate student, Lia Randall, came to the US and worked with Dr. Poole for six weeks in August and September of 2012. Dr. Poole then traveled to Buenos Aires, Argentina and to Uruguay in October 2013 to meet with these collaborators to prepare a paper reporting the

results of these studies (the manuscript is now under revision with the Journal of Biological Chemistry). In brief, it was found that Prx2 isolated from human blood was highly susceptible to tyrosine nitration upon treatment with peroxyxynitrite (which may be generated under oxidative stress and inflammatory conditions, including during cancer initiation and progression), and that the modification(s) render the protein more active toward peroxides in turnover assays with thioredoxin, and also more resistant than the non-modified protein toward inactivation during turnover in the presence of high levels of peroxides.

Dan L. Duncan Cancer Center - Baylor College of Medicine

Institute-wide activities and consortia

- **ARGENTINA:** The Dan L. Duncan Cancer Center's (DLDC's) Breast Cancer Program's international activities include a collaboration with a breast center in Buenos Aires for tumor and blood banking.
- **BOTSWANA:** The Pediatric Oncology Program of DLDC is engaged in several international efforts including a joint agreement to develop plans for a pediatric cancer and hematology center in Botswana.
- **BRAZIL:** The Pediatric Oncology Program of DLDC has a collaborative agreement in education and training with the Brazilian Association for Children and Adolescents with Cancer (TUCCA) in Sao Paulo, Brazil.
- **EUROPE, AUSTRALIA and ISRAEL:** Passport for Care, an interactive internet resource developed by members of DLDC that provides patients and survivors of chronic illnesses with accurate, timely, and individualized healthcare information and guidelines, has been disseminated to institutions in Europe, Australia, and Israel.
- **PERU:** A group of DLDC investigators are involved in a developing collaboration with the Peruvian American Medical Society (PAMS) Chincha Medical Center, located in Inca, Peru, in the area of cervical cancer prevention. Although the collaboration is in its initial phase, it includes plans to develop into a clinical research and outreach collaboration with a focus on cervical cancer prevention and expand to other cancer sites to include breast and colorectal cancer.
- **SINGAPORE and SOUTH KOREA:** The Center for Cancer Cell and Gene Therapy has international activities including Latent Membrane Protein (LMP)-cytotoxic T lymphocyte (CTL) studies that will be conducted in Korea and collaborations in nasopharyngeal carcinoma in Singapore.
- **UGANDA:** Discussions have been initiated to develop a pediatric cancer program in Uganda.

Investigator-initiated activities

- **CHILE:** Dr. C. Kent Osborne, Director of the DLDC, played a major role in establishing and continuing to organize an educational symposium, VIII Simposio Internacional Cáncer de Mama, held biennially for the past 14 years in Santiago, Chile.
- **DENMARK, ISRAEL, SWEDEN and UNITED KINGDOM:** Dr. Melissa Bondy serves as the PI of the [International Case-Control Study of Malignant Glioma](#) and [Genetic Epidemiology of Glioma International Consortium](#). The goal of the international case-control study of malignant glioma is to identify common genetic variants contributing to the risk of glioma, in addition to evaluating gene-gene and gene-environmental interactions with strong biologic relevance to

identify gene-gene and gene-environment interactions for glioma risk. The major goals of the multi-center, multidisciplinary genetic epidemiological study are to identify susceptibility genes in high-risk familial brain tumor pedigrees using the most sophisticated genetic analysis methods available. This research team is uniquely positioned to characteristic genetic risk of familial brain tumors, and conduct important translational research studies that will enhance our understanding into the etiology of brain tumors. Collaborators on these projects include Umea University in Umea, Sweden, Sheba Medical Center in Tel Aviv, Israel, Cancer Research UK in London, United Kingdom and the Danish Cancer Society in Copenhagen, Denmark.

- **GERMANY:** A collaboration between DLDC investigators in the Pediatric Oncology Program and German investigators focuses on the development of Salmonella-based immunotherapy for cancer.
- **MALAWI:** Dr. Maame Aba Coleman, assistant professor of obstetrics and gynecology, is a recipient of a grant awarded through Baylor College of Medicine's Center for Globalization. Dr. Coleman's project goal is to help decrease the incidence of cervical cancer in Malawi by educating the community, increasing access to screening and expanding the health service corps trained to perform the screenings by building on services available through the [Baylor International Pediatric AIDS Initiative \(BIPAI\) in Malawi](#).
- **UNITED KINGDOM:** Investigators from the Breast Cancer Program collaborate with researchers at Royal Marsden Hospital in London on the Komen Promise Grant awarded to DLDC investigators entitled "Restoring Hormone Sensitivity of Late Recurrences in Breast Cancer Patients".

Dana-Farber/Harvard Cancer Center

Related Link: [Harvard Global Health Institute](#)

Dana-Farber/Harvard Cancer Center has many investigators engaged in both large-scale international activities and individual collaborations. A mechanism to track global initiatives is currently in development at the DF/HCC. A sample of DF/HCC's international activities is listed below.

Institute-wide activities and consortia

- **WORLDWIDE:** Harvard-wide Global Oncology (GO!) initiative. Senior faculty and fellows have established a Harvard-wide program of collaboration around global cancer medicine. Activities include lecture series, medical student forums, working meetings, and plans for a global cancer fellowship.

Investigator-initiated activities

- **AFRICA and HAITI:** Dr. Lawrence N Shulman, Assoc. Professor, Dept. of Medical Oncology, and the Director of Dana-Farber's Center for Global Cancer Medicine, studies adult and pediatric cancer in developing countries. Together with Partners In Health (Dr. Paul Farmer) his team has developed cancer treatment infrastructures in Rwanda, Haiti and Malawi. As part of the development they have implemented an innovative pathology lab system in Rwanda, servicing the entire country, and have established the capacity to deliver safe and effective chemotherapy in very resource poor settings. Dr. Shulman has active research programs in Rwanda, Haiti and Malawi concentrating on: (1) implementation research, (2) cancer epidemiology, (3) obstacles to care and early diagnosis, and (4) palliative care. Though all cancers are studied, areas of concentration include pediatric cancer, breast cancer, cervical

cancer, lymphomas, Kaposi's sarcoma. The research is supported by fellowships, institutional support and philanthropy and involves faculty, fellows, and residents from the departments of medicine, surgery, pathology, palliative care and radiation oncology, as well as medical students.

- **INDIA:** Dr. Glorian Sorensen has two NCI-funded R01s devoted to tobacco cessation in India. Both are cluster randomized trials contributing to a much needed evidence base for effective tobacco use cessation initiatives in India. One study, [*Promoting Tobacco Control Among Teachers In India*](#), is just being completed; results in press document the efficacy of this intervention. Research to study the dissemination and implementation process has been proposed. The second study, the [*Mumbai Worksite Tobacco Control Study*](#), is underway. In addition, Harvard School of Public Health has extensive ties with India including a new public health institution there.

Duke Cancer Institute

Related Link: [Duke Global Health Institute](#)

Institute-wide activities and consortia

- **PAKISTAN:** Duke works with Aga Khan University (AKU) to formalize clinical trials in cancer. Training opportunities exist within this partnership. AKU has infrastructure in Africa and there is an opportunity to build on existing strengths and relationships. Dr. Kim Lyerly has also worked in Lahore offering clinical trials training workshops.
- **SINGAPORE and CHINA:** Duke has two international campuses, a medical school in Singapore and a new campus in Kunshan (near Shanghai) in China that will focus on two areas: business and global health.
- **TANZANIA:** [Developing Research Capacity In Africa For Studies On HIV-Associated Malignancies](#) (an NCI funded D43 Grant). The Kilimanjaro Christian Medical Centre (KCMC) in Tanzania and Duke University Medical Center (DUMC) have partnered to further develop research capacity in HIV infection and associated complications, including neoplasms such as cervical cancer, Kaposi's sarcoma, lymphoma and squamous cell carcinoma of the conjunctiva. Support from NIH has allowed Dr. Bartlett to develop a team with the capacity to do rigorous research, adhere to strict quality assurance standards, operationalize standard operating procedures that address: procurement, supplies, and external lab review to ensure standards are being met. Previous studies have focused on cervical cancer screening, prevalent HPV types, and epigenetic patterns associated with cervical cancer.
- **TANZANIA:** Duke Global Cancer is establishing a partnership with Bugando Medical Center to develop oncology services capacity as well as a clinical trials office for initiation of clinical research.
- **WORLDWIDE:** Duke is starting a new initiative to help bring cancer prevention and treatment to clinics around the world. The Global Cancer Initiative, unites researchers from Duke's Global Health and Cancer institutes. In addition to expanding cancer research, clinical care and education in poor countries, the initiative will train health providers through exchange programs.

Investigator-initiated activities

- **CHINA:** Dr. Fang-Fang Yin is working on detailed and practical training in technology implementation, quality assurance, credentialing, and quality control to assist Chinese hospitals to fulfill basic requirements to conduct international clinical trials in radiation oncology. Dr. Kim Lyerly has used NCI-developed bioinformatics tools to assist with the preparation for a trial of triple negative breast cancer in Beijing, and a phase II study of abraxane has been initiated. Dr. Chao is working with Dr. Ai on microchimersim studies.
- **CHINA and Nepal:** Dr. Kim Lyerly serves as an international mentor for Dr. Rajiv Kesari in the Department of Gastric and Pancreatic Surgery at Sun Yat-Sen University Cancer Center in Guangzhou, China. Dr. Kesari is gaining experience in oncology subspecialties, mainly in the gastric, colorectal and breast cancers. Dr. Kesari's long-term goal is to return to work in Nepal and try to develop and accomplished faculty. He is interested in affordable and viable basic research on the gene level in Nepal.
- **EAST AFRICA:** Dr. Nelson Chao has a planning grant to develop a multicenter study of chloroquine prophylaxis and prevention of lymphoma.

- **HAITI:** Drs. David Walmer and Nimmi Ramanujam have partnered in the development of low-cost colposcopy for cervical cancer screening. They have ongoing projects to develop enhanced screening techniques utilizing light-based technologies.
- **INDIA:** Dr. Nelson Chao works with the Tata Memorial Hospital in Kolkata to develop standard operating procedures to deliver cancer care. Dr. Sandeep Dave is working with the Tata Memorial Hospital in Mumbai to study lymphomagenesis. Dr. Arati Rao is working with the Tata Memorial Hospital physicians on leukemia. Dr. Yousuf Zafar has recently completed a study on breast cancer treatment availability and financial models of treatment. Duke has also assisted with the link between 25 hospitals in the India National Cancer Grid.
- **KENYA:** Dr. Erin Dainty worked in Eldoret, Kenya doing screening for cervical cancer in HIV positive women through a FIC Clinical Research Fellowship.
- **TAIWAN:** Dr. David Brizel is investigating the role of serial functional metabolic imaging in the management of patients with nasopharynx cancer in partnership with the Koo Foundation Sun Yat-Sen Cancer Center.
- **TANZANIA:** Dr. Yousuf Zafar is also working with Tanzania KCMC to develop a cancer registry and create cancer research infrastructure. Dr. Zafar has expertise in GI malignancies, and a case-control study of esophageal cancer is underway.
- **TANZANIA:** Dr. Micah Luftig and Dr. Sandeep Dave are researching the human and viral genetic landscape of HIV-associated lymphoma and are building research capacity and training at Muhumbili National Hospital in Dar es Salaam, Tanzania. This work is funded through the Duke CFAR.
- **UGANDA:** Drs. Kristin Schroeder, Corey Adamson and Michael Haglund are studying meningiomas and genetic signatures. Drs. Yousuf Zafar and Jackson Orem have studied delays in diagnosis and treatment of Kaposi's sarcoma.
- **WORLDWIDE:** Dr. Nelson Chao has been involved in work to conduct an assessment of the perceived needs identified by oncologists participating in research training courses - gaining an understanding of the relative importance of access/availability of healthcare, non-healthcare issues, availability of effective cancer therapies, availability of palliative care, and need for new research.

Eppley Cancer Center - University of Nebraska

Institute-wide activities and consortia

- **CHINA:** The University of Nebraska Medical Center (UNMC) Eppley Cancer Center has been involved with the UNMC Asia Pacific Rim Development Program (APRDP). In 2006, the China Scholarship Council (CSC) established a program that provides annual financial support to trainees who desire to train at U.S. and western universities. This UNMC CSC program not only aims to recruit bright and hardworking young scientists from top Chinese universities and institutions to UNMC, but also to provide excellent training to Chinese students, scientists, physicians, nurses and other professionals under the guide of outstanding research scientists and clinical faculty members at UNMC. A total of 76 Chinese visitors from top Chinese institutions have now come to UNMC for training through sponsorship from the CSC. APRDP programs that Eppley Cancer Center members have participated in include: (1) a degree-seeking program where students train and undertake research projects supported by a PI at UNMC for four to five years, (2) joint training where PhD candidates who have completed

required coursework in China will spend one to two years performing research under a PI at UNMC, (3) a joint MD/PhD where the research portion of the degree program is conducted at UNMC, and (4) a health professions degree program where students finish their courses of study at Chinese universities and then train at UNMC to earn medical, pharmacy or physical therapy degrees.

- **ZAMBIA and CHINA:** Dr. Charles Wood is PI on University of Nebraska's Fogarty International Training [Program in HIV and AIDS-Associated Malignancies](#). The overall objective of this training program is to provide research training for Zambian and Chinese biomedical researchers and health care providers to increase their expertise and capability to perform high quality research on HIV and AIDS-associated malignancies.

Investigator-initiated activities

- **AFRICA:** Dr. Amr Soliman has an NCI grant, [Cancer Epidemiology Education in Special Populations](#), for a summer research program in cancer epidemiology for MPH students. The program includes preparatory core courses, short modular courses, special studies, and a four-month summer field research project. Students from a number of countries in North Africa (Egypt, Tunisia, and Morocco) and Sub-Saharan Africa (Ghana, Tanzania, Malawi, Niger, and Zambia) have been trained through the program.
- **CHINA:** Dr. Wing (John) Chan has an ongoing collaboration with the Beijing Institute of Genomics on Next Generation Sequencing of FL and transformed FL. In addition, Dr. Chan has an ongoing collaboration with Sichuan University on the study of NK-cell lymphoma.
- **EUROPE and CANADA:** Dr. Chan is also part of the Lymphoma/Leukemia Molecular Profiling Project (LLMPP). This project combines the efforts of researchers in the U.S., Canada, Denmark, Germany, Norway, Spain, and the United Kingdom.
- **NORTH AFRICA:** Dr. Amr Soliman leads a study on the epidemiology of inflammatory breast cancer in North Africa (Egypt, Tunisia, and Morocco).

Fred Hutchinson Cancer Research Center - University of Washington Cancer Consortium

Related Link: [University of Washington Department of Global Health](#)

Institute-wide activities and consortia

- **AMERICAS and AFRICA:** The Consortium has recently entered into a contract with NCI to establish a Burkitt lymphoma network in Central America, South America, and Africa.
- **CHINA, PERU and SOUTH AFRICA:** Fred Hutchinson Cancer Research Center (FHCRC) is home to the HIV Vaccine Trials Network (HVTN), with trial sites in several regions around the world, including China, Peru, and southern Africa. Through its African entity (HCRI), the HVTN has established a lab in South Africa to focus on the HIV vaccine efforts. Researchers at FHCRC also statistically analyze the data for the HIV Prevention Trials Network.
- **KENYA:** FHCRC promotes capacity building in multiple regions, including Kenya. They use HIV/AIDS programs as a model for capacity building: researchers and public health workers use the existing infrastructure to address cancer research.
- **UGANDA:** FHCRC has focused much of its global cancer research initiatives on Uganda. Uganda is an important place to research cancer because of the high rate of infection-related

cancers. Currently 14-16 FHCRC PIs are working in Uganda to research infection-related cancers. In 2004, Dr. Corey Casper initiated collaboration with physician-scientists at the Uganda Cancer Institute (UCI) and the Kampala Cancer Registry resulting in the formation of the Uganda Program in Cancer and Infectious Diseases (UPCID). As Director of this program based at the Fred Hutchinson Cancer Research Center, Dr. Casper established a translational clinical research site in Kampala. This site currently has 23 ongoing studies which include examining the control of HHV-8 replication, [Impact Of HIV And HHV-8 Co-Infection On Antiretroviral Therapy Efficacy In Africa](#) (an R01 grant funded by NCI), biomarkers for the prediction of Kaposi Sarcoma (KS) development and successful treatment, the immunogenetics of infection-associated cancers, treatment of KS and Burkitt's lymphoma, the role of nutrition in the development and treatment of infection-related cancers, and the discovery of novel pathogens associated with cancer. Under Dr. Casper's direction, research is being bolstered with the addition of a new cancer clinic (with funding from the US Agency for International Development - USAID) and hospital, a quickly expanding training program, and a state-of-the-art molecular diagnostics laboratory. NCI awarded a training-related D43 grant to this project, [Building Sustainable Translational Research Teams in HIV-Associated Malignancies](#) and recently NCI granted FHCRC permission to send funding from their P30 cancer support grant overseas. These programs train up to 7 fellows per year from Uganda, some focusing specifically on Burkitt's lymphoma. The training fellows may be pharmacists, public health researchers or clinicians. This project includes participation from the University of Washington and Seattle Children's Hospital.

- **UGANDA:** The Cancer Consortium has long been an integral part of the Surveillance Epidemiology and End Results (SEER) program, with Dr. Stephen Schwartz serving as the PI of the Seattle-Puget Sound Cancer Registry. Through an inter-programmatic collaboration, Dr. Schwartz assisted researchers in Uganda to enhance the utility of the well-established Kampala Cancer Registry (Parkin et al., *Cancer Causes Control*, 2001) for global oncology research. A more comprehensive set of data fields is now captured by the Kampala registry, which was adapted from the SEER data instruments. Dr. Schwartz taught a course on cancer registration to allow cancer registries to expand throughout the country of Uganda (sponsored by Dr. Casper's NCI/Fogarty International Center D43 training grant). One practical application of this work has been to examine the burden of HIV-associated malignancies in sub-Saharan Africa. Experts in HIV medicine (Drs. Casper and Wald), epidemiology (Drs. Kristal, Casper and Wald, Dr. Polly Newcomb), and clinical oncology (Drs. Harlan, Press and Warren) in a series of projects that have attempted to measure how HIV and its treatment affects cancer incidence and survival (Coghill et al., *Aids*, 2013; Goldman et al., *Lancet*, 2011). Consortium investigators to presented the first data of its kind to policymakers at the World Health Organization and the United States Department of State (President's Emergency Plan for AIDS Relief, PEPFAR) to guide the care of patients with both HIV infection and cancer in low-resource settings.
- **UGANDA:** FHCRC is participating in the HIV+ tumor characterization Project, an initiative of the Human Atlas Genome sponsored by the NCI. The initiative is for collecting tumor tissues from Burkitt's lymphoma and cervical cancer from HIV+ patients with cancer from Kampala, Uganda for full genome sequencing and gene profiling.
- **UGANDA:** Drs. Connie Lehman and Peggy Porter have been developing innovative strategies for breast cancer diagnosis in resource-limited settings (in collaboration with Dr. Casper's UCI / HCCA). These researchers brought breast cancer leaders to Uganda to assess feasibility and establish a plan for a research grant. This work led to an award from the General Electric Foundation through which Dr. Lehman developed a pilot screening program for women with palpable breast masses which utilizes field-rugged, portable/handheld ultrasound machines to evaluate the masses. In pilot data for this proposal, Dr. Lehman showed that radiologists in

Uganda could be taught to use ultrasound objectively and accurately evaluate palpable breast masses that would require further evaluation through evidence-based guidelines and teaching modules.

- **UGANDA AND KENYA:** A large proportion of NHL cases in sub-Saharan Africa are associated with Epstein Barr Virus (EBV) infection, but little is known about the natural history of the infection and why the incidence of progression to cancer is so much higher in that region or in HIV-infected individuals. PiGO investigators, funded by NCI HIV-associated Malignancy Supplements to the CCSG, have established birth cohorts of children born in Uganda and Kenya to characterize primary infection with human herpesviruses (Slyker et al., J Infect Dis, 2013), where it was observed that acquisition of human herpesvirus is nearly universal before age 2 in this region and that the clinical manifestations of infection at this age can be severe.
- **WORLDWIDE:** The Breast Health Global Initiative (BHGI), led by Dr. Ben Anderson has convened several international summits to create resource-stratified guidelines for the detection and management of breast cancer in low- and middle-income countries (Anderson et al., The Lancet Oncology, 2011). These guidelines have subsequently been validated to improve both diagnosis and survival among cancer patients in Latin America, and are being widely adopted or modified for other settings around the world (Cleary et al., Breast, 2013). Breast Cancer is among the most rapidly increasing cancers in resource-limited settings, where some studies suggest the disease is significantly more aggressive (occurs at earlier ages and may be more refractory to treatment).

Investigator-initiated activities

- **AFRICA:** Dr. Ross Prentice coordinates the national Women's Health Initiative and aims to expand African cancer registries to better understand cancer differences worldwide.
- **BANGLADESH:** Maxine L. Linial researches retroviruses in Bangladesh.
- **CANADA and AUSTRALIA:** Dr. Polly A. Newcomb researches family cancer registries in the U.S., Canada, and Australia.
- **CHILE and UNITED STATES (LATINA POPULATION):** Dr. Beti Thompson researches breast cancer in underserved populations, specifically focusing on screening and prevention in a culturally appropriate manner. Dr. Thompson specifically focuses on the Latina population in Washington and in Chile.
- **CHINA:** Dr. Denise A. Galloway has worked with Chinese drug companies to formulate a human papillomavirus vaccine to prevent cervical cancer.
- **KENYA:** Dr. Julie Overbaugh of the Human Biology Division has been collaborating on HIV/AIDS research with colleagues from the University of Nairobi since 1992.
- **RUSSIA, UKRAINE, and JAPAN:** Scott Davis in the University of Washington's Department of Epidemiology in the School of Public Health has spent more than a decade directing two major research activities investigating the effects of ionizing radiation on human health in countries including Russia, Ukraine, and Japan. One is a series of studies in the Russian Federation of the effects of radiation exposure from the Chernobyl Power Station. These studies have focused on the risk of thyroid cancer and leukemia among children in the Bryansk Oblast.

Georgetown Lombardi Comprehensive Cancer Center

Institute-wide activities and consortia

- **JORDAN:** Georgetown has an educational exchange agreement with the King Hussein Cancer Center.
- **GERMANY:** Georgetown has a research and training collaboration with Timm Schroeder at the Helmholtz Institute in Munich, Germany on single cell tracking as a tool for the study of cancer pathophysiology.
- **WORLDWIDE:** Dr. V. Craig Jordan is the Scientific Director of Georgetown Lombardi Comprehensive Cancer Center and currently serves as the President of the Royal Society of Medicine (RSM) in the United Kingdom. The RSM has an expanding global health program as one of its core activities. There are plans to convene a Global Health Panel to be held on April 19th at the Royal Society Headquarters in London, where Dr. Jordan's topic for the panel discussion will be the world impact of Tamoxifen treatment based on its low cost and high therapeutic benefit. Other activities organized by the RSM Global Health program include the RSM Global Health Film Initiative, Global Health Alerts evenings to bring together distinguished speakers to discuss their recent work and challenges, and an RSM Global Health Conference that this year is entitled *The world in denial? Global mental health matters*.

Investigator-initiated activities

- **BRAZIL:** Dr. Luciane R. Cavalli has conducted collaborative research with several institutions in Brazil since joining the Lombardi Comprehensive Cancer Center in 1999 as a postdoctoral fellow. Currently, as an Assistant Professor at the Oncology Department, Dr. Cavalli continues to perform such collaborative international research, mainly focused on the study of genomic instability in breast tumors, supported by both US and international funding. In one such project, Dr. Cavalli obtained funding from FAPESP (The State of Sao Paulo Research Foundation) to collaborate with Brazilian researcher C.A. Rainho. This study investigated epigenetic control of gene expression in mammary carcinogenesis and candidate tumor suppressor genes. In addition, a strong educational program has been established, allowing for the training of undergraduate and graduate students at both Georgetown University and other Universities in Brazil.
- **EGYPT:** Dr. Christopher Loffredo is the PI of [Gender Differences in Bladder Cancer Risk Factors](#), a long standing NCI-funded R01 grant conducting a case-control study on bladder cancer risk factors.
- **EGYPT:** Dr. Loffredo was the PI of a recently completed NIH Fogarty International Center 5-year R01 grant, [Egypt Smoking Prevention Research Initiative](#), to establish the Egyptian Smoking Prevention Research Institute (ESPRI).
- **WORLDWIDE:** Georgetown's [O'Neill Institute For National And Global Health Law](#) explores issues like the Framework Convention on Tobacco Control, health and human rights, non-communicable diseases and the international regulation of food and drugs.

H. Lee Moffitt Cancer Center

Institute-wide activities and consortia

- **PUERTO RICO:** Drs. Dan Sullivan, Tere Antonia and Scott Antonia have a U54/U56 grant from NCI to support the [Ponce School Of Medicine-Moffitt Cancer Center Partnership](#). The complementary expertise at both institutions provides a synergistic means of studying the

cancer problem in Puerto Ricans, and in the Hispanic population in general. The partnership focuses on four target areas: (1) basic research, (2) cancer education and training, (3) outreach, and (4) tissue procurement. Basic scientists from both institutions with shared interests and complementary expertise have jointly developed basic research projects.

Investigator-initiated activities

- **AFRICA:** Dr. Anna Giuliano runs a Gardasil Phase II trial for women in Africa
- **ARGENTINA, IRELAND, UK:** Dr. Ben Craig leads a health valuation/quality of life research that includes US, UK, Ireland, Argentina.
- **AUSTRALIA, CANADA, and ITALY:** Dr. Peter Kanetsky is collaborating on the multi-site GEM, Genes, Environment, and Melanoma study: Investigations of the impact of genetics and sun exposure on melanoma development. Sites include CancerCare Ontario; Women's College Hospital; British Columbia Cancer Agency; Centro per la Prevenzione Oncologia Torino; University of Sydney; and Menzies Research Institute.
- **AUSTRALIA, FRANCE, and UNITED KINGDOM:** Dr. Peter Kanetsky is collaborating on the GenoMEL, the 20+-member melanoma genetics consortium, to investigate the impact of genetics and sun exposure on melanoma development. Sites include University of Sydney, AU; Queensland Institute of Medical Research, AU; Leeds University, UK; and INSERM, FR.
- **BRAZIL:** Dr. Kieran Smalley works with the University of Sao Paulo on a drug discovery center.
- **BRAZIL:** Dr. Robert Gillies and his team collaborate on a project studying modifiers of tumor blood perfusion: an imaging approach with the University of São Paulo, Brazil.
- **BRAZIL:** Collaboration with Dr. Marcelo Carvalho from the Instituto Nacional do Câncer, and Dr. Rafael Mesquita and Dr. Renato Carvalho from the Federal University of Rio de Janeiro on 'Charting the BRCT domain network'. The goal is to determine the protein-protein interaction network mediated by the BRCT modular domain.
- **BRAZIL:** Collaboration with Dr. Leticia Rangel from the Federal University of Espírito Santo on 'Functional analysis of ovarian cancer GWAS loci'. The goal is to functionally characterize susceptibility loci for ovarian cancer risk.
- **CANADA:** Dr. Dan Sullivan and others are collaborating on the Total Cancer Care protocol at Princess Margaret Hospital in Canada.
- **CHINA:** Drs. Jack Pledger, Dan Sullivan, Julie Djeu partner with Tianjin University to train PhD students, post-doctoral fellows, nurses and physicians. They also work with Tianjin to foster clinical trials.
- **CHINA:** Dr. Eric Haura participates in a SPORE collaboration with Tianjin to profile lung tumor specimens.
- **CHINA:** Dr. Robert Gillies is collaborating on a research project exploring the radiomics of non-small cell lung cancer (NSCLC) under an administrative supplement for US-China biomedical research collaborative research in cancer with the Institute of Automation at the Chinese Academy of Science.
- **CHINA:** Dr. Eduardo Sotomayor is collaborating with Tianjin Medical Center on research in T-cell lymphomas.

- **EGYPT:** Dr. Robert Gillies and colleagues are conducting research on the effects of tumor acidity on macrophage infiltration and activation with Mansoura University in Cairo.
- **EUROPE:** Dr. Robert Gillies has radiomics grant with University of Maastricht in the Netherlands.
- **EUROPE:** Dr. Robert Gillies collaborates with the University of Oxford (United Kingdom) on a physical microenvironment in cancer biology and therapy grant.
- **EUROPE:** Dr. Giuliano is the PI of a training grant, [Research Training In Cancer Prevention And Control In Morocco](#).
- **EUROPE:** Dr. Thomas Brandon is assessing the effectiveness of proactive quitline counselling in smoking parents recruited through primary schools with the Radboud University, Nijmegen in the Netherlands.
- **EUROPE:** Dr. Eduardo Sotomayor is collaborating with the Hospital Puerta de Hierro, Madrid, Spain on research involving transformed and aggressive B-cell lymphomas and Personalized Medicine Initiatives.
- **EUROPE:** Dr. Dana Rollison is leading a prospective study of cutaneous viral infections and non-melanoma skin cancer with the German Cancer Research Center (DKFZ) in Germany, and the International Agency for Research on Cancer (IARC) in France (NCI funding is pending).
- **INDIA:** Dr. Kumar Chellappan works with the Jawaharlal Nehru Center for Advanced Scientific Research (JNCASR) and Indian Institute of Science in Bangalore. Dr. Chellappan's work in India focuses on research collaborations and post-doctoral training.
- **JORDAN:** Dr. Karen Fields et al. are conducting a collaborative training program for radiation oncology residents and medical oncology/hematology fellows with the King Hussein Cancer Center.
- **MEXICO and BRAZIL:** Dr. Anna Giuliano studies HPV Infections in Men (with Mexico and Brazil) with an NCI funded grant, [Natural History Of HPV Infection In Men: The HIM Study](#). In addition, Dr. Giuliano is the PI of a Phase II Gardasil trial in mid-adult men in this Mexico and Brazil.
- **PERU:** Dr. Eduardo Sotomayor is collaborating with Hospital Edgardo Rebagliatti Martins in Lima, Peru on studies on the etiopathogenesis of T-cell lymphomas and virus and lymphomas.
- **PORTUGAL, UNITED KINGDOM, and PUERTO RICO:** Dr. Gwen Quinn is collaborating on a study of attitudes, reproductive decisions and patterns of adaptation of breast cancer survivors with the University of Coimbra, Coimbra, Portugal, and the Ponce School of Medicine.
- **SPAIN:** Dr. Thomas Brandon is conducting a study of Craving and nicotine withdrawal in a Spanish smoking cessation sample with the University of Santiago de Compostela.
- **SPAIN:** Collaboration with Dr. Javier Benitez from the Centro Internacional de Investigaciones Oncológicas on 'Characterization of variants of uncertain significance in BRCA1 and BRCA2'. The goal is to classify variants of BRCA genes.
- **UNITED KINGDOM:** Dr. Thomas Brandon is conducting a smoking cessation clinical trial with East Anglia University.

- **UNITED KINGDOM:** Collaboration with Dr. Paul Pharoah from Cambridge University on 'Functional analysis of ovarian cancer GWAS loci'. The goal is to functionally characterize susceptibility loci for ovarian cancer risk'.
- **WORLDWIDE:** Dr. Peter Kanetsky is actively collaborating through the Testicular Cancer Consortium (TeCAC), which conducts post-GWAS studies in testicular germ cell tumors. There are 23 collaborating centers including Norway, Denmark, Netherlands, Sweden, Germany, England. Specific institutions include: Cancer Registry of Norway, Cancer Research UK - Leeds, Copenhagen University Hospital, Erasmus MC-University Medical Center Rotterdam, Groningen-Netherlands, Karolinska Institute, Malmo University Hospital, Nijmegen University, Oslo and Akershus University College of Applied Sciences, Oslo University Hospital – Radiumhospitalet, The University of Padova, The University of Turin, and The University of Ulm.

Herbert Irving Comprehensive Cancer Center - Columbia University

Institute-wide activities and consortia

- **ISRAEL:** Columbia University has a collaboration with Tel Aviv University Cancer Center.
- **SOUTH AFRICA:** Dr. Alfred Neugut and Columbia University have a long history with South Africa. Columbia has had an FIC AIDS International Training and Research Program (AITRP) since 1994 and has used the funding to significantly build capacity in HIV/AIDS and TB management and prevention in partnership with the University of KwaZulu-Natal. Dr. Neugut is the PI of an NCI-funded, Developing Research Capacity in Africa for Studies on HIV-Associated Malignancies D43 supplement, [Columbia-South Africa Training Program For Research On HIV-Associated Malignancies](#). In this grant, he focuses on capacity building for clinical studies of Kaposi sarcoma, non-Hodgkin lymphoma, and cervical cancer in Durban, South Africa. Other partners include Stellenbosch University and the University of Witwatersrand. Trainees are brought to Columbia University for training and instruction and sent back to South Africa with pilot money to begin their own research. Additional research focuses on epithelial cancers and cancers occurring in patients with HIV who are living to later ages than previous generations due to improved treatment and accessibility.

Investigator-initiated activities

- **BANGLADESH:** Dr. Habibul Ashan, formerly of Columbia University, is now at the University of Chicago, but partners with researchers at Columbia on molecular epidemiology of carcinogenic effects of arsenic exposure in Bangladesh. Columbia faculty and Dr. Ashan are currently collaborating on a chemoprevention trial.
- **CHINA:** Dr. Deliang Tang is the PI of Prevention of Health Effects in Children from Energy-Related Air Pollution. In collaboration with the Natural Resources Defense Council (NRDC) and with the municipality of Chongqing, this project aims to demonstrate the immediate health benefits of eliminating coal-burning emissions through energy conversion or closing of the polluting source. Dr. Tang and colleagues compare biomarkers and birth outcomes in two groups of newborns. The first group includes those born before pollution elimination takes place and the second group are conceived and born after conversion. Dr. Tang and colleagues expect that the levels of genetic damage in cord blood and placental tissue from the major coal-burning pollutant, polycyclic aromatic hydrocarbons (PAH), will differ substantially before and after implementation of the Clean Energy Program, consistent with the air monitoring data.

- **EUROPE:** Paolo L. Vineis is an Adjunct Professor of Epidemiology from the Imperial College of London. His research is done with the European Cohort On Diet And Cancer, EPIC.
- **NETHERLANDS:** Dr. Lambert Lumey examines the long-term effects of prenatal exposure to the Dutch famine of 1944-45 on survival and cause of death in a national male birth cohort and looks at the mediating role of health status at age 18. The study, the [Prenatal Under Nutrition And Mortality Through Age 63 Project](#), has found that those exposed during the first trimester develop epigenetic markers correlated with breast cancer risk. The study is funded by the National Institute on Aging (NIA) and the National Institute for Child Health and Human Development (NICHD).
- **POLAND:** Dr. Frederica Perera launched a Polish study, [Developmental Effects Of Early-Life Exposure To Airborne PAHs](#), funded by the National Institute for Environmental Health Sciences (NIEHS) in collaboration with Jagiellonian University in Krakow in 2000 to determine how prenatal and early life exposure to urban environmental pollutants affects children's' health. Poland has high rates of fossil fuel-related carbon emissions, much of which is a result of coal-burning. This prospective cohort study of approximately 500 children is assessing the impact of prenatal exposures to PAHs – harmful pollution released by the burning of coal and other fossil fuels – and other urban pollutants on children's health and cognitive development. Researchers have found evidence of significant in utero and postnatal exposure to combustion-related air pollutants – including toxic hydrocarbons, fine particles, lead, and mercury – and environmental tobacco smoke. This study has found evidence of health effects that range from lower birth weight to reduced IQ and behavioral/attentional problems and decreased lung function. It also indicates the benefits of prenatal nutrition in alleviating some of the adverse health effects of air pollution. The Center compares its Polish study findings with results from parallel studies in New York City and China.
- **SOUTH AFRICA:** Dr. Tom Wright studies the cost effectiveness of HPV screening and "Screen and Treat" in LMICs and specifically in South Africa. His current research ranges from evaluating non-cytological cervical cancer screening tests to studying the safety and efficacy of "screen and treat" approaches to cervical cancer prevention. He has directed large cohort studies investigating the development of cervical cancer in HIV-infected women and the role of specific high-risk types of HPV in the development of cervical cancer precursors.
- **TAIWAN:** Dr. Regina Santella is working on a case-control study of hepatocellular carcinoma nested in a cancer screening cohort of 25,000 subjects. Biomarkers of exposure to environmental carcinogens, hepatitis virus infection, and genetic susceptibility are being measured.

Holden Comprehensive Cancer Center – University of Iowa

Institute-wide activities and consortia

- **INDIA:** Holden Comprehensive Cancer Center (HCCC) has established a collaboration with the Postgraduate Institute of Medical Education and Research (PGI) in Chandigarh, India. A delegation of 10 cancer physicians and scientists from the HCCC visited PGI in early March 2013, discussed collaborations and will be establishing a Memorandum of Understanding between the institutions to expand their interactions. This delegation included George Weiner, MD, Director, HCCC, Sarabdeep Singh Acting COO of the University of Iowa Hospitals and Clinics. This visit took place at the Second World Congress on Gallium 68 Therapy that is jointly sponsored by the University of Iowa and PGI. Dr. Michael Schultz was Vice President of the Congress. Dr. Weiner and Mr. Singh also visited the All India Institute for Medical Sciences in

New Delhi and met with the Director of the Cancer Center and Chair of the Department of Surgery to discuss future collaborations.

- **WORLDWIDE:** The HCCC participates in the ASCO International IDEA fellow's mentorship program. This is a three-day intensive program at the host institution. Visiting fellows in 2011 and 2012 were medical doctors from India and Jordan, respectively.
- **WORLDWIDE:** University of Iowa provides many opportunities for students, trainees and staff to learn about and engage in global health. These opportunities include: (1) the Global Health Studies Program, a unique interdisciplinary, international, and experiential program of study for both graduates and undergraduates; (2) Global Health Distinction Track for Carver College of Medicine medical students to support and guide students in developing expertise in global health issues with the goal of subsequent career involvement in Global Health involving service, policy making, research, and/or teaching; (3) the Global Medical Society, to foster sustained interest in professional activities related to international health issues; (5) Elluminate Live and the Global Public Health Campus Initiative to provide the capability to do live web-conferencing over slow and less reliable internet connections, providing interactive communications to locations that were previously thought to be unreachable; (6) the Center for International Rural and Environmental Health, dedicated to supporting and facilitating global health research, creating and building upon connections between health research institutions here and internationally, as well as furthering the next generation of researchers that will concentrate on global health issues; and (7) the Fogarty Alumni Network, a multinational organization of public health specialists who are united in promoting the growth of collaborative research and intervention projects and the expansion of a modern public health perspective.

Investigator-initiated activities

- **INDIA:** Dr. Michael Schultz is a member of the HCCC and an Investigator with the PGI. He received support from the Khorana exchange program through the Indo-US Science and Technology Foundation. The PGI and University of Iowa have exchanged graduate and undergraduate students via this program. These activities are primarily training exchanges and our plans are to expand into collaborative research activities as they move forward.
- **WORLDWIDE:** Drs. Charles Lynch and Michele West are involved in two international collaborations and studies, including: (1) "Genome-Wide Association Study of Radiation Exposure and Bilateral Breast Cancer", a study that includes investigators in the U.S., Canada, Denmark, and England and is headquartered at Memorial Sloan Cancer Research Center in New York City; and (2) the Second Gastrointestinal Cancers Study, which includes investigators from 6 nations and is headquartered at the Radiation Epidemiology Branch of the U.S. National Cancer Institute.
- **WORLDWIDE:** Dr. Charles Lynch is Director of the Cancer Epidemiology Program at the HCCC and is involved in several other international collaborations and studies, including (1) "International Human Papillomavirus Tissue Study", which includes investigators from 37 nations with a coordinating center headquartered in Barcelona, Spain; 2) the "Molecular Epidemiology Study of MGUS and Biospecimen Collection for Biomarker Studies of Pesticide Exposures in the Agricultural Health Study Cohort", which includes investigators from the U.S. and Italy and is headquartered at the Environmental Epidemiology Branch of the U.S. National Cancer Institute, 3) "Mammographic Density and Risk of Contralateral Breast Cancer", a study that includes investigators in the U.S. and Canada and is headquartered at Memorial Sloan Cancer Research Center in New York City; and (4) "HPV Integration in Cervical Tumor Tissue as a Predictor of Clinical Outcome", a study that includes investigators from the U.S. and China and is headquartered at Tongji University, China.

- **WORLDWIDE:** Drs. Elaine Smith and Linda Rubenstein are conducting a study entitled “Risk Differences by HPV Serology and Tumor DNA Among INHANCE Patients: Preparation for NIH Molecular and Genetic Epidemiology Grants”. IARC (International Association of Cancer Research) and NCI collaborated to create the INHANCE consortium (International Head and Neck Cancer Epidemiology) to address issues that can only be evaluated by large collaborations. IARC warehouses a HNC demographic/risk factor database with raw data contributed by more than 33 INHANCE Centers including Iowa. Seroepidemiological analysis of HPV antibodies provides an opportunity to answer important questions regarding the interaction of HPV with other risk factors, and potential geographical differences in the effect of HPV. The goal of this project is to collect HPV data from more than 20 INHANCE Centers in the US, Europe, Central/South America, and Asia.

Hollings Cancer Center - Medical University of South Carolina

Institute-wide activities and consortia

- **ARGENTINA, BRAZIL, CHILE, MEXICO, AND URUGUAY:** NCI’s United States–Latin America Cancer Research Network (US-LA CRN): The first project of the US-LA CRN, “Molecular Profiling of Stage II and III Breast Cancer in Latin American Women Receiving Standard of Care Treatment” will generate data that can be used in determining and differentiating the effects of standard therapies on breast cancers in Latin American women. Dr. Elizabeth Garrett-Mayer and Mr. Kent E. Armeson serve as statisticians on the study, providing guidance for study design, interim analyses, and statistical methodology for the CRN, in addition to helping to educate individual sites in Latin America about statistical topics, use of statistical software, and best practices in clinical trials and cancer research.
- **AUSTRALIA, CANADA, AND MEXICO:** Dr. K. Michael Cummings’ NIH funded R01 CA1670670, “Building the Evidence for an Effective and Sustainable Cigarette Warning Label Policy,” aims to determine the characteristics of pictorial health warning labels that produce maximum, sustainable effects on quit-related cognitions, affect, and behavior. A quasi-experimental longitudinal study and an experimental study will be conducted among adult smokers in the United States, as well as in Mexico, Canada, and Australia, which have pictorial warning label policies that contrast with the US in important ways.
- **BHUTAN:** Dr. Melanie B. Thomas will be volunteering in Bhutan during the summer of 2014 for six weeks through Health Volunteers Overseas.
- **CHILE:** Dr. Elizabeth Garrett-Mayer presented training sessions for the ASCO/NCI sponsored International Clinical Trials Workshop and the Good Practice Clinical Workshop in November 2013. Her talks were titled, “Statistical Design Analysis,” “Epidemiologic and Observational Research and GCP Compliance in the US,” and “CRFs vs. Databases for Analysis.”
- **CHILE:** Dr. Melanie B. Thomas is investigating potential collaborations in Chile where gallbladder cancer is the leading cause of cancer in women and the second leading cause of cancer in men. There may be genetic causes of the high incidence—related to the high incidence of gallstones in this population. Gall bladder cancer is also high in Native Americans, who have similar ancestry to the Chileans. Dr. Thomas has several colleagues who are Chilean and have discussed the need to conduct tissue based studies to examine the molecular profiling of gallbladder cancers. This would open the door to look for novel therapeutic approaches for gallbladder cancer in this population. The NCI GI Steering Committee Hepatobiliary Task Force

is considering developing a trial to investigate Herceptin in gallbladder cancer. Also, the NCI-Office of Latin American Cancer Program Development is designing an epidemiological study to look at the causes of gallbladder cancer in Chile. Thomas and her colleagues also have been looking at how Chile could get involved in US clinical trials. Chile is an economically developed country with an infrastructure that could support cancer clinical trials.

- **CHINA AND SINGAPORE:** Dr. Weimin Fan has established a collaborative research program, “Innovative Cancer Research Therapeutics,” with Zhejiang University College of Medicine, China, and the Department of Biological Sciences of the National University of Singapore in 2009. The research is focused on the development of novel therapeutic strategies for drug resistant breast cancer and cancer stem cell therapies. During last few years, under the support by the grants from different sources, the team has published over 20 peer-reviewed research articles and a number of book chapters together.
- **HONDURAS:** In August of 2010, Dr. Melanie B. Thomas spent two weeks in Tegucigalpa, Honduras working with the surgical oncology residents at the Hospital San Felipe, training them on various types of GI cancers, fundamentals of clinical research, and dosing and management of chemotherapy in patients with liver dysfunction. Dr. Thomas conducted rounds in the hospital's inpatient unit along with the medical oncologists and residents and saw patients with rectal, biliary, and liver cancers and also visited Hospital Escuela, a large public hospital, to provide teaching sessions with their medical students. Dr. Thomas served as an Health Volunteers Overseas volunteer in Tegucigalpa, Honduras in 2010 and in 2012, and has been the Program Director (volunteer role) for the Honduras program since 2011. (Of note, MUSC has had several faculty volunteers in Honduras: Drs. William T. Creasman, Neal P. Christiansen, Ana Medina, Melanie B. Thomas, and MUSC hosted a visiting surgical oncology resident from Honduras, Dr. Claudia Calderon, in October 2013).
- **HONDURAS:** Dr. William T. Creasman has made several visits to teach at Hospital San Felipe where he gave lectures on the topics that the surgical oncology residents regularly encounter. In Honduras, doctors only receive four years of medical training while in the US, oncologists receive four years of medical training plus many years of residency training. Honduras does not have the resources and infrastructure for regular cervical cancer screening, leading cervical cancer to be a top cause of cancer in women. During Dr. Creasman's visit, he scrubbed in and saw cases with the surgical oncology residents, treating nearly 60 cervical cancer patients per day. Creasman and his colleagues traveled up into the mountains near San Pedro Sula and performed gynecological exams for those people who had limited access to healthcare.
- **INDIA:** Dr. Susan G. Reed is PI of the Oral Mucositis Study [OM Study]. Dr. Reed directs a randomized control trial of an herbal mouthrinse to prevent or lessen the severity of radiotherapy induced mucositis in cancer patients at the Hollings Cancer Center, Charleston, SC. This work is done in collaboration with Organix-South®, division of the Nutraceutical Corporation subsidiary Nutragarden and leaf products are from Nisarga Biotech certified organic farm in Vita, India.
- **INDIA, MALAYSIA, THAILAND, AND URUGUAY:** Dr. K. Michael Cummings' NIH funded P01 CA138389, “Effectiveness of Tobacco Control in High vs. Low Income Countries,” explores whether different tobacco control policies (e.g., product labeling, smoke-free policies, price and taxation, and product regulation) are relatively consistent or inconsistent in effectiveness across different countries with varying incomes and cultures. The research builds upon the work started by the International Tobacco Control (ITC) Policy Evaluation consortium (a research collaboration of over 20 countries, involving over 50% of the world's population and over 70% of the world's tobacco users.). As a Co-Leader of on one of the Projects, Dr. Cummings assists in

the planning and execution of the ITC Project cohort surveys in India, Thailand, Malaysia, and Uruguay.

- **MEXICO:** The purpose of the “GLOBAL - Modeling Tobacco Control Policy in Mexico: A Tool for Public Health” project is to develop a simulation model known as SimSmoke for the nation of Mexico, and use that model for capacity building. In particular, Dr. K. Michael Cummings and his team plan to incorporate the model into the planning process for public health in Mexico. Dr. Cummings’ contribution to this project is to ensure that researchers on this project have access to the ITC data and other needed data sources so that the SimSmoke model can be applied and validated. Dr. Cummings also oversees the planning of the SimSmoke workshop.
- **NETHERLANDS:** Dr. K. Michael Cummings’ supplemental study to P01 CA138389, “Effectiveness of Tobacco Control in High vs. Low Income Countries - Admin Supplement Predicting Consumer Interest in Using a Very Low Nicotine Cigarette (Gold Magic),” has two objectives: 1) monitor the marketing (distribution channels and sales) and marketing claims for a novel new very low nicotine (VLN) tobacco product called Gold Magic being introduced into the marketplace in the Netherlands; and 2) conduct a prospective tracking survey of current and non-smokers to assess exposure and response to the marketing for Gold Magic over 6 month period.
- **NETHERLANDS:** Dr. Dieter Haemmerich is collaborating with Dr. Timo ten Hagen at the Erasmus Medical Center (Rotterdam) on preclinical research involving novel heat-activated nanoparticles for targeted drug delivery.
- **WORLDWIDE:** *World Health Organization Tobacco Free Initiative – Tobacco Product Regulation Monograph* Tobacco product regulation is one component of comprehensive strategy for tobacco prevention and control. Dr. K. Michael Cummings is editor of a WHO Monograph which provides a framework for tobacco product regulation in the United States as well as around the world. It attempts to fill the gap in the scientific understanding about tobacco product regulation by presenting information about the design and diversity of tobacco products; the challenges facing government efforts to regulate tobacco products; the methods and measures currently available to assess emissions, exposures, and the harm associated with using tobacco products; and the limited evidence available on the effectiveness of different approaches to regulation. It is not meant to be comprehensive or definitive, as the science is far from complete and our understanding about the issues is evolving. Rather this monograph is meant to stimulate further thought, inform the public debate, identify the most important gaps in the evidence base and encourage future transdisciplinary research to fill these gaps, and provide some guidance to those responsible for implementing tobacco product regulation in the United States.

Huntsman Cancer Institute - University of Utah

Institute-wide activities and consortia

- **CANADA:** Genome Canada is a collaboration that aims to explore the utility of genetic profiling to stratify women into risk groups to improve the efficiency of mammography screening.
- **CHINA and TAIWAN:** Huntsman is leading a study that is recruiting 1,500 head and neck cancer (HNC) cases and 1,500 controls across centers in China and Taiwan. The aims of the study are (1) to identify risk and protective factors for HNC, and (2) to assess the role of rare genetic variants on HNC risk.

- **NEPAL:** Huntsman is conducting a case-control study of lung cancer in Nepal with a follow up of lung cancer cases. The aims of the study are (1) to study the lung cancer risk factor profile in a LMIC, and (2) to collect information on treatment and palliative care for 900 lung cancer patients.
- **WORLDWIDE:** The International Head and Neck Cancer Epidemiology Consortium is a collaboration among head and neck cancer researchers from around the world.
- **WORLDWIDE:** ENIGMA Consortium which involves members from many different countries and is tasked with using a multidisciplinary approach to classify sequence variants in breast cancer predisposition genes as clinically important or benign.
- **WORLDWIDE:** COMPLEXO is a collaborative project to pool data from exome sequencing experiments in breast cancer families in order to drive discovery of novel breast cancer susceptibility genes.

Investigator-initiated activities

- **AUSTRALIA:** Dr. Randall Burt is exploring developing cancer prevention efforts in Australian Aboriginals similar to Utah's Native American prevention efforts.

Indiana University Melvin & Bren Simon Cancer Center

Institute-wide activities and consortia

- **AFRICA:** AMPATH-Kenya is a consortium including Moi University, Moi Teaching and Referral Hospital and several North American universities led by Indiana University that works in partnership with the Kenyan Government. AMPATH-Kenya started as an HIV/AIDS care and control program and has expanded its medical education, treatment, and research capacity to include cancer care in Eldoret.

Jonsson Comprehensive Cancer Center - University of California at Los Angeles

Institute-wide activities and consortia

- **ASIA-PACIFIC:** Jonsson Comprehensive Cancer Center's Global Initiative has been sponsoring a series of videoconferences entitled, "Nanotechnology Cancer Asia-Pacific Network". Since the launch in 2011, they have sponsored bi-annual videoconferences that have brought together cancer researchers and nanotechnology scientists from various institutions including National Cancer Center Korea, GIST, Seoul National University, Academia Sinica Taiwan, National Center for Nanoscience and Technology Beijing, Peking University, Nagoya University Japan, Jikei University Japan, Vietnam National University-HCM, National University of Singapore, Putra University Malaysia, NCI/NIH, City of Hope and UCLA.
- **CHINA:** Jonsson has a signed Memorandum of Understanding with the Cancer Hospital of the Chinese Academy of Medical Sciences. The MOU covers the areas of collaborations in biomarker research, telepathology, biorepository, cancer screening and preventive research. Currently, they are working on validating nano-mechanical biomarkers for cancer cytological diagnosis in body fluid and developing a biorepository program for nationwide cancer screening of multiple major cancers in Chinese cities.

- **CHINA:** Jonsson has an ongoing telepathology program for cancer diagnosis for a number of hospitals including the second affiliate Hospital of Zhenjiang University and United Family Health System. They are also in the process of setting up a molecular diagnostic laboratory in Shanghai, focusing on cancer molecular and companion diagnosis.
- **VIETNAM:** Jonsson has established a program to promote scientific exchange with Vietnam National University Ho Chi Minh city (VNU-HCM) regarding cancer research. This program involves training students from VNU-HCM at UCLA who will then go back to VNU-HCM to lead new efforts to develop biomedical/cancer research in Vietnam.
- **VIETNAM:** Jonsson is also initiating a consortium that will bring together cancer researchers in Vietnam and the US to discuss Cancer in Vietnam. The aim is to define what the pressing issues are in Vietnam regarding cancer, using a series of videoconferences to provide a platform for discussion. A tentative list of participating institutions in Vietnam include National Institute for Cancer Control, National Institute for Food Control, Vietnam National Academy Institute of Biotechnology, VNU-HCM.
- **WORLDWIDE:** Dr. Ron Mitsuyasu is the PI and Group Chair of the NCI-funded [AIDS Malignancy Clinical Trials Consortium \(AMC\)](#). AMC's mission is to evaluate clinical interventions for the treatment and prevention of malignancies associated with HIV and to investigate the biology of malignancies in the context of clinical trials. AMC is the principal clinical trials group in the world dedicated to improving the treatment and prevention of cancers in the HIV-positive population. AMC has developed multi-center clinical trials in resource limited international settings. AMC has four African Clinical Trials Core Sites in Sub-Saharan Africa: (1) Moi University School of Medicine in Eldoret, Kenya, (2) University of the Witwatersrand in Johannesburg, South Africa, (3) Uganda Cancer Institute in Kampala, Uganda, and (4) University of Zimbabwe in Harare, Zimbabwe. Trials in Africa focus on Kaposi sarcoma, cervical cancer and non-Hodgkin lymphoma. Other AMC sites include Humsafar Trust, YRG Care Medical Center and Christian Medical College in India as well as multiple sites within the U.S.
- **WORLDWIDE:** [Translation Research in Oncology](#) (TRIO) is dedicated to advancing translational cancer research by bringing innovative and targeted therapeutic concepts into the clinical trial setting. TRIO has resulted from a merger of the Cancer International Research Group, Translational Oncology Research International, and a wide group of preclinical researchers at Jonsson Comprehensive Cancer Center. TRIO has offices in Canada, France and Uruguay and is made up of an international network of 2000 investigators and 450 cancer centers in over 45 countries.

Investigator-initiated activities

- **INDIA:** Dr. Ronald Mitsuyasu has recently completed a pilot study with funding from the UCLA AIDS Institute and UCLA CFAR to evaluate the feasibility and barriers to conducting an HIV-cancer match registry study in India. With collaborators from the National AIDS Research Institute (NARI) in Pune, India, the Pune/Bombay Cancer Registry, the NCI Viral Epidemiology Program and the UCLA AIDS Institute, they matched 36,125 HIV cases from NARI with 31,889 cancer cases from the Pune Cancer Registry from 1996-2008. 730 cancer matches were detected among the HIV cases (2% of all cases), demonstrating the increasing importance of cancer among individuals with HIV infection in India. This work was presented at the Conference on Retrovirology and Opportunistic Infections (CROI) in early March 2013.

Kimmel Cancer Center - Thomas Jefferson University

Institute-wide activities and consortia

- **AUSTRALIA, AUSTRIA, and ITALY:** Under the leadership of Dr. Richard Pestell, Director of the Kimmel Cancer Center at Jefferson, the cancer center has actively pursued the establishment of formal arrangements with universities in other countries. These agreements have focused on collaborative activities in the areas of cancer research and training of cancer specialists, and also personnel exchange visits. Formal agreements have been signed in the past four years with: University of Calabria, Arcavacata di Rende, Italy; University of Melbourne, Melbourne, Australia; Università Degli Studi Di Napoli Federico II, Naples, Italy; Istituto Nazionale Tumori, Aviano, Italy; Università Degli Studi Di Ferrara, Ferrara, Italy; and Innsbruck Medical University, Tyrol, Austria.
- **CHINA:** Fudan University Shanghai Cancer Center, one of the largest cancer centers located in Shanghai, China, is expected to soon become the first affiliate member of the Radiation Therapy Oncology Group (<http://www.RTOG.org>) from People's Republic of China, sponsored by the Department of Radiation Oncology, Kimmel Cancer Center, Thomas Jefferson University. This historical accomplishment was achieved from a decade of close collaboration between physicians and scientists from Fudan University Shanghai Cancer Center and Thomas Jefferson University. Fudan Cancer Hospital was established in 1931 as the sino-Belgium Radium Institute, later became the only comprehensive cancer center in Shanghai, treating over five thousand patients annually. It will operate the newly built Shanghai Proton and Heavy Ion Hospital due for opening in mid-2013. For 40 years, the Radiation Therapy Oncology Group® (RTOG®) has been a recognized leader in working to increase survival and improve the quality of life for cancer patients. Based in Philadelphia, RTOG is a key clinical research component of the American College of Radiology and serves as a multi-institutional, international clinical cooperative group funded primarily by NCI. The RTOG was initially organized in 1968 under the direction of Dr. Simon Kramer at Thomas Jefferson University as a national clinical cooperative group for the purpose of conducting radiation therapy research and cooperative clinical investigations. Since its inception, the Group has activated 460 protocols, accrued a total of approximately 90,000 patients to cooperative group studies, and published more than 800 papers reporting the results of its findings. RTOG provides an infrastructure for clinical investigators from the United States, Canada, and international sites to seek more effective treatments for cancer.
- **WORLDWIDE:** Dr. Barry Goldberg is Founding Director of the Jefferson Ultrasound Research and Education Institute (JUREI), which has opened seventy-two affiliated ultrasound education programs and training centers around the world through funding from foundations, corporations, and U.S. Government agencies. JUREI is recognized by the World Health Organization as its only Collaborating Center for Continuing and General Education in Diagnostic Ultrasound. JUREI has trained more than 20,000 physicians, scientists, and educators world-wide. In addition, Dr. Goldberg is Chair of the Education and Archives Committees of the World Federation of Ultrasound in Medicine and Biology, a global organization of ultrasound societies which has more than 50,000 members (2011-2013) and is a Past President (1994-1997).
- **WORLDWIDE:** The Department of Radiation Oncology offers an International Fellowship Program that provides fellows from around the world with training and experience in radiation oncology, molecular radiation biology, and medical physics. All fellows are required to participate in research projects to ensure fellows have a basic understanding of the research process. If desired, the mandated research rotation can form the basis for ongoing involvement in research throughout the entire fellowship.

Investigator-initiated activities

- **AUSTRALIA, UNITED KINGDOM and NEW ZEALAND:** Dr. Richard Pestell has been involved in a number of international activities including serving as President of the USA Branch, International Network for Cancer Treatment and Research (2005-2010), on the Board of Advisors, Center for Australian and New Zealand Studies (2005-2008), on the External Advisory Board, Breakthrough Breast Cancer Research Unit, Manchester, UK (2011-Present), and in the American Australian Association, US Advisory Council (2009-Present). Dr. Pestell is also an Honorary Professor, Department of Medicine, University of Melbourne, Melbourne, Australia (2008-2013).
- **CANADA:** Since 2004, Dr. Scott Waldman has served on the College of Reviewers, [Canada Research Chairs Program](#), which aims to make Canada one of the world's top research countries by attracting and retaining accomplished and promising scientists.
- **CANADA, ISRAEL and SPAIN:** Dr. Alex Mazo's primary research interests center on understanding of the transcriptional mechanisms during development of the eukaryotic organisms. Dr. Mazo's international collaborators include: Dr. Eli Canaani, Weizmann Institute, Israel; Dr. Hugh Brock, University of British Columbia, Canada; and Dr. Montserrat Corominas, Departament de Genètica and Institut de Biomedicina, Universitat de Barcelona, Spain.
- **CHINA:** Dr. Yan Yu is collaborating with Dr. Yongde Zhang, Harbin University of Science and Technology, Harbin, China, on robotic designs in cancer interventions and is also exploring student exchange opportunities. In addition, Dr. Yu serves as a consultant to Dr. Shan Jiang, Centre for Advanced Mechanisms and Robotics, School of Mechanical Engineering, Tianjin University, China, on MRI and image-guided robot-assisted surgery.
- **CHINA:** Dr. Hushan Yang has been collaborating for more than 3 years with Dr. Jinliang Xing of the Fourth Military Medical University in Xi'an, China, focusing on the identification of biomarkers of risk and prognosis in patients with colorectal cancer or hepatocellular carcinoma.
- **CHINA and NETHERLANDS:** Dr. Ying Xiao is conducting Research projects with the MAASTRO Cancer Foundation, Netherlands, and the Shanghai Cancer Hospital, Fudan University, China, on predictive modeling, personalized medicine, and data sharing infrastructure. Dr. Xiao is also conducting a clinical trial with Shangdong Cancer Hospital, Jinan, China.
- **GHANA:** Dr. Kosi Yamoah is collaborating with Dr. Joel Yarney, Korlebu Teaching Hospital (KBTH) Ghana, on evaluation of early clinical outcomes among Ghanaian men with prostate cancer treated with external beam radiotherapy. Dr. Yamoah is also collaborating with Drs. Edward Yeboah and Sunny Mante within the Men of African Descent and Carcinoma of the Prostate Consortium, to determine the prevalence of prostate cancer in Ghana.
- **ITALY:** Dr. Terry Hyslop is co-PI with Dr. Ben Leiby on a PCORI (Patient-Centered Outcomes Research Institute) project utilizing the health services research data from a region of Italy.
- **ISRAEL:** Dr. Robert Den is collaborating with Dr. Yaacov Lawrence, Sheba Medical Center, Tel HaShomer, Israel, on factors influencing newly approved chemotherapy and novel agents in conjunction with radiation oncology.
- **ISRAEL:** Dr. Adam Dicker is collaborating with Dr. Yaacov Lawrence, Sheba Medical Center, Tel HaShomer, Israel, on drug development strategies using ionizing radiation.
- **JAPAN:** Dr. Takami Sato has taken part in a number of training activities in Japan including an international oncology training program for Japanese cancer specialists (Chugoku Oncology

Group in 2011, Kinki Oncology Group in 2012, and metropolitan Tokyo area in 2013). Dr. Sato's collaborations in Japan include: (1) over ten years of international collaboration with Hasumi International Research Foundation for development of new cancer immunotherapies; (2) ten years working with Dr. Yutaka Tamura in Chiba University regarding IL-10 immunoadhesins; (3) international collaboration with Osaka City University regarding "in situ cancer vaccine"; and (4) working with Dr. Shinji Ozaki from Hiroshima University on establishment of hepatic metastasis model for uveal melanoma.

- **JAPAN:** Dr. Schilder is the principal investigator for many clinical trials that study the treatment of persistent or recurrent ovarian cancer. Dr. Schilder collaborates with Dr. Seiji Mabuchi of the Dept. of Obstetrics and Gynecology at Osaka University.
- **UNITED KINGDOM:** Dr. Karen Knudsen was recently awarded the 2012 Movember-Prostate Cancer Foundation Challenge Award for a project entitled "Interrogation of Aberrant DNA Repair in Sporadic Prostate Cancer. Dr. Johann de Bono of the Royal Marsden Hospital in the UK is a co-investigator on the award.
- **WORLDWIDE:** Dr. Ronald Myers has worked with the World Endoscopy Organization to research international colorectal cancer screening programs and methods to increase participation.

Laura and Isaac Perlmutter Cancer Center at Langone Medical Center

Investigator-initiated activities

- **UGANDA:** Dr. J. Thomas Roland Jr., M.D. teaches and trains residents and faculty in Ear and Skull Base Surgery at Mulago Hospital, Makerere University in Kampala, Uganda
- **INDIA:** Dr. Tanveer Mir, M.D. is a champion for the palliative care center at the Hakim Sanallah Hospital and Cancer Center (HSSHCC) in Kashmir valley. Dr. Mir's activities include palliative care, education of physicians in End-of Life Care, speaker to provide updates on palliative care issues.

Masonic Cancer Center - University of Minnesota

Investigator-initiated activities

- **ASIA:** Dr. Douglas Yee is an invited lecturer to the 7th General Assembly and International Conference of Asian Pacific Organization for Cancer Prevention.
- **BRAZIL:** Dr. Kulpna Gupta has been part of a collaboration on translational research for three years.
- **CANADA:** Dr. Ed Cheng works on the "Prophylactic Antibiotic Regimens in Tumor Surgery (PARITY): A Multi-Center Randomized Controlled Study Comparing Alternative Antibiotic Regimens in Patients Undergoing Tumor Resections with Endoprosthetic Replacements." This is a multi-center, blinded, randomized controlled trial, to investigate whether a long term (5 days) postoperative antibiotic regimen will decrease the rate of infection among patients being surgically treated for a lower extremity bone tumor when compared to a short term (24 hours) postoperative antibiotic regimen.
- **CANADA:** Dr. Largaespada collaborates on how clonal selection drives genetic divergence of metastatic medulloblastoma, and Drs. McCarthy and Schwertfeger collaborate on how to use

hyaluronan/tumor cell interactions to define prostate tumor subpopulations with different malignant potential.

- **ITALY:** Dr. Marco Pravettoni leads an affiliation to exchange grad students between University of Milan and Univ. of Minnesota and works on a study entitled "Development of synthetic peptide-coated nanocarriers for clustered carbohydrate-based vaccines against prostate cancer."
- **JAPAN and ISRAEL:** Dr. Reuben Harris has research collaborations on DNA mutating enzymes.
- **INDIA and SOUTH AFRICA:** Drs. Dorothy Hatsukami and Irina Stepanov are collaborating with researchers in these countries to collect smokeless tobacco samples for analysis of harmful and potentially harmful constituents. This information will be valuable to the consumers of these products as well as policy makers. This project is funded through a contract from NCI.
- **LATIN AMERICA:** Dr. Harry Lando is an Executive Committee member for the Human Rights and Tobacco Control Network and on the organizing committee for the 4th Latin American and Caribbean Conference on Tobacco or Health to be held March 2014 in Costa Rica.
- **NETHERLANDS:** Dr. Reuben Harris has a research collaboration on breast cancer, and Drs. Starr, Cormier, and Largaespada have a collaboration on finding new ways of classifying colon cancer patients.
- **NIGER:** Dr. Troy Lund teaches residents/medical students hematology and pediatric oncology.
- **NIGERIA:** Dr. Troy Lund published a recent survey of G6PD deficiency in Nigerian sub-populations.
- **SWEDEN:** Dr. Christine Wendt leads a multilevel OMICS study entitled, "Common Pathogenetic Mechanisms of Lung Cancer and COPD."
- **TAIWAN:** Dr. Douglas Yee is a visiting professor at the Chang Gung Medical School.
- **TUNISIA:** Dr. Harry Lando has a study on how to develop research capacity for tobacco cessation in Tunisia and the region.
- **TURKEY:** Dr. Celalettin Ustun is the Associate Editor of Turkish Journal of Hematology and gives hematological conference presentations
- **UGANDA:** Dr. Troy Lund researches G6PD (prevalence, mutations and oxidative stress) and genetic mutations in Burkitt's lymphoma.
- **WORLDWIDE:** Dr. Logan Spector participates in the Childhood Leukemia International Consortium.
- **WORLDWIDE:** Dr. Carol Lange participates in the Endocrine Society.
- **WORLDWIDE:** Dr. Dr. Harry Lando is the chair for the Scientific Program Committee for the 16th World Conference on Tobacco OR Health to take place March, 2015 in Abu Dhabi, UAE, and is the chair for the International Liaison Group on Tobacco or Health that is responsible for selecting the venue for the triennial world tobacco conferences.

Investigator-initiated activities

- **AUSTRIA:** Elisabeth Weiss and Jeffrey Williamson collaborate with a group at the University Hospital of Vienna Austria on Image Guided Adaptive Radiotherapy for Combined External Beam and Brachytherapy of Cervix Carcinoma.
- **FRANCE:** Geoffrey Hugo is collaborating on a project: "Consistent anatomy registration for lung cancer adaptive radiation therapy". This project is focused on designing, implementing, and evaluating new image registration techniques to support adaptive radiation therapy for locally advanced lung cancer. We are collaborating with Dr. Simon Rit (CREATIS, Lyon, France), who is helping us build motion compensation into cone beam CT reconstruction to improve registration accuracy on this project. The project is supported by R01CA166119.
- **FRANCE:** Paul Fisher collaborates with Habib Boukerche (Unite de Recherché Mixte, Universite Claude Bernard, Lyon).
- **INDIA:** Ja tinder Palta is collaborating with the Tata Memorial Center, Mumbai, India (P. Shrivastava) on a project entitled "Could-based collaboration for global radiotherapy clinical trials, research and training (HHSN261200800001E, PI: Jatinder Palta).
- **INDIA:** Paul Fisher collaborates with several investigators in India including Rupesh Dash (Institute of Life Sciences, Bhubaneswar, India), Sujit Bhutia (National Institute of Technology Rourkela), Subhas Kundu and Mahitosh Mandal (India Institute of Technology West Bengal, India).
- **IRELAND:** Dr. Cathy Bradley is a member of the All-Ireland Consortium and supports post-doctoral training in Ireland.
- **IRELAND:** Dr. Cathy Bradley is Joint PI assessing the impact of cancer on employment and work, a study of adult cancer survivors in Ireland.
- **ISRAEL:** Charles Chalfant is the PI of a grant with the US-Israel Binational Foundation entitled Ceramide kinase and C1P role in cPLA2 activation in stimulated macrophages.
- **ISRAEL:** Paul Fisher collaborates with Avri Ben Ze'ev (Weizmann Institute)
- **ITALY:** Paul Fisher collaborates with Patrizio Giacomini (Regina Elena National Cancer Institute, Rome).
- **JORDAN:** Paul Fisher collaborates with Belal Azab (The University of Jordan, School of Science).
- **LEBANON:** Thomas Eissenberg is the PI on the NCI Funded grant, [Waterpipe Tobacco Smoke: Toxicant Exposure And Effects](#) and a NIDA funded study entitled [Realtime Waterpipe Tobacco Smoke Toxicant Sampling In The Natural Environment](#). and a NIDA funded P50 entitled Center for the Study of Tobacco Products.
- **SCOTLAND:** Iain Morgan has a collaboration with the University of Glasgow looking at the biophysical interaction between human papillomavirus (HPV) replication factors and host replication factors with the ultimate goal of identifying novel therapeutic targets for disrupting HPV replication and alleviating disease burden.
- **SOUTH AFRICA:** Magnboeba Mosavel in the Department of Social and Behavioral Health is actively pursuing collaborations with faculty at the University of Kwazulu Natal in South Africa. She received funding from the Virginia Commonwealth University Office of Global Education to conduct a site visit to jump start this research.

- **SOUTH AFRICA:** Paul Fisher collaborates with Luiz Zerbini (Group Leader, International Centre for Genetic Engineering and Biotechnology, Cape Town)
- **SOUTH KOREA:** Paul Fisher collaborates with several investigators in South Korea including Dong-Chul Kang (Ilsong Institute of Life Science, Hallym University), Sook-Geun Lee (Institute of Oriental Medicine, College of Oriental Medicine, Kyung Hee University)
- **UNITED KINGDOM:** Kristoffer Valerie collaborates closely with AstraZeneca in the United Kingdom to develop and test radiosensitizers for glioma.

Mayo Clinic Cancer Center

There are several global collaborations are on-going at Mayo Clinic Cancer Center to develop alliances in basic and translational research to improve the patient care and also mass education and early screening for cancer prevention as well as improving the quality of life for cancer patients. Below are some examples of Mayo Clinic Cancer Center global alliances:

Institute-wide activities and consortia

- **CHINA:** The Mayo Clinic is part of a consortium with the Peking University Cancer Center covering basic science and has an interest in the large epidemiological cohorts available in China.
- **EGYPT, LEBANON and INDIA:** Dr. Francesca Gany leads an initiative with Ain Shams University in Cairo around breast cancer: A replication of our ICCAN Portal Project there for medically underserved women. We have worked with them to build their capacity to conduct cancer health services research. Together we modified all the study materials, trained their faculty and staff in the program, and perform continuing oversight on data collection and management. Egypt Portal, as it is known, will now also begin to develop one of the first breast cancer cohorts ever in Egypt. There has been a lot of bi-directional exchange between Cairo and MSKCC around this project. We are now working with AUB (American University Beirut) to extend the program into Lebanon. Similarly, we are doing a needs assessment in Mumbai, India as the foundation to starting the program there as well. We are also working with Ain Shams around the issue of the growing numbers of women who are being diagnosed with breast cancer at extremely young ages there. We are in the planning stages to help equip the researchers there with the tools to do genetic studies, and with the epidemiology skill set to investigate risk factors for early age of diagnosis.
- **INDIA:** In October 2011, the [Council of Scientific and Industrial Research](#) (CSIR) India and Mayo Clinic established the CSIR-Mayo Clinic Alliance for Clinomics: Innovation to Translation, a research collaboration focused on better understanding disease and improving patient care. This alliance, which builds upon many existing individual research collaborations between CSIR and Mayo Clinic investigators, has four research themes: (1) Drug development and cancer clinomics, (2) diabetes and related metabolic disorders, (3) cardiovascular diseases, and (4) genome-based informatics and personalized medicine. CSIR resources include drug development and small molecule synthesis capabilities and expertise in genomics and integrative biology. Resources at Mayo Clinic include metabolomics and cancer genomics facilities, the [Center for Individualized Medicine](#), and expertise in cardiology, endocrinology, and cellular and molecular biology.

- **SWEDEN:** Karolinska Institutet, an academic medical research university in Stockholm, Sweden, is one of Europe's largest and most prestigious medical universities. Mayo Clinic and Karolinska Institutet have been research partners for several years and a Memorandum of Understanding was signed on December 2, 2011, that expands the collaboration on education and research in different areas, including cancer.
- **WORLDWIDE:** Dr. Richard Hurt leads the Global Bridges Healthcare Alliance for Tobacco Dependence Treatment, a worldwide, science-based initiative aimed at creating a coordinated global health care provider network that advocates for advancing effective tobacco dependence treatment and advocating for effective tobacco control policies. Founding partners include the American Cancer Society (Tom Glynn), Mayo Clinic, and the University of Arizona (Scott Leischow, now with Mayo Clinic). Global Bridges' first objective to build connections and create opportunities to share treatment and advocacy expertise among network members within and across regions has been accomplished by its established presence in three regions of the world (Africa, Latin America, and the Middle East). Since its inception in 2010, Global Bridges regional partners have trained over 2,400 healthcare providers from 61 countries, resulting in a total of over 25,790 person-hours of training. Global Bridges has recently confirmed a new partnership with Pfizer which will provide up to \$2Mn in grant funds to partners around the world to expand proven training programs and develop new evidence-based programs in accordance with the Global Bridges mission. This program will be similar to a partnership between Pfizer and the Smoking Cessation Leadership Center at UCSF, which provides grants to entities in the U.S. These programs are building an army of health care professionals across the globe that are informed and acting on evidence-based tobacco control policies.

Memorial Sloan-Kettering Cancer Center

Institute-wide activities and consortia

- **AUSTRALIA:** Mary McCabe, RN MA serves as a mentor and trainer to leaders and nurses at the Peter MacCallum Cancer Centre in Australia. For nearly a decade, she has worked with clinical directors, administrative leaders and members of the clinical staff as they have built their survivorship programs. In 2012 and 2013, she developed a comprehensive training program for four nurses who spent time with Memorial Sloan-Kettering Cancer Center (MSKCC) as part of the Australian Churchill Fellowship and Victorian Fellowship programs. In December 2014, she and the Survivorship Director will be leading a panel at the UICC meeting in Melbourne. Also in December 2014, Ms. McCabe will be a keynote speaker at the annual meeting of the Clinical Oncology Society of Australia.
- **BRAZIL:** MSKCC is actively developing a more formal relationship with the Hospital Sírio Libanês in Sao Paulo and the University of Sao Paulo. This is predominantly a relationship not related to patient referral but defined to develop educational and subsequently clinical research opportunities that are collaborative and not affiliations focused on efforts at international medical tourism. MSKCC continues to co-sponsor seminars in Sao Paulo with the Sírio Libanês Hospital and continues to work with Sírio Libanês Hospital in developing a potential major effort in Pathology to improve their diagnostic pathology capability. Recent joint conferences have been held in Gynecology, colorectal cancer, lung cancer and GI malignancy.
- **CANADA, DENMARK, NORWAY, and SWEDEN:** Dr. Jonine Bernstein is the PI of the WECARE Study (Women's Environmental, Cancer, and Radiation Epidemiology), which examines genetic susceptibility and radiation exposure in breast cancer. This is a 25-Center, population-based, case-control study with collaborative partners in Canada, Sweden, Norway and Denmark. Investigations involving this resource include studies of the roles of mutations in

the ATM, BRCA1, BRCA2, Chek2, 53BP1, MDC1, Rad50, and MRN genes. In 2009 Dr. Bernstein was awarded a grant from NIH to conduct a multi-stage genome-wide association study (GWAS) which involves genome-wide screening of the existing WECARE Study cases and controls, and recruitment of a validation data set, in order to discover single-nucleotide polymorphism (SNPs) associated with second primary breast cancer and with radiation.

- **CHINA, INDIA, SINGAPORE, and TURKEY:** MSKCC is working to develop formal relationships with groups in Singapore and China and more recently India and Turkey. MSKCC recently was involved in a joint symposium with the LIV Hospital in Istanbul, Turkey. MSKCC staff attended and presented at a 3-day conference entitled: "Individualized Treatment for Patients with Colorectal Cancer." These collaborations are important for the development of educational and clinical research opportunities with MSKCC.
- **ICELAND:** Mary McCabe, RN MA was the guest of the Icelandic Oncology Nursing Society and was the keynote speaker at their national conference in November, 2013. She also spent four days consulting with them on how best to develop survivorship services.
- **IRELAND:** Dr. Dean Bajorin leads a training program for physicians from Ireland who have completed either all or the vast majority of Higher Specialist Training (HST) in Medical Oncology overseen by the Royal College of Physicians of Ireland and who wish to complete the "Visiting Scholar Fellowship" sponsored by the Irish Society of Medical Oncology (ISMO). The rigorous application, evaluation, appointment, and funding processes are overseen by ISMO in collaboration with leadership from the MSKCC Department of Medicine's Advanced Oncology Fellowship. Fellows in this program receive two years of advanced clinical and research training at MSKCC with the goal of acquiring the skills necessary to run a disease-specific, multidisciplinary clinical and translational research program upon completion of training.
- **ISRAEL:** Mary McCabe, RN MA has established ongoing collaborative training/education relationships with leaders in several countries to develop sustainable models of survivorship care. She has been working with the Rabin Medical Center in Petah-Tikva, Israel since 2005. Several physicians have visited MSKCC for formal Survivorship Program consultations. In 2012, a formal relationship was established to provide ongoing training/education as the Rabin Center develops its Survivorship Program. The leadership team from the MSKCC Survivorship Program traveled to Israel in March to consult with and educate staff about the progress they have made in developing their clinical and research program in cancer survivorship. The new Survivorship director at Rabin Center traveled to New York City in the fall of 2013 to spend time learning about our clinical program and how they might adapt it. Collaborations also continue with Eliezer Robinson who is Chairman of both the Israel Cancer Association and the National Council for Oncology. Ms. McCabe will be presenting with him at the UICC meeting on our work to develop international models of survivorship care.
- **LEBANON:** Dr. Ghassan Abou-Alfa leads an initiative that partners the American University of Beirut (AUB) in Lebanon with MSKCC. The partnership includes an ongoing faculty exchange in which physicians spend a week embedded within a discipline of their choosing at the other institution. In addition, since 2008, a monthly video link session in gastrointestinal (GI) and breast cancers gives fellows the opportunity to present patient cases and allows doctors at both institutions to share their views. The GI cancers sessions are recorded, distributed on DVDs to the participating institutions, and transcribed for publication in the journal *Gastrointestinal Cancer Research*. The partnership includes a fellowship research program, which has so far supported one fellow who trained in radiation oncology at Memorial Sloan-Kettering. A joint MSKCC-AUB course was offered in June of 2013 for oncologists and surgeons from the Mideast who are in their early years of training. A Joint tissue banking process with the

American University of Beirut continues and more collaborative projects are on the horizon. It is anticipated a similar AUB/MSK course will be arranged in Qatar in October.

- **NETHERLANDS, NORWAY, POLAND, and SWEDEN:** Dr. Ann Zauber is the head biostatistician for the NordICC randomized control trial of screening colonoscopy versus usual care being conducted in Norway, Sweden, Poland, and the Netherlands. They are currently accruing subjects in this large RCT with the endpoints of incidence and mortality.
- **NIGERIA:** Dr. Kingham with Dr. Brennan has developed a relationship with young surgeons in Nigeria. With the help of the Soudavar fund they have brought young surgeons to MSKCC for observerships. This has been very successful and Dr. Kingham and Dr. Martin Weiser have been to Nigeria and involved in teaching. Our efforts with Nigeria changed clinical cancer care in communities previously not exposed to techniques and care programs prior to visits of such individuals. We are also in the process of refurbishing endoscopes which would be discarded by MSKCC to allow further use in Nigeria. This has resulted in active collaboration and is part of an NCI grant proposal in partnership with Obafemi Awolowo University Hospital in Ile-Ife, Nigeria and MSKCC. A colorectal cancer screening project is underway with support from MSKCC and SOS for pathology and analysis support.
- **PERU:** The Ministry of Health is seeking to establish an agreement with MSKCC to refer the Peruvian adult patients with myeloid and lymphoid malignancies and bone marrow failures syndromes to MSKCC to undergo allogeneic hematopoietic stem cells transplants from unrelated donors while Peru develops the infrastructure and gets accreditation to perform unrelated HSCT. MSKCC would provide training to transplant personnel including physicians, nurses and technicians while Peru develops the infrastructure (HLA laboratories, Unrelated donor Bank, Cord Blood Bank, Transplant Units, etc.), train the personnel and get the proper accreditation from FACT and the NMDP to perform unrelated HSCT.
- **WORLDWIDE:** Memorial Sloan Kettering Cancer Center (MSKCC) International Program for International Patients welcomes patients from around the world. The Bobst International Center staff, a multi-lingual team, coordinates on-site consultations and treatment and offers mail review of medical records for those foreign patients who are unable to travel to MSKCC or who we think would not be helped by formal consultation. The Center is led by Dr. [Murray Brennan](#), who served as Chair of the Memorial Sloan Kettering Department of Surgery for more than 20 years. Dr. Brennan, an honorary member of multiple medical societies around the world, helps guide the care of each of our international patients. For more information on MSKCC's International Center: <http://www.mskcc.org/cancer-care/international-patients>
- **WORLDWIDE:** MSKCC, through the Bobst International Center, offers organizational seminars in the delivery of cancer care. These seminars allow choices from a modular template of selective areas of cancer care health delivery addressing all aspects of patient referral, evaluation, treatment, and the parallel required administrative structure.
- **WORLDWIDE:** MSKCC has multiple opportunities for International Physician and Scientists to visit and participate in our training programs including: observers for 1-2 months in various departments, international clinical fellows 1 year funded by MSKCC, international research fellows 1-3 years funded by MSKCC, international clinical/research fellows without stipend, and short term visitors for a few days.
- **WORLDWIDE:** MSKCC accepts over 300 international observers each year. These physicians come for clinical observerships, usually limited to one month, sponsored by individual members of the staff and designed for education and exchange. Such observers,

when treated appropriately, become excellent ambassadors for the educational system of the United States. They often become leaders in their own country in the delivery of cancer care.

- **WORLDWIDE:** Within the Bobst International Center and the Department of Surgery, MSKCC has designated philanthropic funds provided through such programs as the Mammadi & Alireza Soudavar Traveling Fellowships which provide financial resources to bring individuals to MSKCC for a two to three month period of clinical observership. These are structured and have significant impact on specific individuals. The Soudavar Fund allows MSKCC to bring young surgeons for observerships for a maximum of three months. This is an excellent program for young surgeons who may wish to compete for the highly sought after International Clinical fellowships which are fully funded by MSK. In the past year Soudavar's have visited from Nigeria, Ghana, China, Rwanda, Kenya, Philippines, Peru, Egypt, South Africa, Ecuador, and India. For more information, the website is:
<http://www.mskcc.org/education/fellowship/mammadi-alireza-soudavar-traveling-fellowships>
- **WORLDWIDE:** MSKCC, led by Dr. Robert Motzer has played a lead role in the development and regulatory approval of targeted therapies for patients with metastatic, clear cell renal cell carcinoma in the United States, Europe, and other regions. MSKCC efforts comprise the construct, conduct, and reporting for pivotal industry sponsored global phase III trials to establish benefit for sunitinib, temsirolimus, pazopanib, everolimus and axitinib. Ongoing MSKCC-led pivotal randomized phase III trials are investigating the role of cabozantinib (inhibitor of vascular endothelial and met growth factor receptors) in second and third line therapy, nivolumab (anti PD-1 monoclonal antibody), in second and third line therapy, and pazopanib in adjuvant therapy following nephrectomy for locally advanced disease.
- **WORLDWIDE:** Dr. Kathleen Foley and colleagues continue their work at MSKCC and in the international community promoting proper management of cancer pain. Dr. Foley is now the medical director of an international palliative care initiative of the Open Society Foundations, whose mission is to advance pain and palliative care globally in resource-limited countries. This effort comes from her work at MSKCC and leadership of the WHO Collaborating Center on Pain Research. This project is based on applying the WHO public health model of cancer control to assure the inclusion of policies to advance palliative care and access to essential medicines.
- **WORLDWIDE:** The Department of Radiology faculty lead several international outreach programs that provide training and resources in oncologic imaging, including a series of initiatives focused on breast cancer. These include a training program in breast imaging sponsored by the Breast Cancer Research Foundation (BCRF); a visiting scholars program run in collaboration with the European School of Radiology (ESOR); and a global clinical research training program in diagnostic radiology, interventional radiology and neuroradiology.

The BCRF-sponsored breast imaging program provides visiting radiologists with intensive instruction in breast imaging interpretation and clinical research methodology. The long-term goals of the program are to train future global leaders in breast imaging and to work with partners around the world to improve patient care and outcomes. Continuing involvement can take many forms. This past year, Dr. Elizabeth Morris and Dr. D. David Dershaw worked with a former trainee from India to develop an advanced breast imaging educational program in India. In its tenth year, the BCRF program will have trained radiologists from China, Colombia, Croatia, Germany, India, Italy, Romania, Russia, Serbia and Uruguay.

Working with the ESOR, MSK provides highly competitive three-month scholarships to radiology residents who wish to receive mentored training at MSKCC in a subspecialty area of oncologic imaging. Directed by Dr. David Panicek and Dr. Hedvig Hricak, the program has so far trained

nine radiology residents from England, Germany, Italy, the Netherlands Poland, Spain and Turkey.

Working with imaging leaders from around the world, Dr. Hricak, Dr. Stephen Solomon, Dr. Wolfgang Weber and Dr. Andrei Holodny have developed an international clinical research program, wherein, visitors come to MSK to complete a clinical research project. In the last five years we have trained 27 radiologists or imaging scientists from Austria, China, England, France, Germany, Greece, India, Italy, Japan, South Korea, Spain, Sweden, Switzerland and Turkey. In the 2013-2014 training period, we hosted our first Fulbright Scholar.

- **WORLDWIDE:** Dr. Bernstein spearheads the Consortium of Contralateral Breast Cancer, with international studies in the UK, Netherlands, Australia, Canada, Denmark, Chile and Sweden.

Investigator-initiated activities

- **CANADA:** Dr. Jonine L. Bernstein is funded to look at mammographic density as a predictor of contralateral breast cancer. This is in collaboration with the University of Toronto and Fred Hutch, Cancer Prevention Institute of California (located in Northern California) and the University of Iowa.
- **EUROPE:** Dr. Darren Feldman has an international randomized clinical trial for patients with advanced germ cell tumors who have progressed after one prior chemotherapy regimen (e.g., called the initial salvage setting). The trial compares conventional-dose chemotherapy with the TIP regimen vs. high-dose chemotherapy with the TI-CE regimen. The sponsor in North America would be the Alliance through the cooperative group mechanism. The sponsor in Europe would be the European Blood and Marrow Transplantation group (EBMT). The protocol is officially titled "A031102." This trial is active but no longer open for accrual. It has been approved by the Alliance, CTEP and GU Steering and Alliance.
- **ISRAEL:** Investigators from MSKCC (led by Dr. David Kelsen) and the Weizmann Institute of Science (WIS) are forming collaborations with the goal of translating basic science discoveries of WIS scientists into clinical trials led by MSK researchers. Three projects have been initiated: Metabolism, The Tumor Microenvironment/Stroma, and Vascular Targeted Photodynamic (VTP) Therapy. The VTP Project initiated and led by Dr. Jonathan Coleman from MSK and Prof. Avigdor Scherz from WIS is supported by a major grant from the Thompson Foundation. The first 18 months of the VTP Project focused on the use of VTP in early stage prostate cancer. Encouraging new preclinical data indicates that VTP also has profound immune modulation effects. A proposal for an expanded VTP Program will study the use of VTP and immune modulation in more advanced prostate cancer, esophagogastric, ureteral and triple-negative breast cancer. The Tumor Microenvironment (TME) Project, led by Drs. Johanna Joyce and Jason Koutcher (MSK) and Profs Irit Sagi and Michal Neeman (WIS), uses novel new imaging techniques to aid study of structural and genomic events in the TME. The Metabolism Project, led by Drs. Kayvan Keshari and Hedi Hricak (MSK) and Prof. Lucio Frydman (WIS), uses Hyperpolarized MRSI to study tumor metabolic changes. Both of these projects have also been initiated, and joint studies are underway. As part of these projects, post-doctoral fellows have the opportunity to work in the collaborating laboratory (MSK postdoc to WIS, and vice versa).
- **ISRAEL:** Dr. William Breitbart is collaborating with investigators from the School of Behavioral Sciences, Tel-Aviv-Yaffo Academic College to replicate Meaning Centered Group Psychotherapy in Hebrew.
- **ISRAEL:** New clinical research initiatives developed by MSK investigators, especially focused on specific subgroups of patients, are being performed in collaboration with investigators from two Israeli medical centers. It has recently been recognized that, as is the case for breast and

ovarian cancer, the risk of pancreatic cancer is substantially increased in people (both men and women) who carry an inherited BRCA mutation. Approximately 2.5% of people of Ashkenazi Jewish descent are BRCA mutation carriers; conversely, approximately 15% of PDAC patients of Ashkenazi descent are found to be BRCA mutation carriers. Advances in early detection and therapy for this subgroup of PDAC may give important insights into the more common types of PDAC on the one hand, and into other BRCA mutation related cancers (e.g. breast or ovary) on the other.

Israeli researchers from Sheba and Shaare Zedek Medical Centers are participating in two clinical trials, led by MSK investigators that are studying Pancreas Ductal Adenocarcinoma (PDAC) in BRCA mutation carriers. Each year, approximately as many BRCAmut PDAC are diagnosed in Israel (which is about the geographic size of New Jersey) as in the USA. In order to accrue BRCA mutation carrier PDAC patients in a timely fashion to both studies, MSKCC investigators formed collaboration with Israeli investigators to perform the trials under MSKCC's leadership. Both studies are supported in part by the Lustgarten Foundation, which is supporting the costs of the Israeli participating sites. In the CTEP-NCI sponsored clinical trial (led by Eileen O'Reilly), MSK investigators are testing the hypothesis that PDAC developing in patients who are known BRCA mutation carriers will be responsive to PARP inhibitor therapy. The second trial establishes a Registry for BRCA mutation Carrier Pancreas Cancer (David Kelsen, PI). The Registry is a platform for the collection of clinical, demographic, family pedigrees, a Risk Factor Questionnaire, and importantly biological material including plasma, lymphocytes, DNA and tumor specimens. The objective of the Registry is to build a resource from which a firm understanding of the risk factors and genomic events leading to the development of PDAC in some BRCA mutation carriers but not in others. Further, in companion trials, the biological specimens obtained from Registry patients and controls (plasma, lymphocytes, and tumor specimens) will be used to test new methods of early detection and hopefully eventually prevention. Patients and their relatives participating in the Registry will also be offered entrance into a companion trial testing new MRI techniques for early detection. This will be the largest Registry of its kind, accruing 500 patients and controls over 3 years accruing.

- **NETHERLANDS:** Mary McCabe, RN MA has worked with the Comprehensive Cancer Centre in the Netherlands to develop a model of care similar to the MSKCC nurse practitioner-led model. She trained program leaders in the development and implementation of survivorship care plans. She then traveled to the Netherlands in 2011 to participate in working meetings to develop formal survivorship care services for cancer patients. Currently, a post-doctoral nurse practitioner (NP) is spending three months at MSK working with Ms. McCabe on a study to evaluate our NP survivorship care model.
- **NETHERLANDS and IRELAND:** Dr. Ann Zauber is collaborating with Erasmus Medical Center, Rotterdam, the Netherlands, to train PhD students to become cancer modelers to inform health policy. She has participated in several thesis defenses for Erasmus, and has been the PI for the MSKCC-Erasmus consortium for colorectal cancer modeling to inform health policy (this is the Cancer Intervention and Surveillance Modeling Network - CISNET project). Dr. Zauber is currently sponsoring Dr. Mary Dallat for her PhD in health economics from Belfast. She is part of the NCI All-Ireland program to train Irish students from Northern Ireland and the Republic of Ireland as health economists.
- **SPAIN and NETHERLANDS:** Dr. William Breitbart has been a consultant, since 2007, for the WHO Collaborating Center in Palliative Care at the Catalan Institute of Oncology, Barcelona Spain, where he helped specifically with a Spanish National program to train and provide psychosocial expertise to existing palliative care and hospice teams across Spain. He helped train and design the evaluation of the impact of this program, funded by the La Caixa Foundation. Dr. Breitbart has also served as a collaborator, consultant and interventionist trainer

with the Vrei University in Amsterdam or an adaptation of his Meaning Centered Psychotherapy for Cancer Survivors, in a study funded in 2011 by the Dutch Cancer Society.

- **WORLDWIDE:** Dr. Howard Scher, working with researchers from the Royal Marsden Hospital in London, led an international Phase III study of abiraterone acetate, an inhibitor of androgen biosynthesis. Survival was prolonged among patients with mCRPC who had previously received docetaxel-based chemotherapy. Increased survival was observed in all patient subgroups and the superiority of the treatment group was shown across all pre-specified secondary endpoints. Based on the results of this trial, the FDA approved abiraterone acetate in 2011 for use in combination with prednisone for the treatment of patients with mCRPC who had already received docetaxel.
- **WORLDWIDE:** Dr. Jonine Bernstein and Dr. Sara Olson are collaborating on an NIH-funded multi-center study, the GLIOGENE (Genetic Epidemiology of Glioma) Study, to characterize genes in familial glioma cases. Using a genome-wide SNP approach and linkage analysis, they will identify new genomic regions or loci that could harbor genes important for gliomagenesis and progression. Drs. Bernstein and Olson are also involved in a related case-control study of gliomas. The MSKCC team joins a large group in North America, Europe, and Israel on this endeavor with Melissa Bondy of MD Anderson as Principal Investigator. The group is also looking at the risk of non-cancer outcomes (cardiovascular, diabetes and pulmonary) among cancer survivors treated with radiation. This study is with Denmark, UK, Canada and the US. Another discovery initiative is using next gen sequencing to identify “risky” regions for developing contralateral breast cancer and looking at the role of rare PALB2 mutations in contralateral breast cancer.
- **WORLDWIDE:** Dr. Ann Zauber is co-author for “Colorectal Cancer” in Disease Control Priorities in Developing Countries, third edition, edited by Dean Jamison, Hellen Gelbrand, Sue Horton, Prabhat Jha, Ramanan Laximinarayan, and Rachel Nugent, Vol 6, Washington DC: World Bank, in-press (2014). Authorship is Rabeneck L, Horton S, Zauber AG and Eagle C.

Norris Cotton Cancer Center at Dartmouth

Investigator-initiated activities

- **AFRICA:** Dr. David Gladstone collaborates with a number of partners on a treatment and education program through the African Affairs Subcommittee of the American Association of Physicists in Medicine.
- **ARGENTINA and MEXICO:** Dr. James Sargent with co-PI Dr. James Thrasher (USC) works on smoking and media in teen tobacco use in a project entitled Cinema Smoking and Youth Smoking in Latin America. Collaborators include scientists from Argentina, Mexico and Germany.
- **COLUMBIA:** Scott M. Williams, Ph.D. has a collaborative project in Colombia related to gastric cancer risk and the role of H. pylori and human ancestries in disease risk.
- **HONDURAS:** Drs. Greg Tsongalis and Vijayalakshmi Padmanabhan lead research on improving pathology options in rural medicine, particularly in cervical cancer. Collaborating investigators include Linda Kennedy from Dartmouth, and Drs. Roberto Zelaya, Suyapa Bejarano, Silvia Portillo, Marcotulio Martinez, and Ana Barrientos in Honduras.
- **HONDURAS:** Tracy Onega, PhD is leading research to determine the most effective approaches to population-based cervical cancer screening.

- **HONDURAS:** Drs. Mary Chamberlin and Marc Pipas are coordinating bidirectional educational programs for hematology/oncology fellows in public hospitals in Honduras where the fellows will teach medical students while learning about the care of patients with HIV malignancies.
- **HONDURAS:** Dr. Konstantin Dragnev will be conducting a monthly lung cancer Global Oncology Seminar via internet with colleagues in Honduras.
- **LATIN AMERICA:** Dr. Samir Soneji studies socioeconomic determinants of cervical cancer screening in Latin America as part of a collaboration with Dr. Natsu Fukui. Soneji, Samir, Natsu Fukui. (2013) "Socioeconomic Determinants of Cervical Cancer Screening in Latin America" Pan American Journal of Public Health, Vol. 33, No. 3, pp 174-182.
- **MONGOLIA:** Dr. Rebecca Troisi conducts research on hormone concentrations in premenopausal and pregnant women in Mongolia.
- **TANZANIA:** Dr. Chuck Wira works on HIV-related mucosal immunology in Tanzania. His work is supported by an education grant from FIC in collaboration with University of Muhimbili, Tanzania. Through the program, scientists from Tanzania train at Dartmouth.
- **TANZANIA:** Drs. Judy Rees, Marc Ernstoff and Tor Tosteson, and Linda Kennedy are funded by an NIH training grant to collaborate with Ocean Road Cancer Institute in Dar es Salaam to provide research training for physicians.
- **UGANDA:** Drs. Jennifer Doherty and Casey Greene is conducting a pilot study on a comparative transcriptome approach to elucidate drivers in Uganda and the US of carcinogenesis in ovarian cancer subtypes. They are collaborating with a number of other investigators, including researchers at Fred Hutchinson Cancer Research Center on the project.
- **VENEZUELA:** Dr. Camilo Fadul conducts a quarterly neuro-oncology Global Oncology Seminar via internet with colleagues in Venezuela.
- **WORLDWIDE:** Dr. Joe O'Donnell collaborates on education with a number of Kosovars through the Geisel Kosovo Exchange. Dr. O'Donnell is engaged in a project in Nicaragua through the Tucker Foundation Community Health Project, which educates Dartmouth students for lives of purpose and ethical leadership, rooted in service, spirituality, and social justice. Dr. O'Donnell is also involved in the Dartmouth International Health Group, which promotes interest and active participation in the global health care arena.

The Ohio State University Comprehensive Cancer Center

Investigator-initiated activities

- **AFRICA:** Dr. Thomas Gross serves on a working committee for a project on Burkitt lymphoma in Africa sponsored by NCI's Center for Global Health.
- **AUSTRALIA, FINLAND, FRANCE, Germany and POLAND:** Dr. Albert de la Chapelle is investigating genes that predispose people to several cancers, particularly thyroid, colorectal, and AML. Large cohorts of patients are difficult to assemble in one place and Dr. de la Chapelle uses the power of pooling datasets and experience with partners from a number of countries including Australia, Finland, France, Germany and Poland to study different populations.
- **CANADA:** Dr. Kari Kendra is leading a phase 1 expansion cohort evaluating the Selective Inhibitor of Nuclear Export (SINE) KPT-330 in patients with unresectable melanoma. KPT-330 is

an oral agent that blocks nuclear transport resulting in tumor cell death in patients with metastatic melanoma. This investigator-initiated, pharma-sponsored project is currently in development, with plans to consider opening in Toronto as a second site once it is opened to accrual at The Ohio State University Comprehensive Cancer Center (OSUCCC).

- **CANADA, GERMANY, NETHERLANDS, and SWEDEN:** Dr. Cynthia Gerhardt is collaborating on multiple studies related to childhood cancer with colleagues from several countries. These studies include a family bereavement study after a child's death from cancer, psychosocial outcomes for pediatric brain tumor survivors, and psychosexual outcomes for young adult survivors of childhood cancer.
- **CHINA:** Dr. L. James Lee is investigating lipoplex nanoparticles-based drug/gene delivery and early disease detection of liver cancer. His lab and other OSUCCC medical researchers are collaborating with Professor Lu Wang at Zhongshan Hospital in Shanghai on using targeted lipoplex nanoparticles developed at OSU for siRNA/microRNA delivery to hepatocellular carcinoma tumor sites in knockout mice and liver cancer patients. Both parties have unique knock out mouse models. They are also exploring the feasibility of using a newly developed 'tethered lipoplex nanoparticle assay' for early cancer detection. Zhongshan Hospital has the largest liver cancer treatment program in China.
- **CHINA:** Dr. Tong Chen investigates cancer prevention with natural food products. Her projects include: (1) combinational approaches to the chemoprevention of esophageal cancer (funded by an administrative supplement for US-China collaboration); (2) a randomized phase II clinical chemoprevention trial of lyophilized strawberries in esophageal cancer; (3) a clinical investigation in China of chemoprevention of esophageal cancer with freeze-dried grapes; and (4) chemoprevention of azoxymethane and dextran sodium sulfate-induced colitis-related colon carcinogenesis in mice by strawberries.
- **CANADA, CHINA, FRANCE, and GERMANY:** Drs. Clara Derber Bloomfield and Guido Marcucci are involved in multiple projects with international collaborators in AML, primarily classification, prognostication, leukemogenesis and some therapy in AML. They have supported many physician-scientists that have come to the U.S. to further their research goals from countries such as Germany, Greece, Austria and Finland. Dr. Clara Derber Bloomfield serves as Chair of the Clinical Advisory Committee for WHO Classification of Tumours of Haematopoietic and Lymphoid Tissues, is one of two external advisors to the European Union-created European LeukemiaNet (ELN), and is senior author of ELN guidelines for management of AML. Drs. Bloomfield and Marcucci have an ongoing collaboration with the Department of Hematology, Chinese PLA General Hospital, in Beijing. Dr. Marcucci is also member of Scientific Advisory Committee for the MDS/AML Project of The Terry Fox Research Institute.
- **EGYPT:** Dr. Mohamed Abdel-Rahman studies the genetics of pediatrics and liver cancers. He is currently involved in a study of the genetics of hepatocellular carcinoma in Egypt, and in establishing a biorepository at the National Liver Institute, Menoufiya University. He is also involved in establishing a clinical cancer genetics clinic at the Children Cancer Hospital of Egypt.
- **FRANCE:** Dr. Stan Lemeshow studies the prospective association between exposure data and childhood cancer through the International Child Cancer Cohort Consortium (I4C) study with investigators at IARC.
- **GUATEMALA and PERU:** Dr. Pierluigi Porcu is studying the role of Epstein-Barr Virus (EBV) in extranodal NK cell lymphoma (ENKL). ENKL lymphoma is rare in the US but much more common in South and Central America. Dr. Porcu and colleagues have established a network of institutions that have committed to share samples for laboratory studies to be conducted at

OSUCCC. The network includes Stanford University, OSU, the NCI of Peru, and Guatemala. They currently have letters of commitment and are looking to secure external funding sponsors.

- **ITALY:** Dr. Amy Ferketich is conducting tobacco control research in Italy. Dr. Ferketich has a current collaborator in Rome with whom she has been working on various smoking cessation papers as well as doing surveys of medical students to determine their level of knowledge of smoking cessation treatment.
- **ITALY:** Dr. Anjali Mishra is conducting a study entitled “Epigenomics in Cutaneous T-Cell Lymphoma” that focuses on lymphomagenesis with collaborators in Italy.
- **ITALY:** Drs. Robert Baiocchi and Said Sif are examining oncogenic driver activities of protein arginine methyltransferase 5 (PRMT5), an epigenetic enzyme that is dysregulated in both solid and hematologic cancers. Dr. Stefano Pileri, an internationally recognized expert in hematopathology, has provided histologic evaluation of hundreds of lymphoma samples and has contributed to several projects at the OSUCCC. This collaborative effort is supporting a drug development program at OSUCCC to target PRMT5 in cancer.
- **ISRAEL:** Dr. Barbara L. Andersen studies psychological care for breast cancer patients and other psychosocial issues, including research on caregivers with colleagues in Israel.
- **SWEDEN:** Dr. Werner Tjarks is investigating boronated nucleosides for neutron capture therapy of brain tumors with colleagues in Sweden. The major goals of this project are to evaluate boronated nucleosides for Boron Neutron Capture Therapy of cancer and other forms of cancer therapy.
- **TAIWAN:** Dr. Ching-Shih Chen and Dr. Tanius Bekaii-Saab from the OSUCCC are collaborating with National Cheng Kung University, a premier institution in Taiwan, on the development of effective diagnostic markers and therapeutic agents for pancreatic cancer.
- **TURKEY:** Dr. Kay Huebner conducts analysis of protein expression in breast cancers and is currently investigating correlations between specific proteins expressed in breast cancer and clinical features in Ankara, Turkey.
- **UNITED KINGDOM:** Dr. Nyla Heerema participates in a study entitled “Cytogenetic Studies in Pediatric ALL” with researchers in the UK, who are conducting molecular and clinical studies of various cytogenetic aberrations in pediatric acute lymphoblastic leukemia (ALL). Dr. Heerema’s lab is involved with the US clinical studies, which also provides specimens for some of the molecular studies.
- **WORLDWIDE:** Dr. Amanda Toland participates in the Consortium of Investigators of Modifiers of BRCA 1/2 (CIMBA), a collaboration of investigators that spans Asia, Australia, Europe and North America.

Robert H. Lurie Comprehensive Cancer Center - Northwestern University

Institute-wide activities and consortia

- **CHINA:** The Robert H. Lurie Comprehensive Cancer Center Lurie Cancer Center members have formal research agreements in China.
- **ISRAEL:** The Lurie Cancer Center has an ECOG affiliate in Israel.
- **QATAR:** Northwestern University has a campus in Qatar with a focus on overall education.

- **WORLDWIDE:** The Robert H. Lurie Comprehensive Cancer Center annually funds an initiative bringing physician representatives from Chicago's 28 Sister Cities around the world to participate in the Center's Lynn Sage Breast Cancer Symposium. This initiative provides the opportunity for access to cutting-edge treatment options and research efforts for dissemination abroad as well as a forum for development of ongoing collaborations.
- **WORLDWIDE:** The Lurie Cancer Center works the American Society of Clinical Oncology (ASCO) International Development and Education Award (**IDEA**) program to offer a full day of lectures, tours and professional observation experiences while they are in Chicago at ASCO's Annual Conference.
- **WORLDWIDE:** The Lurie Cancer Center provides ½ day-full day educational programming in collaboration with the US State Department when international visitors are in Chicago.
- **WORLDWIDE:** Northwestern Medicine has initiated a comprehensive International Health program which collaborates with the Lurie Cancer Center to provide assistance for patients traveling from abroad to seek care at Northwestern.

Investigator-initiated activities

- **CHINA:** Dr. Jindan Yu is working on prostate cancer chemoprevention trial.
- **EUROPE & AUSTRALIA:** Dr. Piotr Kulesza was working with the International Society of Biospecimen and Environmental Repository members on Biospecimen science.
- **GERMANY:** Dr. Jane Wu collaborates with Dr. Christian Fischer at Charité-Universitätsmedizin in Berlin on mechanisms suppressing cancer metastasis.
- **ICELAND:** Dr. William Catalona is working with deCode Genetics on genetics of Prostate cancer.
- **IRELAND:** Dr. Piotr Kulesza was working with Pixcell data on advancing digital pathology for research and education.
- **IRELAND & PERU:** Dr. Al Benson is working on a phase III colon trial.
- **SOUTH AFRICA:** Dr. Seema Khan is working on a phase III Breast cancer trial studying early surgery to see how well it works compared to standard palliative therapy in treating patients with stage IV breast cancer.
- **SWEDEN:** Dr. Shuo Ma is working on a phase II trial studying the side effects and how well giving alemtuzumab and ofatumumab together work with treating patients with previously untreated chronic lymphocytic leukemia (CLL).

Roswell Park Cancer Institute

Institute-wide activities and consortia

- **CHINA:** Roswell Park has a training and education collaboration with the Institute of Materia Medica of Nanyang at Normal University, China (NYNU). Roswell Park also has a research collaboration with Zhejiang University in Hangzhou, China.

- **EUROPE and CANADA:** Roswell Park leads the Stacey Scott Lung Cancer Registry with partners: British Columbia Cancer Agency, Vancouver, BC, Canada, and Vrije Universiteit Amsterdam, Amsterdam, The Netherlands.
- **JORDAN:** Roswell Park has had a clinical network with King Hussein Cancer Center in Amman, Jordan, as well as clinical and research programs with the King Hussein Cancer Biotechnology Institute.
- **SAUDI ARABIA:** Roswell Park has training and educational collaborative agreements with King Fahad Specialist Hospital-Dammam, Saudi Arabia Oil Company-Dhahran Medical, and Saudi Arabian Cultural Mission-Washington DC. In addition, Roswell Park produces a joint symposium with the Saudi Cancer Foundation.
- **NIGERIA:** Roswell Park has a partnership with the Shawsand Medical Centre, Port Harcourt, Nigeria for prostate cancer surgical training.
- **WORLDWIDE:** As co-founders of the [International Tobacco Control \(ITC\) Policy Evaluation Project](#), Roswell Park Department of Health Behavior faculty collaborates on many other international projects. The ITC Project has undertaken a large range of studies in more than 20 countries since its inception in 2002. Countries under study by the ITC Project comprise 50% of the world's population, 60% of the world's smokers, and 70% of the world's tobacco users. From 2004-2011, via a Transdisciplinary Tobacco Use Research Center ([TTURC, P50 CA111236](#)) and [P01 CA138389](#), Roswell Park conducted survey, tobacco product, and biomarker projects with collaborators at: (1) Cancer Council Victoria, Australia, (2) Chinese Center for Disease Control, China, (3) Healis-Sekhsaria Institute for Public Health, India, (3) University Sains Malaysia, (4) Mauritius Institute of Health, Mauritius, (5) Mahidol University, Thailand, (6) University of Nottingham, United Kingdom, (7) University of Stirling, United Kingdom, (8) University of St. Andrews, United Kingdom, (9) Center for the Investigation of the Tobacco Epidemic, Uruguay, (10) University of Waterloo, Canada.
- **WORLDWIDE:** Health Behavior faculty also are currently conducting survey and tobacco warning label studies in Panama and Bolivia, and recently completed similar work in a large number of CARICOM countries of the Caribbean Community. Our faculty also is currently coordinating field studies in 10 foreign cities (nine in Asia and one in Africa) to assess the level of compliance of establishments with legislation prohibiting indoor smoking.

Investigator-initiated activities

- **CHINA, INDIA, and RUSSIA:** Roswell Park has a number of "Start-up" collaborations, led by RPCI investigators such as Drs. Andrei Gudkov and Ravindra Pandey.

Rutgers Cancer Institute of New Jersey

Investigator-initiated activities

- **CHINA:** Dr. Xi Zheng is collaborating with the Guangdong University of Technology in Guangzhou, China. The collaborative research is to investigate the inhibitory effect of naturally occurred compounds on prostate cancer cells. The mechanisms by which these compounds inhibit the growth and induce apoptosis in prostate cancer cells will also be studied.
- **CHINA:** Dr. Sharon Pine is collaborating with LianXin Liu from the Harbin Medical University in China. Their research focus is on lung cancer progression and cancer stem cells – molecular and cell biology.

- **CHINA:** Dr. Steven Zheng is actively collaborating with Shanghai Jiao-Tong University and Sun Yat-sen University in China to study the biology and therapy of malignancies in the digestive system, including esophageal, liver, and colorectal cancer.
- **CHINA:** Dr. Zhiyuan Shen is collaborating with Beijing Cancer Hospital and Institute (BCHI), Peking University School of Oncology in China. The US-China collaboration was supported by a NCI supplement award (R01CA156706-01S1). It aims to understand the role of BCCIP gene in early onset breast cancer.
- **EUROPE:** Dr. Elisa Bandera participates in the Ovarian Cancer Association International Consortium and on the World Cancer Research Fund Continuous Update Project expert panel.
- **EUROPE:** Rutgers Cancer Institute of New Jersey investigators are working with the NCI Amsterdam on the roles of 53BP1 and BRCA1 in breast cancer, and the role of BMI in DNA repair. Work is also ongoing with scientists in Denmark on 53BP1 and DNA repair pathways, and with scientists in the United Kingdom on TRIM33 in DNA repair.
- **HONG KONG:** Dr. Karl Herrup is on a two-year leave of absence at the Hong Kong University of Science and Technology to further work on their project on the DNA damage response protein, ATM. They are working on its role in controlling the epigenome as a heretofore unrecognized way of responding to DNA damage and triggering cell death.
- **INDIA:** Dr. Gyan Bhanot and Dr. Shridar Ganesan from RCINJ, along with Dr. Ullas Kolthur, Dr. BJ Rao and Dr. Himanshu Sinha from the Tata Institute of Fundamental Research in Mumbai, India, are doing research on ovarian cancer DNA damaging pathway. They are trying to use TCGA data to generate some novel targets and pathways to identify mechanisms for failure of DNA damaging therapy.
- **INDIA:** Investigators are currently engaged with the HCG group in India on a project to develop and evaluate a histologic image-based risk score predictor identifying ER+ breast cancer patients that are good candidates for adjuvant chemotherapy in India.
- **ISRAEL:** Dr. George Studzinski is collaborating with Dr. Michael Danilenko in Ben Gurion University, Bar Sevea, Israel. The project is directed to the therapeutic effects on human Acute Myeloid Leukemia of vitamin analogs combined with plant-derived antioxidants, such as carnosic acid, or curcumin.
- **JAPAN and INDIA:** Dr. Kiron Das is involved in international collaborations with the Division of Gastroenterology and Oncology at the Asahikawa Medical College in Asahikawa, Japan and Cancer Centre Welfare Home and Research Institute in Kolkata, India on projects involving early diagnosis of gastric and esophageal cancer using a novel biomarker, mAb Das-1 developed by CINJ.
- **KOREA:** Dr. Mingzhu Fang is collaborating with the Animal, Plant & Fisheries Quarantine and Inspection Agency in the Republic of Korea. Project Name: Development of Alternative Research Strategy to Screen and Classify the Neurotoxicity and Hepatotoxicity Potential of Veterinary Dogs.
- **KOREA and TAIWAN:** Extensive collaboration with centers in Korea and Taiwan. Investigators have published more than 10 papers from these collaborations. The projects include: (1) expression of bone morphogenetic protein-6, IL-10, and tumor-infiltrating macrophages in kidney cancer and (2) anterior prostate fat pad in prostate cancer and its pathologic implications.

- **SWEDEN:** Dr. Vincenzo Pirrotta is collaborating with the Department of Molecular Biology, Umea University in Sweden. The project concerns mechanisms of Polycomb-mediated chromatin repression and of Trithorax anti repression.
- **SWITZERLAND:** Dr. Spencer Knapp's research group participates in an antimalarial project funded by NIH and coordinated by the Medicines for Malaria Venture (MMV) Institute of Geneva. They are doing hit-to-lead studies to develop new antimalarials. One of their compounds, (+)-SJ557733, has recently been approved for clinical trials.
- **TAIWAN:** Dr. Leroy Liu is on sabbatical leave at Taipei Medical University (TMU) in Taiwan and will initiate formal arrangements through TMU to establishing international collaborations in cancer-related activities.
- **WORLDWIDE:** After Dr. David Foran was selected by IBM for his "Help Defeat Cancer" project to run on IBM's World Community Grid, his team received funding from NIH to expand the project and build a clinical decision support system to allow automated analysis and stratification of patient populations.
- **WORLDWIDE:** Dr. Mark Pierce's lab at Rutgers is just getting started and at present his focus is on establishing domestic collaborations, but Dr. Pierce would like to expand to international sites in the future. Dr. Mark Pierce joined the Biomedical Engineering faculty at Rutgers having previously been actively involved in Dr. Richards-Kortum's research program at Rice University on developing optical imaging platforms for cancer diagnosis in both domestic and international settings. International sites included Guatemala (cervical cancer), India (oral cancer), Botswana (cervical cancer), and China (esophageal cancer).

Sidney Kimmel Comprehensive Cancer Center - Johns Hopkins University

Related Links: [Johns Hopkins Medicine International Collaborations](#), [Johns Hopkins Center for Global Health](#)

Institute-wide activities and consortia

- **AFRICA, ASIA, and LATIN AMERICA:** [Jhpiego](#) is an international non-profit health organization affiliated with Johns Hopkins University. For more than 35 years and in over 150 countries, Jhpiego has worked to prevent the needless deaths of women and their families. Working with stakeholders and partners, Jhpiego pioneered the single visit approach (SVA), a unique, medically safe, acceptable and effective approach to cervical cancer prevention for low-resource settings. The SVA consists of visual inspection using vinegar or dilute acetic acid (VIA) to detect precancerous lesions on the cervix, followed by the offer for treatment using a freezing technique (cryotherapy), in the same visit.
- **BANGLADESH:** The Center for Control of Chronic Diseases in Bangladesh is a consortium partnership between the International Centre for Diarrheal Disease Research, Bangladesh, Bangladesh Rehabilitation Assistance Committee, the Institute for Development Studies (IDS) and Johns Hopkins Bloomberg School of Public Health (JHSPH). Within this framework, JHSPH is helping to conduct an initial assessment of Bangladeshi chronic disease programs, including those for cardiovascular disease, diabetes and cancer. Project objectives are to ensure better understanding of risk factors, preventive and curative measures for chronic diseases and enhance awareness across the levels of care.

- **PHILIPPINES:** One of [Jhpiego's current initiatives in the Philippines](#) is the Cervical Cancer Prevention Program, which will build on Jhpiego's success with similar cervical cancer prevention and treatment programs in Thailand and Ghana. It is an 18-month pilot program starting at three sites with the objective of rapid expansion. It is being implemented with support from GlaxoSmithKline and in partnership with the Philippine General Hospital at University of the Philippines.
- **SINGAPORE:** Johns Hopkins staff is working to develop advanced practice nursing programs at [Johns Hopkins Singapore International Medical Centre](#) (JHSIMC). JHSIMC has a tripartite mission of research, education and patient care, integrating basic translational and clinical research components. Inpatient, outpatient, intensive care and consultative services are provided at JHSIMC, which is located within Tang Tock Seng Hospital. Educational programs include visiting Johns Hopkins consultants, medical symposiums, oncology nurse training programs, and updates and public health presentations. Clinical and translational research is being conducted on new agents and innovative therapies for breast, lung, nasopharyngeal and hepatocellular cancers. JHSIMC is a member of the CTGR research collaboration (National University Hospital Singapore, National University of Singapore, Sydney Cancer Center/University of Sydney, Chinese University of Hong Kong, National Cancer Centre, and Johns Hopkins Singapore International Medical Centre).
- **WORLDWIDE:** The Johns Hopkins Bloomberg School of Public Health has a renowned [Institute for Global Tobacco Control](#) to "prevent death and disease from tobacco use by generating, synthesizing, and translating scientific evidence to support effective tobacco control policies, programs and activities".
- **WORLDWIDE:** Johns Hopkins experts provide educational and consulting support to the affiliate's clinical and administrative staff to keep them on the cutting-edge of medical research, clinical techniques and equipment, hospital management, health system operations and more through: observerships, continuing medical education, video conferencing and customized training programs. Collaborations exist with: [Instituto Tecnológico y de Estudios Superiores de Monterrey in Mexico](#), Johns Hopkins Aramco Healthcare, [Medcan Clinic in Canada](#), [Perdana University Graduate School of Medicine in Malaysia](#), Fundación Santa Fe de Bogotá in Colombia, Pacifico Salud Lima, Peru, Abu Dahbi Health Services- Tawam Hospital, Clemenceau Medical Center in Lebanon, Anadolu Hospital Cancer Center in Turkey and the Cancer Center in Clinical Las Condes in Chile.
- **GENERAL:** Johns Hopkins has the largest international health research and practice footprint of any university in the US. Currently there are 818 projects led by 209 faculty members operating in 119 countries. The largest numbers of projects are in the following countries in rank order: India (57), Uganda (57), South Africa (50), and Bangladesh (49). Many other countries have a large number of projects and there are 131 global health projects being conducted in the US. Hopkins is involved in a wide variety of health topics but work in Maternal and Child Health and HIV/AIDS predominate. A substantial number of these projects are research projects.

Investigator-initiated activities

- **AFRICA:** Dr. Richard Ambinder researches EBV and associated tumors. As part of the AIDS Malignancy Consortia, Dr. Ambinder went to Africa to give a talk regarding his collaborations. He will collaborate with a half-dozen countries in Africa, including Kenya and Uganda.
- **SINGAPORE and HONG KONG:** Dr. Richard Ambinder researches Epstein-Barr and associated tumors in Singapore and Hong Kong. In Singapore, they are close to obtaining approval for a clinical study for EBV-associated nasopharyngeal carcinoma, which involves a

combination of drugs and radiopharmaceuticals. The trial protocol is going through the IRB at Johns Hopkins and a parallel protocol has been submitted to agencies in Singapore.

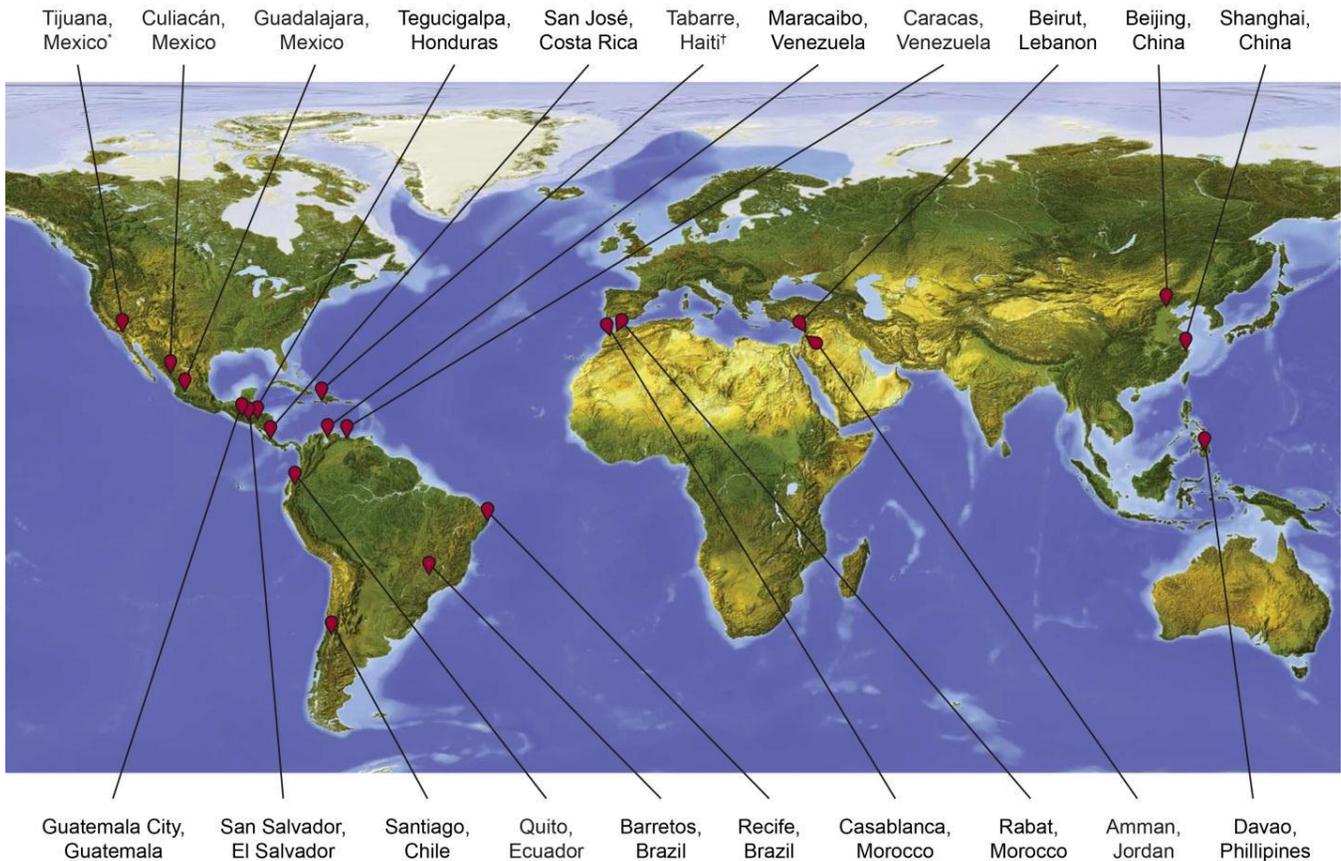
St. Jude Children's Research Hospital

St. Jude Children's Research Hospital (SJCRH) is committed to global outreach for children with cancer and other catastrophic childhood diseases worldwide. As part of this commitment, the SJCRH International Outreach Program (SJ-IOP) was initiated in 1991 as a humanitarian and educational effort that strives to improve survival rates for these children and address the disparity in care that children with cancer face across the globe.

The SJ-IOP accomplishes its mission by sharing knowledge, technology, and organizational skills with its partners via the "twinning" model of collaborative mentoring, evaluation, consultation, education, and research. SJ-IOP has further promoted the development of regional pediatric cancer associations, such as POEM in the Eastern Mediterranean region and AHOPCA in Central America, that foster the development of larger networks focused on improving pediatric cancer care. SJ-IOP partner sites include cancer centers with a wide spectrum of resources and care capabilities, and we facilitate delivery and continued improvement of comprehensive care based on the local level of need, resources available, level of professional training, and overall treatment capacity. This strategy has been successful in improving survival rates of children with malignancies by increasing access to care and reducing the main causes of failure, including abandonment of therapy and toxic death, in low-resource settings.

SJ-IOP relies on faculty and staff at SJCRH as well as external collaborators to provide expertise and mentorship for site- and disease-specific initiatives. Internally developed educational tools, such as those provided through www.Cure4Kids.org, provide opportunities for frequent communication between SJCRH members and partner site personnel, access to a variety of learning materials, courses, publications and seminars, and networking among pediatric oncology professionals worldwide. SJ-IOP has also created data management tools and training for improved data collection, monitoring, and analyses at its partner sites.

Some examples of ways in which sites have benefited from their partnerships with SJ-IOP include: implementation of structured pediatric leukemia protocols, designed collaboratively with SJCRH, development of a complex bone marrow transplant program, reduction in treatment abandonment, creation of a nurse educator program model and training hub designed to elevate the level of nurse training and care, and creation and implementation of an infection prevention and control program to reduce the levels of treatment-related mortality caused by nosocomial infections. Some significant SJ-IOP efforts are listed below along with a map of all SJCRH's partner sites.



*Partnership with Rady Children's Hospital, San Diego, California, USA

†Current demonstration project to establish Haiti's first sustainable pediatric oncology unit.

Institute-wide activities and consortia

- **BRAZIL:** The IPACTR www.stjude.org/ipactr was developed by SJCRH as a centralized repository for demographic, biologic, outcome data, and tumor samples. It was created in 1989 so that SJCRH researchers could collaborate with researchers in Brazil, where the incidence of adrenocortical carcinoma is 10-15 times higher than in the rest of the world. IPACTR 1, closed for about 10 years, enrolled roughly 250 patients. IPACTR 2, a currently active study, was modified based on discoveries made regarding a specific mutation in the TP53 gene (Ribeiro et al, 2012). By early 2014, 109 participants had enrolled in IPACTR 2.
- **BRAZIL:** At the SJCRH partner site of the Unidad de Oncologia Pediatrica (IMIP) do Pernambuco, focuses have been on developing a low-risk ALL protocol and the treatment of high-risk malignancies. At this site, the event-free survival (EFS) for children with ALL increased from 32% in the 1980's to 63% by 2002. One remarkable achievement in Recife was the reduction of the number of children with ALL who abandoned treatment from 16% to 0.5% by providing free housing, transportation, food, and psychosocial support, very similar to the support that St. Jude provides to the patients treated in the US. Similar practices to prevent abandonment are now being applied around the globe.

- BRAZIL:** At the SJCRH partner site of the Hospital de Câncer de Barretos, the main focus is to provide training and education of health care professionals and implement effective therapy for children with malignancies using the same model used in Recife. This hospital only recently created a pediatric hematology/oncology unit, so training personnel is the current main objective. Ultimately, the goal is to create several satellite pediatric oncology units in Brazilian underserved places including the Amazon region. Funds for this program come from a partnership between the Brazilian government and Brazilian private enterprise. Also in Brazil: The International Pediatric Adrenocortical Tumor Registry (IPACTR) was developed by SJCRH as a centralized repository for demographic, biologic, outcome data, and tumor samples for adrenocortical carcinoma. It was created in 1989 as a collaborative effort between SJCRH and Brazilian researchers. The incidence of adrenocortical carcinoma is 10-15 times higher in southern Brazil than in the rest of the world. IPACTR 1, closed for about 10 years, enrolled roughly 250 patients. IPACTR 2, a currently active study, was modified based on discoveries made regarding a specific mutation in the TP53 gene. By early 2014, 109 participants had enrolled in IPACTR 2. SJCRH supports efforts at two hospitals in Curitiba, in southern Brazil. At Hospital de Clinicas, Universidade Federal do Parana, SJCRH provides funds that go toward treating children with Fanconi's anemia, including bone marrow transplantation. At Instituto Pele/Pequeno Principe's, SJCRH provides funds that go toward screening children for TP53 mutations associated with adrenocortical carcinoma, and surveillance and psychosocial support for children that carry the mutation.
- CHILE:** SJCRH's partner site in Chile, Hospital Luis Calvo Mackenna in Santiago has developed a bone marrow transplant unit with St. Jude's support, and the ongoing focus has been program enhancements, such as HLA typing capabilities. To date, a total of 271 transplants have been performed with similar results to those reported in the international literature. Since only 25% of Chilean children have matched family donors, the focus within the last 3 years has been to develop technology for alternative donor transplants (cord blood or parents for haploidentical transplants). This has allowed further expansion of the program by having more eligible patients for transplantation. SJ-IOP's Nurse Educator Program training center (Latin American Center of Pediatric Oncology Nursing Excellence) is also located at this site. This program was implemented in 2007 and has trained 16 nurse educators in Central and South America and the Caribbean.
- CHINA:** SJCRH has 2 partner sites in China: Beijing Children's Hospital and Shanghai Children's Medical Center. SJCRH's focus in China is on low and intermediate risk ALL protocols and enhancement of supportive care. SJCRH assists in the support of treatment, meals, and housing for children on protocol that are unable to pay for care at both partner sites and Xijing Hospital in Xian. Results have indicated that treatment of this type of cancer is possible at an affordable cost, and has helped promote an overhaul of treatment standards and governmental support for children with this cancer.
- CENTRAL AMERICA:** Formed in 1996, Central American Pediatric Hematology-Oncology Association or Asociación de Hemato-Oncología Pediátrica de Centro América (AHOPCA) is an alliance of pediatric oncology centers in Central America that began due to collaborations among SJCRH's partner sites. Its purpose is education, implementation of uniform regional treatment regimens, and continuous improvement in the quality of care. It has grown to include 8 centers in 7 countries that treat about 1000 children with newly diagnosed cancer each year. Each pediatric oncology center is supported by a non-profit foundation. As a result of this collaboration, AHOPCA currently has 10 shared treatment regimens that have been adapted for use in the region with support and expertise of SJCRH's faculty and staff. The group has an annual meeting to review protocols in detail and provide education and networking opportunities, and engages throughout the year online via SJCRH's www.Cure4Kids.org with

healthcare professionals, including those from SJCRH (about 5 web-conferences per week for different disease/protocol subgroups). The annual meeting has evolved to also include participation by non-AHOPCA members, demonstrating the growing reach and interest of international pediatric oncology in and among LMIC. Conference sessions consist of multidisciplinary professional groups to discuss activities, outcomes, challenges, and regional efforts in each country to promote pediatric cancer programs. AHOPCA activities have been recognized and supported by international health organizations.³ Via their collaboration, participating sites have achieved a 59.4% 3-year event free survival (EFS) for ALL,⁴ reduction in early mortality in ALL patients, adoption of surgical guidelines for staging and treating solid tumors, reduction in presentation of extra-ocular disease among children with retinoblastoma from 73% to 35% in Honduras, and successful treatment of Wilms Tumor and Hodgkin lymphoma in Nicaragua. Other achievements include reducing treatment abandonment rates to less than 2% in some countries, where previously rates had been as high as 50%.³ Current efforts include alliances with SJCRH and other renowned childhood cancer international organizations to improve outcome evaluation by further developing data management programs at AHOPCA sites. From 2006-2011, SJCRH faculty and staff have written 59 articles and our partner sites' health care professionals have contributed an additional 132 articles in peer-reviewed journals.

- **COSTA RICA:** At Hospital Nacional de Niños in San José, SJ-IOP has provided financial, logistical, and training support for treatment of high-risk malignancies, including continuing education in pediatric hematology-oncology. In 2014, Hospital Nacional de Niños will work with SJ-IOP to develop the nurse educator position at their site.
- **EASTERN MEDITERRANEAN:** Pediatric Oncology Eastern and Mediterranean Group (POEM) began in 2013 after a regional conference hosted by the Children Cancer Center of Lebanon (CCCL) at the American University of Beirut Medical Center (AUBMC), one of SJCRH's partner sites, and SJCRH, at which presenters from 15 countries spoke of patient access, resources, and challenges in their countries. Because significant disparities were noted, participants agreed to form a working group (POEM) in collaboration with SJCRH to improve the standard of care in all children with cancer in the region. With the CCCL serving as the administrative center for this network, POEM consists of 55 pediatric cancer centers from 20 countries (Armenia, Bahrain, Egypt, India, Iraq, Iran, Jordan, Kuwait, KSA, Lebanon, Libya, Morocco, Oman, Pakistan, Palestine, Syria, Tunis, Turkey, UAE, Yemen). POEM has elected Board members representing the different member countries. The group has established bylaws, designed a logo, and is working on establishing a web site. Working groups have been formed with specific tasks aimed at improving access to care and quality of care in the region. 239 members have registered including physicians, nurses, pharmacists, basic researchers, data managers, and trainees. Members have participated in scheduled teleconferences and electronic communications. Regular conferences will rotate among member countries and have so far been largely supported by the AUBMC. This diverse and driven group is unique, and offers great opportunities for St Jude to help in regional twinning and collaborations aiming at building capacity and improving cancer care in the region.
- **ECUADOR:** At Hospital de la Sociedad de Lucha Contra el Cáncer Núcleo in Quito, SJ-IOP has focused its expertise on providing support and continuing education in the treatment of high-risk pediatric malignancies.
- **EL SALVADOR:** Hospital Benjamin Bloom in San Salvador was SJCRH's first partner site in 1993. At the time only about 5% of children with acute lymphoblastic leukemia (ALL), the most common childhood cancer, survived. By 2000, the 4 year event free survival (EFS) increased to 48% using a treatment protocol first developed by St. Jude for use in El Salvador. This protocol

has since been refined and now is shared by several additional Central American countries, including Nicaragua, Costa Rica, Honduras, and Panama. With SJ-IOP's assistance, Hospital Benjamin Bloom successfully established a flow cytometry laboratory. Currently, SJ-IOP is working with team members to enhance brain tumor treatments.

- **GUATEMALA, CENTRAL AMERICA:** SJCRH receives NCI funding to support for a 3 year pediatric hematology/oncology fellowship program at SJCRH's partner site in Guatemala, Unidad de Oncología Pediátrica (UNOP). Rotations include pathology, flow cytometry, and radiotherapy, and 6 months of training at SJCRH and the San Gerardo Hospital in Italy.³ This fellowship program provides a scholarship for Spanish-speaking pediatricians to obtain accredited subspecialty training in pediatric hematology/oncology for working in Latin American countries. As of January 2014, 13 fellows representing five Latin American countries (Dominican Republic, Ecuador, Guatemala, Honduras, Nicaragua, and Panama) had completed the program. All have returned to their respective countries and are working at pediatric oncology centers, and 7 additional fellows from Central America are currently in various stages of training.
- **HAITI:** SJCRH works with St. Damien Children's Hospital, in collaboration with Hospital Infantil Dr. Robert Reid Cabral in Santo Domingo, Dominican Republic, to improve treatment and care of children with cancer in Haiti. SJ-IOP has focused on hematology-oncology training for physicians and other multidisciplinary team members, providing essential cancer medications, and sponsoring treatment for some patients in the Dominican Republic.
- **HONDURAS:** Hospital Escuela Materno Infantil in Tegucigalpa has worked with SJ-IOP experts to develop a nurse educator position, enhance supportive care, and develop satellite clinics throughout the country to reduce treatment abandonment by providing local access to ambulatory care. Through participation in AHOPCA and a concerted effort to improve early diagnosis for retinoblastoma children, Honduras has seen a reduction in presentation of extra-ocular disease among children with retinoblastoma from 73% to 35%. The need for local care in northern Honduras was so great that the first satellite clinic in the second largest city, San Pedro Sula, has created a pediatric oncology unit. SJ-IOP is working with Hospital Mario Catarino Rivas there to improve nursing, infection prevention and control, and pathology.
- **JORDAN:** The King Hussein Cancer Center (KHCC) in Amman has focused on treatment of high-risk malignancies, enhancing clinical and basic science research capabilities, and creating a pediatric hematology/oncology fellowship program. Importantly, the International Joint Commission (JCI) has certified the KHCC since 2006. KHCC patients have access to sophisticated medical care equal to that present in tertiary centers in the US, including outstanding nursing, excellent intensive care, limb salvage, hematologic stem cell transplant, etc. Their published results in peer reviewed journals reflect outcomes that compare very favorably to those reported by major international pediatric oncology groups. They achieve such results by applying evidence-based approaches and rationally modifying therapy to decrease toxicities without compromising patient survival. The KHCC is committed to education and training. It hosts regional visitors on a regular basis offering training in several fields including pediatric hematology oncology, hematopoietic stem cell transplant, nursing, and flow cytometry. In collaboration with St Jude, and under the patronage of HRH Princess Ghida Talal, the KHCC has hosted a Regional Congress of cancer and Blood Diseases of Childhood. This biennial Congress has been held since 2005 in conjunction with the Jordan Society of Pediatric Oncology (JSPO) meeting. SJCRH provides funding for travel and accommodations for keynote speakers during this conference, during which experts from around the world meet in Jordan to learn about the SJCRH experience, including the latest treatment and research trends in pediatric oncology and hematology, and to discuss their current practices of treating childhood cancers.

- **LATIN AMERICA:** Many nurses in LMIC lack access to training and education in basic pediatric oncology care, and providing unspecialized care to children with cancer creates the potential for patient harm, eventually affecting survival rates. Recognizing that its partner sites faced these challenges, SJ-IOP designed and implemented a Nurse Educator Program focused on training nurses in Latin America, providing the new nurse educators with a job description and professional expectations to help them focus on the clinical area and outcomes. The Nurse Educator training center (Latin American Center of Pediatric Oncology Nursing Excellence) opened in 2007 at SJCRH's partner site in Chile. The program includes an onsite 4-week pediatric oncology nursing course in Spanish. To date, 16 nurse educators have been trained, of which 9 are from SJCRH official partner sites and 7 from non-partner sites. Upon completion, nurse educators receive ongoing support and education from their instructors and SJ-IOP nursing staff. Each nurse educator is responsible on providing all site nurses with the specialized pediatric oncology nursing training via nursing orientation program for newly hired nurses, competency training, and continuing education.
- **LATIN AMERICA:** SJCRH's Infectious Diseases Outreach (SJ-ID-IO) designed and implemented an Infection Prevention and Control program for its partner sites. As part of this program, SJ-ID-IO created a training center in Mexico using SJCRH curricula designed to improve outcomes related to toxicity and infection for children undergoing cancer treatment at SJCRH partner sites. Sites implementing this program must select and train a physician and nurse infection preventionist who work collaboratively with the pediatric oncologist and other personnel in the pediatric oncology unit. This program has been implemented in 6 SJCRH partner and collaborating sites in Latin America. The course has trained 190 doctors and nurses serving as infection preventionists and educators in infection prevention and control in Latin America. Better care and prevention of infection and consequently diminishing infections for cancer patients have resulted from this program. Using the Latin American model, a similar program was implemented in at SJCRH's partner site in the Philippines and is currently being at both partner sites in Morocco.
- **LEBANON:** Founded in 2002, the Children Cancer Center of Lebanon (CCCL) at the American University of Beirut Medical Center (AUBMC) has a unique relationship with SJ-IOP, serving as an affiliate site. Programmatic efforts include treating high-risk malignancies, enhancing clinical and basic science research capabilities, a humanitarian program for non-Lebanese displaced children with cancer, and developing a pediatric hematology/oncology fellowship program. The CCCL has quickly become a national and regional referral center and center of excellence in pediatric oncology. Benefiting from strong collaborations with SJCRH, the CCCL has established multiple outreach programs that aim to improve pediatric oncology care both within Lebanon and regionally. Recently, the CCCL has developed national and regional networks aimed at enhancing access to good standards of care for every child with cancer in Lebanon and the region. A few select achievements regarding care of cancer patients include: outcomes comparable to those reported by major international pediatric oncology groups using ALL adapted protocols;¹⁷ an expert limb salvage initiated more than a decade ago by SJCRH; and development of a robust quality of life and palliative care program. The CCCL was also instrumental in founding POEM (Pediatric Oncology Eastern and Mediterranean) group.
- **MEXICO:** SJCRH has three partner sites in Mexico: Hospital Pediátrico de Sinaloa in Culiacan, Hospital Civil de Guadalajara, and Hospital General de Tijuana. SJCRH efforts include establishing and supporting nurse educator positions, commitments to training and continuing education, and improvements in supportive services. Collaborators from Mexico participate in AHOPCA. With an aim of improving supportive care related to infection and toxicity in patients undergoing treatment for cancer, SJCRH's Infectious Diseases Outreach (SJ-ID-IO) team has successfully trained 190 Latin American health care professionals in the St. Jude Infection

Prevention and Control Course, in collaboration with the Mexican Infection Prevention Association and three major health care and academic centers in Mexico.

- **MOROCCO:** SJCRH has two partner sites in Morocco: Hôpital d'Enfants in Rabat and Hôpital 20 Aout 1953 in Casablanca. SJCRH efforts in supporting its Moroccan partner sites have included Hodgkin lymphoma and AML protocol development, as well as enhancement of supportive care. When SJCRH began its international outreach program with Hôpital d'Enfants Rabat in 2000, 43% of children with Hodgkin lymphoma survived. By 2013, the 5-year event free survival (EFS) reached 70% for patients on a locally adapted protocol. Additionally, the rate of abandonment decreased from 50% to 12.5% for patients enrolled on this protocol. To achieve this outcome, investigators implemented a treatment regime in conjunction with SJCRH and two local foundations to provide protocol logistics and patient management via Cure4Kids, funding for patient care, and psychosocial support for patients.
- **PHILLIPINES:** Formerly Davao Medical Center, the Southern Philippines Medical Center (SPMC), a public tertiary regional hospital serving the Mindanao region with over 21 million people, has collaborated with SJ-IOP for programmatic capacity building since 2006. Efforts have focused on training a multidisciplinary team, development of a local ALL protocol, and enhancement of supportive care, including infection prevention and control. Since partnering with SJCRH, the local team has launched a 25-bed Children's Cancer and Blood Diseases Unit (CCBDU) operated by a designated nursing and multidisciplinary team. This is supported by a local dedicated foundation. Treatment roadmaps, assessment forms, and checklists have been collaboratively created, along with disease-specific algorithms to help support timely and appropriate management. Services include a dedicated pediatric infectious disease consultant and infection prevention nurse coordinator, palliative care consultation with a 2-bed inpatient pediatric palliative unit, and a retinoblastoma center with multidisciplinary clinics. With additional funding from community organizations and governmental partners, the team has also established and maintained transient homes that allow families to remain closer to the treatment center, as distance, transportation, financial and logistic challenges often affect patients' ability to return for needed treatment. Families served by the CCBDU also have access to many activities, a parent support program, and a hospital school program (with the University of Southeastern Philippines) tailored to support their psychosocial needs. Finally, the team has established a Mindanao Pediatric Cancer Care Network with active satellite centers involving trained pediatrician program managers and nurse leaders to help improve access to care.
- **VENEZUELA:** SJCRH has two partner sites in Venezuela: Hospital de Niños J.M. de los Rios in Caracas and Hospital de Especialidades Pediatricas in Maracaibo. At both institutions, SJ-IOP has provided financial, logistical, and training support for treatment of high-risk malignancies, including continuing education in pediatric hematology-oncology.
- **WORLDWIDE:** Cure4Kids, a SJCRH-developed web-based tool provided free of charge to registered users that contains educational content and provides web-based tools for collaboration and conferencing among pediatric cancer-care professionals. SJCRH partner sites, in addition to other pediatric oncology professionals worldwide, meet regularly for online meetings via www.Cure4Kids.org, to discuss disease-, site/region-, and project-specific improvements for care and survival, including protocol adaptation to regional resources and need, treatment management plans, and difficult cases. Meetings serve as both technical support as well as education for healthcare professionals at our partner sites. Cure4Kids has over 38,000 users in more than 160 countries, independent nation states, dependencies, and other areas, offers more than 2300 seminars, and has had more than 8 million items viewed or downloaded.

- **WORLDWIDE:** The SJCRH hosts international pediatric oncology professionals via the SJ-IOP's International Visitors Program (IVP). Interested candidates submit an application online via www.Cure4Kids.org and are systematically reviewed and selected based on experience in a pediatric hematology-oncology setting, regional need, and partner site status. Those selected participate in a 2-6 week long observership at SJCRH with mentors in their field. The IVP began informally in the mid-1990s as a mechanism to invite pediatric oncology professionals from LMIC, including physicians, nurses, and supporting personnel, to visit St. Jude to experience the multidisciplinary approach to treating childhood cancer and network with professionals in their fields. The aim was to help bridge the gap in professional knowledge of treating pediatric cancers in LMIC, where there may be very few pediatric oncologists, lack of knowledge to adequately treat pediatric cancers, and limited resources required for relevant treatment. SJCRH hosts roughly between 60-80 visitors per year, and since 1996, more than 1,050 healthcare professionals have participated in the IVP.

Stanford Cancer Institute

Institute-wide activities and consortia

- **WORLDWIDE:** Dr. Robert Haile has been a leader of the International Mismatch Repair Consortium (IMRC), which includes the major groups in the world that conduct research or provide clinical care for families with Lynch Syndrome. This consortium was facilitated by the International Society for Gastrointestinal Hereditary Tumors (InSiGHT). The IMRC includes centers in Africa, Asia, Australasia, Europe, North and South America, all of whom provide clinical care and conduct research on Lynch syndrome families. Collectively, they have over 7,000 families and greater than 17,000 mismatch repair gene mutation carriers with pedigree and screening data. The IMRC plans a number of studies aimed at better understanding the risk of colorectal cancer and other cancers among carriers of a mutation in an MMR gene, with plans to disseminate this information to relevant clinical care providers worldwide.

Investigator-initiated activities

- **CHILE:** Dr. Ann Hsing is collaborating with Catholic University in Santiago on a pilot study to assess the feasibility of a large population-based gallbladder cancer study in Chile. She recently submitted an R01 for a multi-center population-based study in Chile to recruit 3,000 gallbladder cancer cases and 3,000 population controls for a molecular epidemiologic investigation to clarify the role of infections, genetics, gallstones, and obesity in gallbladder cancer in Chile.
- **CHINA:** Dr. Hsing is also collaborating with the Shanghai Cancer Institute on a population-based study of prostate and biliary tract cancers to identify risk factors for these cancers.
- **GHANA:** Dr. Hsing works with collaborators at with the University of Ghana on a prostate cancer screening survey in the Ghana population in order to assess the prostate cancer burden in an unscreened population. The study recruited 1,037 men from Accra, Ghana for DRE and PSA screening. In the clinical component, the study recruited an additional 550 prostate cancer cases and conducted a GWAS to identify novel variants related to prostate cancer in Africans.
- **INDIA:** In addition to the above studies, Dr. Hsing has collaborates with an Indian investigator on a gallbladder cancer study of 1,000 cases and 1,000 controls to investigate the role of infection (chronic carriage of typhoid), genetic, and heavy metal exposure in gallbladder cancer.
- **LATIN AMERICA:** Dr. Robert Haile has been a leader of the Latin American Cancer Epidemiology (LACE) Consortium that includes investigators from Argentina, Brazil, Chile, El

Salvador, Mexico, Puerto Rico, Uruguay, and Spain, plus collaborating scientists from Canada, the UK, and the U.S. The general purpose of LACE is to facilitate genetic epidemiology studies of cancer in Latin America, with an emphasis on genomics-based approaches.

- **SOUTH KOREA:** Dr. Ann Hsing is collaborating with National Seoul University on a case-control study of 4,000 thyroid cancer patients and 4,000 controls, and she plans to submit an R01 in October 2013 for a GWAS with Omini5M (4.3M SNPs). Thyroid cancer is the most common cancer in premenopausal women in Korea.

University of Alabama at Birmingham Comprehensive Cancer Center

Investigator-initiated activities

- **AUSTRALIA:** Dr. Bruce Korf is collaborating with researchers at Children's Hospital at Westmead and the University of Sydney. The Neurofibromatosis NF Clinical Trials Consortium is dedicated to conducting clinical trials to improve the quality of life of persons with neurofibromatosis. Since the discovery of the genes responsible for the different forms of neurofibromatosis, much has been learned about how the various problems associated with neurofibromatosis come about. This opens the door towards development and testing of medications that may be helpful in preventing or treating complications of the disorders. The NF Clinical Trials Consortium was formed in 2006 with funding from the U.S. Army Medical Research and Materiel Command to carry out clinical trials of such medications. The Consortium consists of thirteen clinical centers around the U.S. and an Operations Center at the University of Alabama Birmingham to coordinate consortium activities.
- **BRAZIL:** Dr. Isabel Scarinici is collaborating with investigators from Pontifícia Universidade, Universidade Estadual de Londrina, and the Paraná State Health Department. They have established a [Network for Tobacco Control among Women in Paraná, Brazil](#) with the purpose of establishing community and institutional capacity to promote gender-relevant tobacco control efforts among women through Community-Based Participatory Research (CBPR) and training. The goals of the network are to reduce tobacco use and exposure to environmental tobacco smoke (ETS) among women in Paraná, and to develop a cadre of well-trained researchers who will continue to address comprehensive tobacco control strategies at multiple levels.
- **BRAZIL:** Dr. Isabel Scarinici is conducting a project with Pontifícia Universidade and Amigas da Mama. This project will first explore sociocultural factors associated with breast cancer screening among underserved women 40 years of age and older in the southern region of Brazil (Curitiba) through a theory-based and culturally-relevant qualitative and quantitative approach. The qualitative approach will generate the sociocultural factors associated with breast cancer screening, and the quantitative approach will be used to validate the qualitative findings. This work will be based on their proposed theoretical framework (Health Belief Model), and these qualitative and quantitative findings will guide intervention development and feasibility testing, which will be developed in partnership with the targeted audience. An additional, and very important, goal of this project is to promote capacity building among partners, researchers, and university students in Brazil.
- **BRAZIL and SWITZERLAND:** Dr. Boris Pasche is working with collaborators from the University of Sao Paulo in Brazil and the IT'IS Foundation in Switzerland on treatment of advanced hepatocellular carcinoma with very low levels of amplitude-modulated electromagnetic fields.
- **CANADA, CZECH REPUBLIC, DENMARK, JAPAN and SWEDEN:** Dr. Jan Novak is collaborating with multiple international partners on projects regarding pathways and analyses

of IgA1 O-glycan heterogeneity and analysis of O-glycosylation of IgA1 from patients with multiple myeloma. Dr. Novak's collaborators are at institutes including Aarhus University in Denmark, Lund University in Sweden, University of Toronto in Canada, Palacky University in the Czech Republic, and Fujita Health University and Juntendo University in Japan.

- **CHILE:** Dr. Phillip Smith is working with researchers at Catolica University Medical School investigating the role of gastric inflammation in gastric cancer. H. pylori infection is the major risk factor for gastric cancer in adults (children do not get gastric cancer) throughout the world but especially in the developing world. The group recently showed that H. pylori-infected children have reduced gastric Th1- and Th17-mediated gastric inflammation due to increased numbers of and responses by gastric T-regulatory cells, which down-regulated inflammatory responses, compared to infected adults. They are now investigating whether differences in the gastric microbiota in children versus adults contribute to the increased T-regulatory responses in children, especially H. pylori-infected children.
- **FINLAND:** Dr. Katri Selander works with researchers at Finnish institutes University of Turku, University of Oulu, University of Eastern Finland and Central Hospital of Lapland. The main focus of their studies has been to investigate the role of Toll like-receptor-9 in the pathophysiology of cancer. Through this collaboration they have been able to utilize Finnish cancer specimens, with the associated clinical data. In addition, scientists and students from Finnish institutions have done rotations in Dr. Selander's lab during the past 6 years.
- **GERMANY and UNITED KINGDOM:** Dr. Jan Novak is conducting analyses of urinary peptide biomarkers of various diseases with collaborators from the University of Hanover, Germany and University of Glasgow, UK.
- **GHANA:** Dr. Chandrika Piyathilake is working with St. Markus Hospital and Kwame Nkrumah University of Science and Technology. Micronutrient deficiencies occur commonly in people infected with the human immunodeficiency virus. Since aflatoxin exposure also results in reduced levels of several micronutrients, HIV and aflatoxin may work synergistically to increase micronutrient deficiencies. However, there has been no report on the association between aflatoxin exposure and micronutrient deficiencies in HIV-infected people. Dr. Piyathilake and colleagues measured aflatoxin B1 albumin (AF-ALB) adduct levels and vitamins A and E concentrations in the plasma of HIV-positive and HIV-negative Ghanaians and examined the association of vitamins A and E with HIV status, aflatoxin levels and hepatitis B virus (HBV) infection.
- **ICELAND:** Drs. William Grizzle and Boris Pasche are working with DeCode Genetics in Iceland. DeCode has enlisted the majority of the Icelandic population to study risk factors in the major cancers. DeCode approached Dr. Pasche about confirming some of their identified risk factors in a racially mixed population and the Tissue Collection and Banking Facility, with the support of the Comprehensive Cancer Center, selected pancreatic cancer as the first tumor category on which to work. This effort also was [supported by the Pancreatic SPORE](#) and the Cooperative Human Tissue Network CHTN.
- **ISRAEL and ITALY:** Dr. Ralph Sanderson is collaborating with Ronzoni Institute in Italy and Technion in Israel on an NCI-funded project, [Novel Heparanase Inhibitors for Cancer Therapy](#). This R01 is designed to develop novel inhibitors of heparanase using chemically modified heparins for treatment of multiple myeloma and possibly other cancers. Other ongoing projects with Technion in Israel are designed to better understand the role of heparanase in cancer and to also develop and test novel inhibitors. Dr. Sanderson and colleagues are using various tumor models and testing multiple therapeutic approaches including small molecule inhibitors and monoclonal antibodies to heparanase.

University of Arizona Cancer Center

Related Links: [University of Arizona Mel and Enid Zuckerman College of Public Health Global Health Institute](#)

Institute-wide activities and consortia

- **AUSTRIA, NICARAGUA and KOREA:** Selected global research within the Global Health Institute (housed at the Mel and Enid Zuckerman College of Public Health – MEZCOPH) focused on cancer includes a 2005 project in Austria regarding a “Programme of Action for Cancer,” a 2004 project in Nicaragua studying the “Health Needs and Community Demand for Improved Screening Services” and a 2009-2010 project in Korea using cancer tissue arrays to “examine causes and mechanisms of gastric cancer.”
- **HAITI:** Public Health students interested in Global Health can join the [Global Health Alliance](#), a student-led organization focused on enhancing public health functions in a global context. This club is currently focusing on public health relief efforts in Haiti.
- **IRAQ:** Established in 2007, the Skin Cancer Institute has assisted with skin cancer screenings of the United States Embassy in Baghdad, Iraq, and partner with institutions in Australia, another country with a high incidence of skin cancer, to conduct international research on skin cancer and skin cancer prevention.
- **MEXICO:** The College of Medicine hosted the “[Bridging the Gap](#)” conference in October 2012. This conference was held in collaboration with the Universidad de Sonora, Hermosillo, Mexico, as well as the Sociedad Estudiantil de Medicina. Over several days, American and Mexican students and medical professions met to network and discuss healthcare issues affecting both sides of the border.
- **MEXICO:** The University of Arizona Cancer Center (UACC), in collaboration with the MD Anderson Cancer Center in Texas, the Universidad de Sonora, Mexico, and the Universidad de Guadalajara, Mexico, has conducted a study looking for breast cancer risk factors in Mexican women, Mexican-American women, and African-American women. This study is registered with [clinicaltrials.gov](#) under identifier [NCT00837499](#).
- **PACIFIC REGION:** The Skin Cancer Institute participates in the Pan Pacific Skin Cancer Consortium, a coalition between Arizona and Queensland, Australia, developed to address skin cancer health issues through research collaborations utilizing the latest technologies and approaches, developing new proof-of-concept studies to address the burden of illnesses skin cancer causes in both the United States and Australia, and to develop standard practices and resource-sharing for human skin cancer biospecimens. The group has developed research around common interests and mutual need by establishing five working groups: 1) Epidemiology and Behavioral Working Group, 2) Telemedicine Working Group, 3) Chemoprevention Working Group, 4) Translational (renamed internally as the ‘Omics’) Working Group, and the 5) Registry and Tissue Banking Working Group. Future work includes the development of a sustainable infrastructure and the establishment of a fellowship program to fund research by students and investigators at a sister institution.
- **UNITED STATES (NATIVE AMERICAN POPULATION):** The [Native American Cancer Prevention \(NACP\) program](#) funds research, jointly developed by both the UA and Northern Arizona University that seeks to solve cancer questions specific to the Native American populations, specifically the Hopi, Navajo and Tohono O’odham ([CA143924](#) and [CA143925](#)). Programs developed embody the concept of community based participatory research (CBRP),

in that they are “designed to facilitate the entry of Native Americans into biomedical research and healthcare professions while engaging communities in research and training relevant to their needs.” The NACP also funds a [community outreach program](#) in cervical cancer prevention to the Native American populations. This program is focused in developing collaborations and culturally-appropriate cancer prevention and control programs through the use of a tribal liaison and community advisory board to identify research priorities, prepare educational materials and deliver evidence-based cancer prevention programs.

- **WORLDWIDE:** UACC has a [Global Health Unit](#) within the College of Medicine. Four UACC members from the Cancer Prevention program are involved with this unit: Drs. Oscar Beita, Doug Campos-Outcalt, Myra Muramoto, and Doug Taren.
- **WORLDWIDE:** The Department of Pediatrics offers a [residency in pediatric global health](#), whose goal is to “provide residents with education here in Tucson as well as through international rotations”
- **WORLDWIDE:** Medical students have the option of completing the Border-Indigenous-Global (B.I.G.) Health Program, housed within the Office of Medical Student Education. Throughout their four years of medical school, students in this program take courses and are mentored with health professionals who work along the border, reservation lands and abroad.
- **WORLDWIDE:** University of Arizona is engaged in extensive international training and mentoring. In 2008 – 2009 they hosted over 2,000 international students and scholars with many receiving financial support. In 2009 they had over 1,000 outbound study abroad students.

Investigator-initiated activities

- **AUSTRALIA:** Lois Loescher, PhD, Cancer Center member in Cancer Prevention, has been a collaborator and co-investigator on a skin cancer early detection international program of research since 2010. This program evolved from the Pan-Pacific Skin Cancer Consortium (PPSCC, described above). Her work involves international collaborations with Australia to study mobile teledermoscopy as a technology for 1) improving primary care providers’ skin cancer early detection skills and 2) enhancing skin self-examination in melanoma high-risk consumers.
- **AUSTRALIA:** Daniela Zarnescu, PhD, and Joyce Schroeder, PhD, Cancer Center members in Cancer Biology, work on the role of polarity as a tumor suppressor with a collaborator in Australia, Helena Richardson (Peter MacCallum Cancer Center, Melbourne, Victoria Australia). The Zarnescu and Richardson labs work in the model organism *Drosophila*, and have expertise in polarity and stem cells. The Schroeder lab works in human cell lines and mouse models and has expertise in breast cancer progression.
- **BRAZIL:** Vince Guerriero, PhD, Cancer Center member in Cancer Biology, has been collaborating with Cristina Bonorino (Laboratory of Cellular and Molecular Immunology, Biomedical Research Institute (IPB), Pontifícia Universidade Católica do Rio Grande do Sul, Porto Alegre, Brazil) for approximately 6 years. Their labs share a common interest in heat stress proteins and cancer but have used different approaches to study this area of common interest. The Guerriero lab has discovered a novel stress protein, HspBP1, that plays a role in tumor growth and the current hypothesis is that this protein act though the immune system of the host.
- **CANADA:** David Harris, PhD, Cancer Center member in Cancer Biology, collaborates with Dr. Ian Rogers in Toronto on a NIH grant studying epigenetics in the immune systems of humanized mouse models.

- **EGYPT and MIDDLE EAST:** Iman Hakim, MBBCh, PhD, MPH, Cancer Center member in Cancer Prevention and Professor of Public Health and Dean of the College of Public Health, has research focused in cancer prevention through dietary modification and tea consumption. Much of her work has been focused in the Middle East, specifically Egypt.
- **INDIA and INDONESIA:** Mark Nichter, PhD, MPH, Cancer Center member in Cancer Prevention and Professor of Anthropology, teaches one of the undergraduate courses in global health through the Department of Anthropology. He has also written a book through UA Press titled, "[Global Health: Why Cultural Perceptions, Social Representations, and Biopolitics Matter](#)". Dr. Nichter's work includes collaborations with institutions in Indonesia and India to [end tobacco use](#).
- **LATIN AMERICA:** Members of the Cancer Prevention and Control program have also participated in clinical trials focused on global health. Past member, Maria Elena Martinez, PhD, represented the University of Arizona Cancer Center in the multi-center, randomized trial of therapies for *H. pylori* infections in Latin America.
- **MEXICO:** A. Jay Gandolfi, PhD, and Bernard Futscher, PhD, Cancer Center members in Cancer Biology and Therapeutic Development, respectively, have long-standing funding to study the effects of arsenic on the human body in the Southwestern United States and Mexican populations. Current funding under an [NIEHS Superfund Component Project](#) focuses on the effect of arsenic on inducing malignant transformation of human bladder cancer. Additional international work on the effect of arsenic has been conducted by members of the Cancer Prevention Program. Most recently, results of the Bi-national Arsenic Exposure Studies (BAES) were jointly published by the University of Arizona and two universities in Sonora, Mexico. This project was funded through the [Gastrointestinal Cancer SPORE](#).
- **WORLDWIDE:** Raymond Runyan, PhD, Cancer Center member in Cancer Biology, was funded for the "[5th International Conference on Epithelial Mesenchymal Transition](#)". A similar grant pending review is designed to fund travel by several junior faculty from the USA to present at the TEMTIA (The Epithelial to Mesenchymal Transition International Association) meeting in Alicante, Spain. The objectives of the meeting are to 1) Bring together investigators in the separate disciplines of cancer, pathology and development to discuss their observations on EMT and explore whether there is a consensus on important components of the process; 2) Provide a forum where students and junior investigators can interact with senior investigators and display their own work and ideas in the field; and 3) Expand a viable co-operative cross-disciplinary forum of EMT-related researchers internationally. This will continue to provide a worldwide network for exchange of expertise, reagents and techniques across disciplines. Dr. Runyan hosted the meeting in Tucson, Arizona in 1999 and other meetings have been held in Australia, Canada, Poland, and Singapore.

University of California Davis Cancer Center

Institute-wide activities and consortia

- **CHINA and UNITED KINGDOM:** Dr. Kenneth W. Kizer is Director of the Institute for Population Health Improvement at UC Davis, which provides technical assistance and leadership on population health improvement. Dr. Kizer presented to the Chinese Academy of Social Sciences in Beijing and, on a different occasion, to a meeting of the National Development and Reform Commission in Chengdu about transforming China's public hospital systems. Dr. Kizer also presented to the International Integrated Care Summit hosted by The King's Fund in London and to various leadership groups of the UK's National Health Service

about quality improvement. He also has hosted meetings in California of groups from China and Jordan and individuals from multiple countries.

- **CHINA:** Dr. Fuli Wang, Associate Professor and Associate Chief Physician, Department of Urology, Xijing Hospital in Xi'an P.R. China, has recently arrived at the UC Davis Comprehensive Cancer Center for a one year sabbatical to work in our bladder cancer research labs to establish collaborations for clinical research between the two institutions.
- **TAIWAN:** Hsing-Jien Kung leads the National Health Research Institute to help develop global health research, including a variety of cancers, vaccines, biotechnology etc. He is Distinguished Chair and Professor at Taipei Medical University. Fu-Tong Liu is at Academia Sinica, Taiwan's most prestigious academic institution, and develops research into inflammation and cancers themes in both Taiwan and UC Davis. Academia Sinica and UC Davis have formal ties and faculty exchanges are routine. Dr. Kung was Deputy Director and Associate Director for Basic Science at the UC Davis Comprehensive Cancer Center from 1998-2013. He still remains on emeriti status and holds laboratory space and funded NIH projects at the UC Davis Comprehensive Cancer Center.

Investigator-initiated activities

- **IRELAND:** Dr. Ralph de Vere White conducts research in the areas of prostate and bladder cancer. His primary research focus has been on the role of p53 and miRNA in castration resistant prostate cancer. Dr. de Vere White is a consultant to the All-Ireland National Cancer Institute.

University of California San Diego Moores Cancer Center

Institute-wide activities and consortia

- **CHILE:** University of California, San Diego (UCSD) Moores Cancer Center (MCC) has an institutional collaboration with the National University of Chile in Santiago, Chile. As part of this institutional collaboration, UCSD organized a Workshop on Cancer Research and Treatment with the Instituto de Ciencias, the Universidad de Chile and sponsored by the MECESUP-STIPAS Project of the Ministry of Education, Chile. The workshop's two goals were (1) exchanging scientific findings and ideas between Chilean and UCSD cancer researchers and (2) paving the way for productive future interactions and research collaborations.
- **CHILE:** As part of the institutional collaboration with University of Chile, a joint grant was submitted proposing the development of a solution that would allow in a single assay: (1) to increase sensitivity in the detection of mutations in the cells of the tumor; (2) to detect mutations in all the genes significant for oncology; (3) to detect novel and known mutations; and (4) to develop the methodology at reduced cost. The researchers propose to transfer the technological know-how necessary for the implementation and use of this methodology to their counterparts in Chile. The study will focus on the group of patients suffering from metastatic and/or recurrent breast cancer, since these tumor types display a large number of mutations in many genes. In these patients, they aim to identify with high sensitivity the presence of all the mutations -novels or known- in 41 genes of interest in oncology (informative about prognosis and treatment response in cancer and patients pharmacogenomics characteristics). This methodology will allow the adequate diagnosis and the rational indication of targeted therapies in cancer patients, resulting in a maximization of patient benefits and treatment success, avoiding the use on oncologic treatments with low chances of success.

- **CHINA:** UCSD MCC has an institutional collaboration with Sun Yat-Sen University in Guangzhou, China to study hepatocellular carcinoma (HCC). An HCC biomarker project with single cell analysis has been submitted to UCSD IRB. Better ways to diagnosis HCC are needed since those currently available are not always able to detect cancers and are not always correct when making the final diagnosis. Fine-needle aspiration (FNA) is low risk procedure where the liver or a mass in the liver can be directly sampled and more reliably provide the correct diagnosis. The aim of this study is to develop FNA as a diagnostic tool in HCC. Samples obtained by FNA will be used to test whether we can detect HCC by new molecular methods. The study's specific aims are: (1) to test whether FNA can be used in conjunction with the profiles established in Aim 2 to readily make the diagnosis of HCC; (2) to compare the genetic and metabolic profile of tissue obtained from non-HCC and HCC by ultra-deep sequencing, microarray, metabolomics and other novel molecular biology tools; and (3) to correlate findings from HCC tissue in identifying HCC sub-types which may relate to prognosis, guide therapy or may be more responsive to small molecules.

Investigator-initiated activities

- **CHILE:** Dr. Dwayne Stupack has established a continuing collaboration with the labs of Dr. Vicente Torres, Dr. Andrew Quest and Dr. Lisette Leyton that focuses on cell migration. Dr. Torres is a former postdoctoral fellow of Dr. Stupack's who is now a faculty member in Santiago.
- **CHINA:** Dr. Xiang-Dong Fu is involved in biomedical research activities in China at three levels: (1) serving as a reviewer for large-scale projects; (2) serving as a mentor to junior investigators; and (3) directing a research laboratory with Chinese collaborators to study RNA biology at the Wuhan University as a visiting Professor. Dr. Fu's lab is part of two program projects, one focusing on the regulation of RNA processing (PI: Dr. Lianghu Qu of Sun Yat-Sen University) and the other on the role of microRNAs that link inflammation to cancer (PI: Anling Lin of Shanghai Institute of Biochemistry and Cell Biology), supported by the Ministry of Science and Technology of China.
- **CHINA:** Dr. Yang Xu has recently established a collaboration with the Guangdong Academy of Chinese Medical Sciences to develop a program that employs iPSCs (induced pluripotent stem cells) and a humanized mouse model to study hepatitis B-induced liver cancer. This work is supported by the Guangdong government and the Ministry of Science and Technology of China.
- **CHINA:** Dr. Kun-Liang Guan directs a joint laboratory with Dr. Yue Xiong and two other Chinese faculty members at the Fudan University School of Medicine in Shanghai, China. The research focus of this joint laboratory is cancer metabolism. In particular, this laboratory studies the molecular mechanism of tumor promotion by the mutated isocitrate dehydrogenase (IDH). This joint study on cancer metabolism is supported by the Chinese National Science Foundation and the Ministry of Science and Technology, as well as the NIH, USA.
- **CHINA:** Dr. Dwayne Stupack has a continuing collaboration with the lab of Dr. Rong Xiang at the Nankai Medical School in Tianjin. Dr. Stupack's Group and Dr. Xiang's group are examining the roles played by the tumor microenvironment in shaping tumor progression.

University of California at San Francisco Helen Diller Family Comprehensive Cancer Center

Investigator-initiated activities

- **ARGENTINA:** Dr. Eliseo Pérez-Stable is a Professor and Chief of the Division of General Internal Medicine and has a R01 grant (5R01DA024877) from the Fogarty International Center/NIDA to strengthen capacity in tobacco control research and implement projects in Argentina, called *Tobacco Control Research and Training in South America*.
- **INDIA:** Dr. Joel Palefsky has two trials in India that are coordinated by the AIDS Malignancy Consortium; [Incidence Of HPV Among Indian Men Who Have Sex With Men](#) and [HPV-Related Neoplasia Among HIV-Seropositive Indian Men Who Have Sex With Men](#).
- **TANZANIA:** Dr. Robert A. Hiatt is professor and Chair of the UCSF Department of Epidemiology & Biostatistics and Associate Director of the Cancer Center's Population Science program. He is collaborating with Dr. Katherine van Loon, an Associate Member in GI Oncology, and partners at the Muhimbili University of Health and Allied Sciences (MUHAS) in Dar es Salaam, Tanzania to develop a Population-Based Cancer Registry [P30 A1027763 Van Loon, K.]. Dr. Paul Volberding, a professor and Vice Chair of the UCSF Department of Medicine, is supporting this project through his leadership of the Center for AIDS Research (CFAR) and NCI supplemental funding of the [UCSF-GIVI CFAR](#).
- **TANZANIA:** Dr. Hiatt is also leading a second project with Dr. van Loon, which is an NCI supported Study of Etiology of Esophageal Cancer in Tanzania (SEEC-Tanzania). This epidemiologic project, also working with partners at MUHAS and the Ocean Road Cancer Institute, includes a descriptive study using existing cancer registry data and a case-control study of esophageal cancer in Dar es Salaam focused on the etiology of this cancer in East Africa.
- **UGANDA:** Dr. Jeffrey Martin, has a capacity building program at the Infectious Diseases Institute in Kampala, Uganda entitled [Uganda-UCSF Research Training in HIV-malignancies](#) which aims to build a multidisciplinary research team that is capable of improving early Kaposi Sarcoma diagnosis and researching the epidemiology, clinical course and treatment of KS. Dr. Martin also conducted a study on regression of KS caused by highly active antiretroviral therapy (HAART) called [Antiretroviral Therapy of AIDS-Related Kaposi's Sarcoma in Africa](#).

The University of Chicago Comprehensive Cancer Center

Institute-wide activities and consortia

- **AFRICA:** The University of Chicago Center for Global Health works with community-based organizations across Africa to facilitate advocacy, cancer research and training, and to provide relevant and accurate information on the prevention, early diagnosis, treatment, and palliative care of cancer, increase public awareness of cancer, and reduce the stigma associated with the disease. This work is done in collaboration with the African Organization for Research and Training in Cancer (AORTIC), The University of Ibadan, Nigeria and the University of Capetown, South Africa.
- **AFRICA:** The University of Chicago Center for Global Health through the support of a Fogarty International Center NIH D43 training grant launched the African Cancer Leaders Institute (ACLI), a program designed to develop the next generation of leaders in clinical practice, cancer research, training and policy in Africa. ACLI aims to foster leadership and professional development through ongoing workshops, satellite meetings, and exchanges. This is a collaborative effort with AORTIC and the University of Pennsylvania with support from American Society of Oncology (ASCO) and the NIH.

- **CHINA:** The Wuhan University Medical Education Reform (WUMER) Project is a University of Chicago-wide initiative started in 2008 to provide assistance to Wuhan University for comprehensive reform of their medical education curriculum and methodology, with a special emphasis on infectious disease and public health. Dr. Eugene Chang, a member of the University of Chicago Medicine Comprehensive Cancer Center, is an active participant.
- **MALAWI:** In Malawi, the University of Chicago conducts training in dermatologic disorders and hosts an albinism clinic where screening and counseling for prevention of skin cancer is offered with Kamuzu Central Hospital Skin Clinic.

Investigator-initiated activities

- **BANGLADESH:** Dr. Habibul Ahsan is PI of the Health Effects of Arsenic Longitudinal Study [HEALS]. Dr. Ahsan directs a prospective cohort study of ~30,000 men and women in Bangladesh to investigate the intermediate- and long-term pre-malignant, malignant and non-malignant health effects of environmental arsenic exposure from drinking water.
- **BANGLADESH:** Dr. Ahsan is also PI of the Genetic Susceptibility to Arsenic-induced Skin Cancer project in which he directs a series of nested case-control and case-cohort studies to investigate the gene-environment interactions in arsenic-induced pre-malignant and malignant skin lesions among 3,000 cases and controls.
- **BANGLADESH:** As PI of the Bangladesh vitamin E and Selenium Trial (BEST), Dr. Ahsan directs a randomized placebo-controlled 2x2 factorial clinical trial of selenium and vitamin E supplementation among 7,000 individuals with pre-malignant skin lesions for the prevention of cancers and deaths.
- **BANGLADESH:** By efficient sampling from HEALS and BEST cohorts Dr. Ahsan is leading a large-scale genomic study called the Gene Environment Multi-phenotype Studies (GEMS) to integrate variations in SNPs, gene expression and DNA methylation across the genome to comprehensively evaluate their independent and joint effects on a range of clinical and molecular phenotypes among 6,000 well-characterized Bangladeshi individuals.
- **BANGLADESH:** Dr. Brandon Pierce directs a study of the effects of arsenic exposure on telomere length, a biomarker of aging and cancer risk, in the context of an arsenic-exposed Bangladeshi cohort. Using a nested case-control design, Dr. Pierce is also assessing the association of telomere-related biomarkers with arsenic-related health outcomes, such as skin lesions, non-melanoma skin cancer, and overall mortality.
- **CAMEROON and UGANDA:** Dr. Dezheng Huo is conducting an epidemiologic study of breast cancer in Kampala, Uganda and Yaounde, Cameroon, to research the genetic and non-genetic risk factors for breast cancer in women of African descent. The goal of the project is to understand the molecular mechanisms underlying aggressive behavior of breast cancer in underserved populations, and specifically to understand the complex roles of pathogens, chronic inflammation and dysregulated immune pathways in breast cancer etiology and progression.
- **CHINA:** Dr. Chuan He holds an adjunct position as the Director of Synthetic and Functional Biomolecules Center at Peking (Beijing) University. In addition, he serves as a member of the advisory Life Science Committee at Peking University that oversees life science research on campus as well as six affiliated hospitals, including a hospital specializing in cancer treatment.

- **CHINA:** Dr. Yusuke Nakamura is working with Dr. Jia -Fu Ji at the Beijing University investigating the involvement of tumor infiltrating T lymphocytes in the clinical response of neoadjuvant treatment for gastric cancer.
- **GHANA:** With help from AORTIC, Dr. Dezheng Huo is working with Dr. Verna Vanderpuye in Ghana to conduct a survey of breast cancer treatment in Ghana.
- **JAPAN:** Dr. Yusuke Nakamura is investigating genetic factors associated with chemotherapy-induced hair loss researching in collaboration with a group from the BioBank Japan Project, including Dr. Michaiki Kubo.
- **JAPAN:** Dr. Yusuke Nakamura is collaborating with Drs. Yataro Daigo and Tomoaki Fujioka at the University of Tokyo to analyze the immune responses in patients who were treated with cancer peptide vaccines.
- **NIGERIA:** Dr. Sola Olopade's research examines the effect of indoor exposure to smoke from burning low-grade fuels on the health of women and children in Nigeria. Household Air Pollution (HAP) is responsible for almost 3% of illness globally and an estimated 4 million deaths per year, with nearly 1.2 million deaths among children under 5. Many of these deaths are in Africa. Within Nigeria, it is estimated that more than 90 million people and 70% of the rural population use solid fuels for household energy, exposing them to large concentrations of toxins emitted from biomass combustion. With funding from the Global Alliance for Clean Cookstoves, Dr. Sola Olopade and collaborators in Nigeria are studying the health effects of indoor pollution including epigenetics changes and risks associated with cancer.
- **NIGERIA and WEST AFRICA:** Dr. Funmi Olopade is building on the University of Chicago's strengths in cancer and genomics to better understand the extent and manifestations of cancer globally. Dr. Olopade researches breast cancer genetics with a focus on women of African ancestry (both in Africa and in the United States), whose breast cancer genetics and are often significantly different from Caucasian women and frequently respond poorly to standard therapies. Dr. Olopade also teaches frequently in Nigeria and has been conducting cancer epidemiology and prevention studies in Nigeria and the West African region. Drs. Olopade and Dezheng Huo are conducting a genome-wide association study of breast cancer in women of African ancestry. In addition, Drs. Olopade and Huo are conducting a whole genome sequencing project of breast cancer in Nigeria.
- **TAIWAN:** Dr. Brian Chiu is the PI of the AsiaLymph Taiwan Center, part of the NCI's multi-center international hospital-based case-control study of lymphoma in Asia (AsiaLymph). The goal is to evaluate the etiology of lymphoma in Asia. The main focus of the AsiaLymph is on environmental and chemical exposures, viral exposures, and genetic susceptibility with central pathology review to characterize effects by histologic subtypes. Dr. Chiu has been also actively involved in NCI-supported epidemiology consortia: the International Lymphoma Epidemiology Consortium (InterLymph) and the International Multiple Myeloma Consortium (IMMC), including serving as the Co-Leader of the Diet and Lifestyle Working Group, Leader of the Lifestyle and Environment Working Group, and Chair of the IMMC Coordinating Committee. A major goal of InterLymph and IMMC is to facilitate pooling of data from epidemiologic studies to investigate lifestyle, environmental, familial, and genetic factors for risk of NHL and MM.
- **TANZANIA:** Dr. Stanley Liauw, a radiation oncologist, is participating in a project led by the small non-profit organization Radiating Hope to establish best practices for cancer screening and therapy and build a cancer center in the city of Moshi.

University of Colorado Cancer Center

The University of Colorado Cancer Center established the International Program in 2011 with the goal of formalizing and building upon the Cancer Center's existing international relationships. The program includes scientific and educational exchanges and collaborations among identified international academic partners.

Institute-wide activities and consortia

- **TAIWAN:** In 2012, the CU Cancer Center formalized a Memorandum of Understanding with the National University of Taiwan for research and educational collaborations, and the first annual joint scientific seminar was held in December 2012 in Denver, Colorado. Cancer specific collaborative projects are under development, particularly in the area of lung cancer as the first step. The International Program is investigating formal partnerships with selected academic institutions in Europe and South America, which the CU Cancer Center hopes to finalize in 2014.
- **BRAZIL:** A fellowship exchange program has been initiated with an academic institution in Brazil, Hospital de Clinicas de Porte Alegre. We have also signed an MOU with the Brazilian Urological Society and the National Cancer Department to initiate collaboration and exchange.
- **WORLDWIDE:** The CU Cancer Center International Program is also planning to initiate 2-4 days Multidisciplinary International Master classes in 2014 in particular areas of expertise within the Cancer Center, e.g. Lung Cancer, Bladder Cancer, Phase I Clinical Programs. The first International Course in Denver under this Program is planned for February 17-21 in urology in collaboration with the Brazilian Cancer Society.

University of Hawaii Cancer Center

Investigator-initiated activities

- **CHINA:** Dr. Adrian Franke led NCI-funded cooperative research on biomarker discovery for breast cancer and prostate cancer in the Chinese population, along with many investigators from the Shanghai Women's and Men's Health Studies.
- **TURKEY:** A research team led by Dr. Michele Carbone, Director of University of Hawaii Cancer Center, has been conducting research on a mesothelioma epidemic in some Turkish villages in Cappadocia and in some families in the US. This research is sponsored by NCI project awards entitled [Pathogenesis of Mesothelioma](#) and [Gene Environment Interactions in Mesothelioma](#). In 2008 Dr. Carbone's research team was awarded the AACR-Landon Innovator Award for International Collaboration in Cancer Research. Studies conducted by this research team in Cappadocia and in the US revealed that the mesothelioma epidemic in Cappadocia was linked to air concentrations of erionite in different villagers, these allowed Turkish authority to plan the construction of two new villages in erionite free areas where the population was relocated. They also uncovered erionite exposure in North Dakota, where air concentrations of erionite were found to be as high as in Cappadocia villages where 6.5% of the population dies of mesothelioma. These findings have already led the North Dakota government to implement preventive measures to reduce erionite exposure, to prevent a possible new wave of mesothelioma.

University of Kansas Cancer Center

Investigator-initiated activities

- **BRAZIL:** Kimber Richter, PhD, along with Ana Paula Cupertino, PhD, head up an R03 from NHLBI that focuses on treating tobacco dependence among patients with diabetes, hypertension, and renal failure in Brazil. This has led to a number of collaborations on manuscripts focusing on drug treatment. In addition, data collection on a population-based survey of patients with chronic diseases has just been submitted for publication. This will yield the first data on tobacco use among people with chronic diseases in South America.
- **BRAZIL:** In partnership with Dr. Isabel Scarinc (PI), a Brazilian researcher at the University of Alabama, Ana Paula Cupertino, PhD, is principal investigator for a sub-contract to develop and implement a smoking cessation community health work intervention for Brazilian women who are light smokers (NIH-R01 TW009272: Network for Tobacco Control among Women in Paraná, Brazil – II). In this project, Cupertino will bring her expertise in implementing a tobacco control curriculum for health care providers and researchers in the U.S. to the health care system in Brazil. As a principal investigator of the sub-contract on the proposed study, Cupertino will oversee the implementation of a culturally-sensitive randomized clinical trial tailored to Brazilian smokers. This project will work closely with community health workers and research staff in all study activities, including material development, training protocol, training activities, and study supervision.
- **BRAZIL:** Kimber Richter, PhD is Special Visiting Professor at the Federal University of Juiz de Fora (UFJF). This is a 3-year program from Brazil's "Science Without Frontiers" initiative that funds intensive research exchanges between research teams within Brazil and senior investigators abroad. The collaboration will occur between Richter at KUMC and Dr. Telmo Ronzani's research team at the Federal University of Juiz de Fora, Minas Gerais. The project will replicate and evaluate KUMC's UKanQuit hospital tobacco treatment service in a Brazilian academic medical center. The project also funds student training and KUMC-UFJF research exchange.
- **CANADA:** Scott Weir, PharmD, PhD organized a collaboration through the Leukemia & Lymphoma Society for a clinical proof of concept trial conducted with Dr. Aaron Schimmer at The Ontario Cancer Institute in Toronto and the University of British Columbia Cancer Center in Vancouver. The clinical proof of concept trial, conducted in collaboration with the Ontario Cancer Institute, University of British Columbia Cancer Center, and The Leukemia and Lymphoma Society, evaluating oral ciclopirox olamine as a treatment for acute myeloid leukemia, was completed. KUCC provided drug development, regulatory science, and clinical pharmacology support for this drug repurposing trial conducted in Toronto and Vancouver. Clinical and translational research efforts culminated in a manuscript accepted for publication in the American Journal of Hematology (Minden, MD et al. 2013 Nov 25. doi: 10.1002/ajh.23640).
- **CHINA:** Since 2006, Liang Xu, MD, PhD has collaborated with Daocheng Wu, PhD, Professor, Director, Center for Biomaterials and Nanotechnology, School of Life Science and Technology, The Key Laboratory of Biomedical Information Engineering of Ministry of Education, Xi'an Jiaotong University, Shaanxi, China. The two labs have been collaborating on the tumor-targeted delivery of molecular cancer therapeutics using novel nanotechnology. Multiple US and International Patents are issued or pending, with a series of joint publications. Currently, Xu and his team are using this patented nanovector for tumor-targeted delivery of siRNA/miRNA-based therapeutics and novel small-molecule therapeutics. Xu is also working on the next generation nanovectors for targeting cancer stem cells.
- **CHINA:** Qi Chen, PhD and Jeanne Drisko, MD have been collaborating with Dr. Ping Chen, Associate Professor at the Xi'an Jiaotong University School of Medicine in China. The

collaborating work on a novel suppressor gene, PDSS2, has resulted in a publication in the journal of Cancer Epidemiology in 2013 (37:166-171). A second paper on this gene is currently under revision of the journal AntiCancer Drugs. Additionally, Chen and Drisko are collaborating with The Third Affiliated Hospital of Sun Yat-Sen University in China for potential clinical research on hepatocellular carcinoma. Dr. Hua Li from the Sun Yat-Sen University was a visiting scholar at The University of Kansas Medical Center for a year. In the summer of 2014, Chen and Drisko will visit the collaborating hospital to further discuss initiation of a possible clinical trial with intravenous ascorbate.

- **COSTA RICA:** In 2012, with partners from the University of Costa Rica (UCR – School of Mass Communications and School of Public Health), Mugur Geana, MD, PhD, launched a joint program for capacity building at UCR to conduct Community Based Participatory Research. The development of this local resource will allow Geana's teams to address community research and interventions on a diverse spectrum, from infectious diseases to cancer. The project is funded by the Costa Rica - USA Friendship Foundation through the International Programs Offices of KU and UCR (PI: Geana). Researchers from KU (School of Journalism and Mass Communications) and KUMC (Department of Family Medicine - Research Division) collaborate on this project.
- **COSTA RICA:** Kimber Richter, PhD, Ana Paula Cupertino, PhD, and Theresa Shireman, PhD, RPh collaborated with MPH student Angela Leon Salas to publish the results of a survey of Costa Rican Pharmacists regarding their attitudes about tobacco treatment. Although few pharmacists actively intervened with their patients' tobacco use, they were interested in learning more about their role in tobacco treatment. Leon Salas has since returned to Costa Rica to take up a faculty post at the University of Costa Rica and will continue to collaborate with the KUMC Department of Preventive Medicine and Public Health in the future.
- **EUROPE:** Amit Rastogi, MD, participated in a multicenter randomized controlled trial comparing Third Eye Colonoscopy and standard colonoscopy for the detection of adenomas. Colonoscopy can miss adenomas that can then grow on to become colon cancer. Therefore efforts to improve the efficacy of colonoscopy in detecting adenomas are an active area of research. This study was conducted in four European and five US centers. The final results showed that third eye colonoscopy increases adenoma detection rate by visualizing areas behind folds.
- **EUROPE:** Robb Krumlauf, PhD, Scientific Director at the Stowers Institute for Medical Research, is associated with the European Union COST action BM0805 "HOX and TALE Transcription Factors in Development and Disease". Krumlauf's research investigates DNA gene targets for the action of Hox proteins and the TALE proteins Pbx and Meis. Alterations in these proteins and their target genes are associated with a variety of cancers, including leukemia. Identifying normal target genes and how they are affected in cancer is a central focus of Krumlauf's work and the EU COST collaboration.
- **GERMANY:** Shrikant Anant, PhD collaborates with Professors Rainer Schobert and Bernhard Biersack of the University of Bayreuth, Department of Chemistry, Bayreuth, Germany on developing novel curcuminoids for treatment and prevention of colon and pancreatic cancers. They have developed several compounds with therapeutic activity at nanomolar effective dose. Further preclinical testing is currently in progress in Anant's laboratory.
- **GREECE:** Danny Welch, PhD collaborates with Dr. Evi Lianidou at the University of Athens. Together they aim to molecularly characterize circulating tumor cells. Their studies indicate that Breast cancer metastasis suppressor-1 (BRMS1) promoter methylation status has biomarker potential in breast cancer. This was published in Molecular Cancer Research (Chimonidou, M.,

Kallergi, G., Georgoulis, V., Welch, D.R., Lianidou, E.S. (2013) Breast Cancer Metastasis Suppressor-1 promoter methylation in primary breast tumors and corresponding circulating tumor cells. (doi: 10.1158/1541-7786.MCR-13-0096) PMID: 23744981 PMCID: PMC3868947).

- **ITALY:** Dan Dixon, PhD, collaborates with Professor Paola Patrignani (Center of Excellence on Aging and Department of Neuroscience and Imaging) at the G. d'Annunzio University, School of Medicine, Chieti, Italy. Dixon and Patrignani have completed a clinical study of the chemopreventive effects of Celebrex use upon prostanoid biosynthesis in familial adenomatous polyposis.
- **INDIA:** Shrikant Anant, PhD, Roy Jensen, MD, Scott Weir, PharmD, PhD, Shahid Umar, PhD, and Animesh Dhar, PhD, collaborate with Dr. Subash Padhye of the University of Pune, India on various projects making synthetic chemopreventive analogs of natural product compounds. Anant and Padhye have furthered their previous work using Marmelin and now developed multiple water soluble derivatives that are currently in preclinical testing. Recently, Anant and Weir received a multi-PI R01 grant to continue preclinical testing for one of the compounds. A manuscript is currently being prepared for submission and the University is processing a patent application. In addition, Umar and Padhye have modified a current series of Tankyrase inhibitors to block Wnt signaling and these compounds are in preclinical testing.
- **NEPAL:** Gary Doolittle, MD, Sarah Taylor, MD and Prakash Neupane, MD visited Kathmandu where they gave continuing education lectures on sarcoma, brain, breast, lung and nasopharyngeal carcinoma, respectively. Taylor and Neupane are also working with their oncologists to set up a fellowship program; assisting with the curriculum and connecting them with ASCO program directors.
- **NIGERIA:** Since 2009, Babalola Faseru, MD, MPH, has served as a Scientific Advisor to the Tobacco Control Research Group of the University College Hospital and College of Medicine, University of Ibadan, Nigeria. They recently received funding from American Cancer Society to implement the University of Ibadan/American Cancer Society (UIACS) Tobacco Control Research and Leadership Programme. The funding will aid the development of a graduate level academic curriculum on tobacco control research and leadership for incorporation into the University's Masters in Global Health programme.
- **POLAND:** Brian Petroff, DVM, PhD, has a long-standing collaboration with the laboratory of Dr. Renata Ciereszko at the University of Warmia and Mazury, Poland. Petroff and Ciereszko have had several grants studying function of the aryl hydrocarbon receptor pathway in reproduction and its impact upon carcinogen production in the ovary. Most recently Ciereszko was awarded the Polish equivalent of an R01 with Petroff as a co-investigator and consultant.
- **UNITED STATES (LATINO POPULATION):** Ana Paula Cupertino, PhD, was the 2012 recipient of the Carlos F. Cortes Humanitarian of the Year Award. Cupertino and her staff at Juntos, Center for Advancing Latino Health are addressing the most pressing health needs of the Latino community throughout the metropolitan area and across Kansas. Their projects include improving breast cancer awareness and screening among Latinas in Wyandotte County, training 34 community health workers in rural Kansas, increasing the number of Latino health workers becoming certified nursing assistants, developing a pipeline to health careers and addressing smoking cessation in Hispanic communities across the state.
- **UNITED STATES (AFRICAN AMERICAN POPULATION):** Crystal Lumpkins, PhD is principle investigator of an NCI-funded pilot study that investigates the role that area African American churches have in marketing and disseminating colorectal cancer prevention communication materials to the community and its congregants. Lumpkins along with her mentors Allen Greiner, MD and Christine Daley, PhD, and the Community Advisory Board for

the project have been successful with not only highlighting the importance of the project with this population but also with building an infrastructure where other community based research projects are being discussed and developed in the bi-state area.

- **WORLDWIDE:** Brooke Fridley, PhD, is a member of the International Ovarian Cancer Association Consortium (OCAC), comprised of >40 study sites world-wide, looking at the genetic basis and etiology of ovarian cancer. Fridley is the lead PhD statistical geneticist for the two Mayo Clinic studies (PI: Ellen L. Goode) that are a part of OCAC. Fridley and the statistical team at the Mayo Clinic completed the analysis related to survival and integrative analyses involving methylation, SNP and gene expression data for a number of Collaborative Oncological Gene-Environment Study (COGS) papers related to ovarian cancer. Currently, 18 genetic susceptibility loci have been confirmed for ovarian cancer. This international collaboration has resulted in 14 published research articles in 2013, including papers in Nature Genetics (PMCID: PMC3693183, PMCID: PMC3670748), Gynecological Oncology (PMCID: PMC3795832), and 2 manuscripts in Nature Communications (PMCID: PMC3709460; PMCID: PMC3848248), in which Fridley is co-first author paper entitled “Epigenetic analysis leads to identification of HNF1B as a subtype-specific susceptibility gene for ovarian cancer.” In addition to Fridley’s work with OCAC, she is also involved in the International Ovarian Tumor Tissue Analysis (OTTA) Consortium for which Mayo Clinic participates (PI: Ellen L. Goode). This work has led to a high profile papers in Lancet Oncology (PMID: 23845225) and Cancer Epidemiology, Biomarkers, and Prevention (PMID: 23880734).
- **WORLDWIDE:** Andrew K. Godwin, PhD, is an active participant in several international consortia which aim to identify genetic modifiers of risk breast cancer, including the Consortium of Investigators of Modifiers of BRCA1 and BRCA2 (CIMBA), Evidence-based Network for the Interpretation of Germline Mutant Alleles (ENIGMA), and the Triple Negative Breast Cancer Consortium (TNBCC). CIMBA is an international group of investigators representing 28 countries and 61 centers focused on studying issues related to inherited BRCA1 and BRCA2 risk, while the TNBCC studies genetic susceptibility to TN breast cancer in subjects from 25 studies in eight countries. The aims of CIMBA and TNBCC are to provide sufficient sample sizes to support large-scale studies (>45,000 BRCA mutation carriers and >3,000 TNBC cases and >6,000 controls respectively) to identify common inherited changes in DNA that influence the breast cancer risk of all women. ENIGMA is a consortium of investigators focused on determining the involvement of all unclassified variants in the BRCA1 and BRCA2 tumor suppressor genes in predisposition to breast and ovarian cancer. The purpose of this research-based Consortium is to facilitate classification of variants through collaborative large-scale projects by sharing data and improving classification methods. Efforts from CIMBA, ENIGMA and TNBCC have produced a number of important findings in 2013 published in Nature Commun. (PMID: 23535648) (PMCID: PMC3709460); Nature Genetics (PMID: 23535731) (PMCID: PMC3670748); Nature Genetics (PMID: 23535733); American Journal of Human Genetics (PMID: 23540573) (PMCID: PMC3617380); PLoS Genetics (PMID: 23544013) (PMCID: PMC3609646); and Carcinogenesis (PMID: 24325915).

University of Maryland Marlene and Stewart Greene-Baum Cancer Center

Related Link: [University of Maryland Global Health Initiatives](#)

Institute-wide activities and consortia

- **AFRICA:** University of Maryland Marlene and Steward Greene-Baum Cancer Center (UMGCC) is studying the genomics and epigenomics of persistent high risk HPV infection vaginal microenvironment and cervical cancer in HIV negative women.
- **MAURITIUS:** University of Maryland is collaborating with the Mauritius Ministry of Health and Quality of Life to improve Mauritius' National Cancer Registry.
- **NIGERIA:** University of Maryland has collaborated with IARC, the Nigerian Federal Ministry of Health, and other local organizations on several initiatives in Nigeria. (1) They have established a national system of cancer registration in Nigeria, trained registrars, and created incentives for development of new cancer registries, compilation and analysis of data, and publication of cancer statistics. This effort has resulted in 20 cancer registries and submitted publications. (2) They have also worked on cervical cancer "screen-and-treat" programs, beginning with HIV+ women and expanding to others. Nurse-providers are caregivers backed up by a gynecologist. Data collected is being used in research. (3) UMGCC worked on development of clinical trials capacity on AIDS-associated cancers at National Hospital, Abuja. Clinicians from these hospitals have been trained in the United States and South Africa in the implementation and organization of clinical trials. (4) UMGCC is also collaborating on a variety of other areas in Nigeria including increasing recreational physical activity, supporting a regional cancer immunohistochemistry laboratory, the Cancer Genome Atlas Mapping Project and a study on gut microbiome and breast cancer risk in African women.

University of Michigan Comprehensive Cancer Center

Related Link: [University of Michigan Global Health Initiatives and Activities](#)

Institute-wide activities and consortia

- **AFRICA:** The University of Michigan Comprehensive Cancer Center (UMCCC) is engaged in understanding the molecular and environmental determinants of aggressive breast cancers in Africa. Surrounding this work, a priority for UMCCC is to establish a good cancer registry in West Africa. Faculty are researching innovative approaches to establishing registries cancer control programs in low and middle-resources areas. They currently think Nigeria and Ghana would be desirable starting points for such a registry, which would likely take 2-3 years to develop with modern technology and adequate support from multilateral collaborators. UMCCC is also active in collaborations with partners and the MECC in North Africa and the Middle East.
- **ECUADOR:** UMCCC also engages three major Ecuadorian universities, where scientists collaborate on cancer research and utilization of novel information and mobile technologies to assist with cancer diagnosis and down-staging of cancer.
- **GHANA:** UMCCC is studying in Ghana (specifically, the Ashanti area) and sub-Saharan Africa on how to effectively diagnose cancers at earlier stages by intervening with traditional healers and understanding the molecular signatures and pathways that drive the aggressiveness of cancers in the region.
- **WORLDWIDE:** UMCCC offers a rigorous one to two week methodology course of 12-15 students per class to top-performing scientists and physicians in several countries. Students are selected through recommendations from universities, ministries of health, and similar

institutional means. Almost every scientist trained in the program has continued to engage in cancer research, often translating their findings to policy in their home countries. This work continues with collaborations with the University of Nebraska and other partners.

University of New Mexico Cancer Center

Institute-wide activities and consortia

- **MEXICO:** UNM Cancer Center works closely with the Mexican Consulate on the Ventanilla de Salud (VDS) program. The VDS program informs the community about topics such as health literacy, health prevention and health promotion. VDS is primarily aimed at the growing Hispanic community in New Mexico and provides bilingual and bicultural health information and assistance that is culturally and linguistically appropriate. VDS provides a number of services that relate to cancer including: basic information on cancer, tobacco control, reproductive health, and vaccines; assistance in finding low-cost clinics and providers; and assistance in finding medical insurance.

Additionally, the Mexican Consulate is our lead community partner in our NCI P30 Supplement grant through which we are conducting a randomized clinical trial testing the effectiveness of text messaging as an intervention to increase physical activity and improve dietary habits in Hispanic populations as an effort to decrease colorectal cancer in this population.

- **AUSTRALIA, CANADA, FRANCE and ITALY:** Marianne Berwick, PhD, leads an international group of melanoma researchers who are evaluating gene-environment interactions and identifying factors involved in progression to deadly melanoma. The study, called GEM (Genes, Environment and Melanoma), consists of 3,580 melanoma patients who are representative of populations from Australia, Italy, Canada and the United States. Recently this group expanded into a larger effort, InterMEL, and now includes approximately 16,000 melanoma patients from two additional Australian sites, France and more sites in the US. The researchers have access to each patient's DNA samples and a high level of annotation.

Investigator-initiated activities

- **CANADA:** Dr. Cook leads an international group of ovarian cancer researchers who are evaluating the role of variations in mitochondrial DNA and ovarian cancer risk and survival. The study, called the OVAL-BC Study (Ovarian Cancer in Alberta and British Columbia), consists of 1540 ovarian cancer patients and 2580 controls who are representative of populations from the two provinces. The researchers have access to each patient's DNA samples as well as tumor specimens and a high level of risk factor, treatment, and recurrence information.
- **CHINA, ISRAEL and SYRIA:** STMC has a sabbatical visitor (2 years), Dr. Jin Yang, from Shanghai China and is shortly expecting another sabbatical visitor (one year) from Syria, Dr. Lama Yousseff. Dr. Wilson had a mini-sabbatical visitor (3 weeks) from Israel last summer, Dr. Ramir Mehr.
- **EUROPE:** Dr. Berwick is a member of the CIE committee, which evaluates the positive and negative effects of ultraviolet radiation exposure. This is an international committee that has met for several years in Europe and will meet this Spring/Summer in the UK.
- **EUROPE:** Dr. Luo works with a team of researchers from Germany and USA in the pediGFR consortium to study chronic kidney diseases. The pediGFR consortium is an international collaborative study, and has assembled the largest pediatric CKD patient population with over 1400 children from 55 North America pediatric nephrology centers and 33 European union

centers, through the prospective cohorts of the Chronic Kidney Disease in Children (CKiD) study, the Effect of Strict Blood Pressure Control and ACE Inhibition on CRF Progression in Pediatric Patients (ESCAPE trial), and the Cardiovascular Co-morbidity in Children with Chronic Kidney Disease (4C) study.

- **EUROPE:** Dr. Wilson has active collaborations with French physician-scientists, Sylvie Hermouet (INSERM & Centre de Recherche en Cancérologie Nantes-Angers) and François Girodon (Laboratoire d'Hématologie, CHU Dijon) in myeloproliferative neoplasms.
- **IRELAND and TAIWAN:** Dr. Mary Ann Osley collaborates with former postdoctoral fellows in her lab who now head labs of their own: Alastair Fleming, PhD, Moynes Institute of Molecular Medicine, Trinity College, Dublin, Ireland and Cheng-Fu Kao, PHD, Institute of Cellular and Organismic Biology, Academia Sinica, Taipei, Taiwan.
- **ISRAEL:** Dr. Berwick received a 6-week sabbatical visit from Esther Azizi, MD. They are currently co-writing a paper.
- **JAPAN:** Dr. Berwick is also a member of the Scientific Advisory Council for the Radiation Effects Research Foundation (RERF) in Hiroshima, Japan. This Council meets annually to review the progress of ongoing research. Japan and the United States formed the RERF (formerly the Atomic Bomb Casualty Commission, or ABCC) with a cooperative agreement after the nuclear bombing of Hiroshima and Nagasaki in 1946. The Council developed the major understandings of human effects from ionizing radiation and is now collaborating with the citizens of Fukushima to evaluate the effects of the low level radiation stemming from the March 11, 2011 nuclear accident at the Fukushima Daiichi plant.
- **NETHERLANDS:** Diane S. Lidke, PhD, Assistant Professor of Pathology has an on-going collaboration with Paul van Bergen en Henegouwen at Utrecht University, The Netherlands, who provides reagents for studying EGFR. He co-authored Low-Nam et al., Nature Structural & Molecular Biology 2011.
- **INDIA, NETHERLANDS and SPAIN:** Dr. Lidke and three international collaborators have been awarded a HFSP Program Grant of over \$1.3 million. Research Grants provided by HFSP support basic research in the life sciences with emphasis on novel, innovative and interdisciplinary approaches that involve scientific exchanges across national and disciplinary boundaries. The three year project entitled "Nano-Mechano-Biology: spatiotemporal remodeling of membrane nanoplateforms under mechanical forces" is in collaboration with Dr. Alessandra Cambi from the Nijmegen Centre for Molecular Life Sciences (Nijmegen, the Netherlands), Dr. Maria Garcia-Parajo from the Institute of Photonic Sciences (Barcelona, Spain) and Dr. Satyajit Mayor from the National Centre for Biological Sciences (Bangalore, India).
- **WORLDWIDE:** Dr. Cook is a member of the Epidemiology of Endometrial Cancer Consortium (E2C2), an NCI-supported consortium dedicated to the study of the etiology of endometrial cancer. This international consortium includes investigators from the North America, Asia, North Africa, Europe and Australia and over 40 epidemiologic studies of endometrial cancer. Dr. Cook is active on a number of on-going publications with this consortium and meets with them once per year.
- **WORLDWIDE:** Dr. Cook is a member of the Ovarian Cancer Association Consortium (OCAC) that is supported by the Ovarian Cancer Research Fund (OCRF) with website funding from Cancer Research UK (CRUK) and some funding for meetings from NCI. The consortium aims to identify genes that may be related to the risk of ovarian cancer and to ovarian survival. This international consortium includes investigators from North America, Europe, Asia representing

over 50 epidemiologic studies of ovarian cancer. Dr. Cook is active on a number of on-going publications with this consortium and has monthly contact with other OCAC members.

University of North Carolina Lineberger Comprehensive Cancer Center

Related Link: [UNC Lineberger Comprehensive Cancer Center Global Oncology](#)

The global oncology program in the UNC Lineberger Comprehensive Cancer Center is part of a larger UNC effort in global health, which includes cancer, infectious disease, and epidemiology. The program is focused on population-wide screening for cancer prevention, interventional clinical trials, training, and discovery-based research. UNC Lineberger Comprehensive Cancer Center global cancer sites are listed below in alphabetical order:

Institute-wide activities and consortia

- **BRAZIL:** UNC is part of the NCI AIDS malignancies consortium, which supported a phase I clinical trial in Kaposi sarcoma. They work closely with Brazil's reference pathology lab.
- **CHINA:** Current UNC research in China is multifaceted. Clinically, it primarily focuses on epidemiological studies of HPV and cervical cancer, with a focus on prevention via screening or prophylactic HPV vaccines as a long-term collaboration between Dr. Jennifer Smith (UNC) and Dr. Youlin Qiao (Chinese Institute/Hospital, Chinese Academy of Medical Sciences). In addition, UNC has Fogarty Scholars and Fellows based in Beijing and Nanjing/Guangzhou for year-long projects and joint scientific projects to study HBV/HCV infection, HPV/cervical cancer, breast cancer, and basic tumor biology in Beijing, Shanghai and Jilin.
- **INDIA:** UNC works in close collaboration with the TATA Memorial Hospital in Mumbai. Research centers on genomic explorations of lymphoma and head and neck cancer.
- **KENYA:** UNC established a longitudinal cohort to study the natural history of HPV infection and cervical neoplasia in high risk female sexual workers in Nairobi, Kenya, as a collaborative project between Dr. Jennifer Smith (UNC) and Dr. Nelly Mugo (Kemri) Further, research examining the effect of male circumcision on the natural history of penile HPV infection in men has been conducted by UNC in Kisumu, Kenya. UNC students have been mentored at University of Nairobi Kenyatta National Hospital as Fogarty and Howard Hughes Medical Institute fellows.
- **MALAWI:** UNC has been conducting clinical research in Malawi for more than 20 years. The project has 350 employees, more than 40,000 square feet of space, satellite high speed internet, a full library and lecture hall, state of the art laboratories with the capacity to freeze viable cells in liquid nitrogen, and a full microbiology lab. It has funded ongoing research in trauma, burns, cancer, HIV, STIs, maternal fistulas, malaria vaccine, TB, clean water, and nutrition. UNC Project-Malawi is a Doris Duke and Fogarty Fellows and Scholars site. UNC has helped establish accredited residency programs in surgery and obstetrics-gynecology for Malawian nationals in Lilongwe, and is working to establish similar programs in internal medicine and pediatrics. More than 50 Malawian nationals have been trained through NIH training grants to UNC, and many alumni occupy key leadership positions within government, research, and clinical care programs. UNC faculty have appointments at the University of Malawi College of Medicine and are key teaching faculty for all Malawian medical students who do their core clinical third year rotations in Lilongwe. Cancer activities specifically have funding from NIH through NCI, Division of AIDS, Medical Education Partnership Initiative, Fogarty International Center, and AIDS Malignancy Consortium. Institutional support comes from the

UNC Lineberger Comprehensive Cancer Center, Institute for Global Health and Infectious Diseases, and Center for AIDS Research. In partnership with the Malawi Ministry of Health, UNC established the first pathology laboratory in the capital in 2011, which is now a regional leader through innovations such as immunohistochemistry and telepathology. A hospital-based cancer registry was established in 2009 and contributes data to the population-based Malawi National Cancer Registry, supported by the International Agency for Research on Cancer (IARC). The Lilongwe site currently conducts NIH network phase III clinical trials for Kaposi sarcoma, as well as single-center studies and clinical trials for lymphoma, cervical cancer, breast cancer, esophageal cancer, and head/neck cancer.

- **SOUTH AFRICA:** UNC has a longstanding collaboration in HIV and infectious diseases with University Witwatersrand, at which Dr. Charles van der Horst has an adjunct appointment. The main focus here is research in determining optimal cervical cancer screening methods among HIV seropositive women as a collaboration between Dr. Jennifer Smith (UNC) and Dr. Cindy Firnhaber (WITS). Additional research is being conducted as interventional trials in AIDS associated cancers through the AIDS clinical trials group (ACTG) and AMC. In addition they collaborate with Stellenbosch University which has become an NCI regional biorepository.
- **ZAMBIA:** Headed by Dr. Groesbeck Parham, UNC is engaged in extensive cervical cancer screening and vaccine evaluation efforts, research and training program, which encompasses multiple sites across this nation. This is done through the Center for Infectious Disease Research in Zambia (CIDRZ). The goal of the Cervical Cancer Prevention in Zambia (CCPPZ) is to significantly reduce cervical cancer mortality by providing access to high quality early detection and treatment services to 80% of the at-risk population. As a grossly underfunded effort that initiated VIA-based "screen and treat" cervical cancer prevention in two clinics in 2006, CCPPZ has now screened over 150,000 at-risk women (95% previously unscreened, 41% HIV infected) in one of the world's poorest countries that suffers from a severe shortage of physicians, a very porous healthcare infrastructure, and a target population that has a low level of awareness and understanding about the importance of cervical cancer screening. Using an organic model that maximizes task-shifting and the use of affordable technology for quality improvement, 25 centers distributed throughout the country's 10 provinces now provide national access to cervical cancer prevention services (VIA, cryotherapy and LEEP), to all women in the country, for the first time in its history. The model has now been officially adopted by the Zambian government and under its leadership is currently being expanded into the country's 108 districts, providing even greater access to cancer prevention services over the next 3-5 years. Other supplemental efforts to speed the scale up of services include cervical cancer screening camps in rural areas, as a component of the government's mobile healthcare services, and plans to include point-of-care HPV DA-based screening. Although far from the perfect cervical cancer prevention system, the CCPPZ stands as a testament to what can be accomplished, with minimal investment, through the creative application of constrained resources in an environment for which the ultimate model of success awaits development and implementation.

University of Pittsburgh Cancer Institute

Institute-wide activities and consortia

- **AUSTRALIA, UNITED KINGDOM:** Drs. John Kirkwood (US), Mark Middleton (UK), and Grant McArthur (AU) lead the International Melanoma Working Group. Multicenter International Collaborative Adaptive Trial (MICAT) for therapy of metastatic melanoma. This effort that is nested in the IMWG and includes Don Berry of Berry Consulting (Houston) and Dirk Reitsma (PPD CRO) is developing the first adaptive trial design for therapy of metastatic melanoma, and

will be performed internationally in selected sites of the IMWG that will begin with Pittsburgh, Oxford, and the Peter Macallum Cancer Institute.

- **CANADA, INDIA, UK:** Dr. James Mountz is working with Meenakshi Thakur, MD and Stephen M Robbins, PhD. The NCI's Quantitative Imaging Network (QIN) is conducting an international meeting in March 2014, sponsored by NCI's Center for Global Health. This is a planning meeting for opportunities for international collaboration to promote research and development of quantitative imaging methods for the measurement of tumor response to therapies in clinical trial settings, with the overall goal of facilitating clinical decision making.
- **CHINA:** In 2011, the University of Pittsburgh School of Medicine (UPSOM) signed a five-year agreement with Tsinghua University in Beijing, through which all students in Tsinghua's eight-year experimental curriculum aimed at training physician-scientists will come to UPSOM for two years for focused research training co-mentored by UPSOM and Tsinghua faculty members. The first cohort of 21 Tsinghua students arrived in Pittsburgh in August 2012, and the second cohort of 30 students arrived in August 2013.
- **FRANCE:** Dr. Paul Brennan is collaborating with Dr. Mattias Johansson and the PIs of the other 23 participating cohorts. This NCI cohort consortium-based project includes 23 participating cohorts of 2 million individuals. The goal of this project is to assess the role of one-carbon metabolism pathway including vitamin B6 and folate in prediagnostic blood samples in the development of lung cancer in never, former, and current smokers.
- **HONG KONG:** Dr. Edward Chu is a member of the advisory council of the Chinese Global Consortium for Chinese medicine (CGCM), an international organization based in Hong Kong. This group's main mission is focused on the development of Chinese herbal medicine in all aspect of medicine, although Dr. Chu's specific role is to oversee the development of Chinese herbal medicine as part of cancer therapy.
- **HONG KONG, FINLAND:** Inna Belfer, MD, PhD collaborates with Dino Samartzis DSc, PhD (C), MSc, MACE, Dip EBHC, FRIPH and Karpinen Jaro, MD in an international consortium on spine pain genetics; collaboration with DNA samples transfer on genetics of sciatica and low back pain, participation and lecturing at 3 international spine congress.
- **IRELAND and ITALY:** UPCI/UPMC owns and operates two cancer centers in Ireland and one cancer center in Rome, Italy.
- **ITALY:** University of Pittsburgh, School of Medicine (UPSOM) is developing a clinical and research center in Carinni, Sicily with Ri.MED. The center is an international partnership between the Italian Government, the Presidency of the Region of Sicily, the Italian National Research Council, the University of Pittsburgh and UPMC. Ri.MED is developing a \$398 million, 269,100 square-foot Biomedical Research and Biotechnology Center (BRBC) in Carini, near Palermo, which is projected to open in 2016. Dr. Art Levine is Scientific Director and the center will house some 500 scientists and support personnel pursuing basic research directed toward new drugs and vaccines, biomedical devices, tissue engineering, and regenerative medicine, treatments for psychiatric and neurodegenerative disorders, and noninvasive imaging technologies. Ri.MED supports the training of postdoctoral fellows in University of Pittsburgh laboratories who, upon their return to Italy, will be among BRBC's founding staff. Some 15 Ri.MED fellows have come to Pittsburgh for research training.
- **ITALY:** UPSOM has a partnership in Italy on a Cell Factory dedicated to the production of cell lines for treatment of end-stage organ failure.
- **ITALY:** Mediterranean Institute for Transplantation and Advanced Specialized Therapies (ISMETT) was established in 1999 in Palermo, Italy, as a specialized transplant hospital.

ISMETT is a joint venture of UPMC, the Italian government, and Civico and Cervella hospitals of Palermo. The institute is financed by the Italian government and managed by UPMC. UPSOM medical students and residents have the option of undertaking some of their elective and required rotations at ISMETT in a program of the same level of excellence as that at UPSOM/UPMC.

- **KAZAKHSTAN:** UPSOM has an agreement with Nazarbayev University (NU), opened in June 2010, to collaborate with NU in the development of its new medical school. UPSOM experts will advise NU officials on how to design and develop teaching facilities for a medical school curriculum; recruit and train school leadership and faculty; plan organizational and administrative structures, policies, and procedures; and develop courses, syllabi, and clinical experiences with the participation of physician-educators from the hospitals of National Medical Holding. NU will matriculate its first medical school class in 2015. UPMC, driven largely by UPCI, has a contract with NU to conduct a feasibility study and outline plans for developing a national oncology treatment and research center. Under a consultative agreement, UPMC assessed the types of cancer services needed in Kazakhstan and the viability of a national oncology center in the capital city of Astana. Nazarbayev University will manage the government-funded National Research Oncology Center, which is expected to include a hospital, outpatient care, a research facility, and a hotel complex. UPMC-designed breast cancer screening programs will begin in Astana in summer 2014.
- **KAZAKHSTAN:** UPCI/UPMC is continuing to develop an oncology strategy for the country of Kazakhstan.
- **MOZAMBIQUE:** Since 2001, UPSOM has partnered with the Catholic University of Mozambique (UCM), located in Beira, Sofala Province, to train Mozambican medical students and other health care professionals to become HIV/AIDS care providers and to establish an HIV/AIDS Center of Excellence at UCM. With funding from the U.S. President's Emergency Plan for AIDS Relief (PEPFAR), the program has provided faculty and curriculum development through an extensive series of professional exchanges conducted both in Mozambique and the U.S. The newly established UCM is one of only two medical schools in Mozambique and graduated its first class in 2007 and UCM's HIV/AIDS clinic and training center, St. Luke's Health Center, opened in June 2009.
- **NEW ZEALAND:** Dr. John Potter is working with the PIs of 18 Asian cohorts. The major goal of this Asian Cohort Consortium is to examine the effect of obesity and smoking on various health outcomes including cancer, cardiovascular disease, and diabetes.
- **SINGAPORE:** UPMC/UPCI has developed a Bone Marrow Transplant program in Singapore.
- **WORLDWIDE:** Dr. Francesmary Modugno participates in the Ovarian Cancer Association Consortium to carry out ovarian cancer studies.
- **WORLDWIDE:** Dr. Marjorie Romkes (UPCI) and Dr. Paul Brennan (UPCI) collaborate with Drs. S.Franceschi, V. Wunsche, A. Ness, M. Lacko, W. Peters, S. Boccia, C. La Vecchia, C. Bosetti, and R. Hung on the Genetic Association and Mechanisms in Oncology (GAME-ON) consortium that includes: Europe, Australia, Brazil, Argentina, UK, Canada. The GAME-ON consortium builds on the U19 INHANCE funded consortia for GWAS and has recently designed a customized Illumina genotyping array, the 'Oncochip' of approximately 565,000 variants. The OncoChip will be used to conduct centralized genotyping of five major cancer sites, namely breast, prostate, colorectum, ovary and lung.
- **WORLDWIDE (Italy, Spain, Greece, UK, Australia):** Dr. John Kirkwood continues to participate in the International Melanoma Working Group that he founded in 2005. The group

meets every 6 months. The working group that has served as a forum for international scientific exchange in relation to melanoma research, prevention, diagnosis, and therapy. Trials that have the goal of banking brain metastases IMWG 01, and precraniotomy assessment of therapeutic impact of BRAF/MEK inhibitors in brain metastases are now active. It has formulated three funded trials, two active at UPCI with Australian co-investigators.

Investigator-initiated activities

- **AUSTRALIA:** University of Pittsburgh Cancer Institute (UPCI) Melanoma Program is the hub for two efforts that are being undertaken by Dr. John Kirkwood at UPCI in collaboration with the Melanoma Institute of Australia in Sydney and MD Anderson Cancer Center in Houston. Dr. Kirkwood founded the International Melanoma Working Group eight years ago and is leading an international melanoma brain metastasis banking study, as well as a pre-craniotomy assessment of BRAFi and BRAFi + MEKi molecular therapy of brain metastasis from melanoma. These projects are also in part funded by GlaxoSmithKline.
- **AUSTRIA, GERMANY, UK, US,;** Dr. Christian Adam is collaborating with Drs. Anne Baeurle, David Schrama, Jürgen C. Becker, and Roland Houben. They have identified new small molecule modulators that thwart the growth of Merkel Cell Carcinomas.
- **BELGIUM:** Dr. Anette Duensing is collaborating with Drs. Maria Debiec-Rychter, Patrick Schöffski and Agnieszka Wozniak on mouse xenograft models of gastrointestinal stromal tumors (GIST) to evaluate efficacy of novel therapeutic strategies. This work was published in the Feb. 15, 2014 issue of Cancer Research.
- **BRAZIL:** Drs. Ross Cranston, who studies anal dysplasia and cancer, and Timothy Wilkin are working with Dr. Beartiz Grinsztejn to assess the protective effect of the quadrivalent HPV vaccine Gardasil in HIV-positive men who have sex with men over the age of 27 years.
- **BRAZIL:** Dr. Peter Wipf is working with Ronaldo Pilli on the synthesis and biological function of stemona alkaloids.
- **BRAZIL:** Dr. Michael Shurin is collaborating with Prof. Ramon Kaneno (Sao Paulo University in Botukatu) on the molecular and function alterations of dendritic cells in the tumor microenvironment. He is also teaching dendritic cell course.
- **CAMBODIA:** Drs. Richard Henker and Heidi Donovan worked with the Cambodian Ministry of Health to conduct a workshop on the Code of Ethics for Nursing at the Angkor Hospital for Children.
- **CANADA:** Dr. Robert Sobol is collaborating with Guy Poirier Canada Research Chair in Proteomics CHUL Research Center 2705 boul. Laurier, Quebec, QC, Canada G1V 4G2 to identify poly-ADP-ribose binding proteins by mass spectrometry.
- **CHINA:** Dr. Guozhi Xiao is collaborating with Drs. Ke Zhu, Hongli Jiao, Shuai Li, Zhongfang Zhao, and Xi Zhao. This collaboration has demonstrated that the transcription factor ATF4 promotes bone angiogenesis via increasing VEGF expression by osteoblasts through increasing HIF-1a protein stability by direct interaction in hypoxic conditions. Further, ATF4 also has a role in increasing osteoclast formation and bone resorption resulting in release of VEGF from the bone matrix.
- **CHINA:** Dr. Thomas Kensler is collaborating with Jian-Guo Chen MD and Tao-Yang Chen MD, Qidong Liver Cancer Institute Qidong, Jiangsu Province, China to study archived serum and urine samples from Qidong cohorts are used to probe the basis for dramatic changes in incidence rates of liver and lung cancer in this region. In addition, randomized clinical trials are

being conducted to define the efficacy of Nrf2-targeted interventions with broccoli sprout-derived beverages to enhance the detoxication of food- and air-borne carcinogens in Qidong residents.

- **CHINA:** Dr. Lin Zhang is collaborating with Dr. Xiaohang Zhao to study apoptosis in esophageal cancer cells.
- **CHINA:** Dr. Michael Shurin is collaborating with Dr. Harriet Zhang on dendritic cell vaccines and low dose chemotherapy in patients with lung cancer.
- **CHINA:** Dr. Stephen Thorne collaborates with Dr. Yi Zhang on a US-China supplement on an existing grant established collaboration to examine chemokine receptor profiles on immune cell therapies. Visiting Postdoc is working in Dr. Thorne's lab.
- **CHINA:** Dr. Yu-Tang Gao is collaborating with Drs. Wei Zhang, Yu-Ting Tan and Xue-Li Wang on a long-term collaborative study of environmental exposure (smoking, diet) and genetic polymorphism (genes related to metabolism of tobacco and dietary constituents) in relation to risk of cancer in more than 18,000 men with more than 25 years of follow-up.
- **DENMARK:** Inna Belfer, MD, PhD collaborates with Henrik Kehlet, MD and Eske Aasvang, MD on collaborative clinical research projects on genetics and phenomics of post mastectomy pain in breast cancer survivors.
- **ESTONIA:** Inna Belfer, MD, PhD collaborates with Yuri Kolesnikov, MD, PhD and Boris Gabovich, MD on a collaborative project with material transfer (DNA samples) on identifying predictive genetic markers for human chronic pain syndromes.

- **EUROPE (ADMINISTRATION BASED IN ITALY):** Dr. Anette Duensing is collaborating with Daniel Helbling and Francesca Marangoni at the European School of Oncology (ESO) in collaboration with Nature Reviews Oncology and Critical Reviews in Oncology Hematology to produce “e-grand round on “Targetable pathways in gastrointestinal stromal tumors (GIST),” an educational online session for oncologists.
- **EUROPE (ADMINISTRATION BASED IN GERMANY):** Dr. Anette Duensing is collaborating with Michaela Geissler of the Sarcoma Patient EuroNet (SPAEN) to establish the European sarcoma patient advocacy group that will hold educational sessions on cancer biology and therapy and do patient outreach.
- **FINLAND:** Dr. Paula Sherwood is co-mentoring Dr. Voutilainen, a post-doctoral fellow at the University of Eastern Finland. They have two manuscripts which have looked at spatial patterns of cancer using Principal Components Matrices Network analysis.
- **FINLAND:** Dr. Paula Sherwood is collaborating with Drs. Tarja Kvist and Katri Vehvilainen-Julkunen and are working together to submit a grant to the European Union regarding quality of cancer care.
- **FINLAND:** Dr. Paula Sherwood is co-mentoring Dr. Natalia Sak Tarja Kvist who is completing her doctoral degree at the University of Eastern Finland on family witnessed CPR.
- **FRANCE:** Dr. Charles Horn’s lab hosts 1 or 2 students each year from AgroSup, Dijon University who join his lab for a 5 month internship.
- **FRANCE:** Dr. Patrick Moore is collaborating with Drs. Massimo Tommasino Naveed Shahzad, Tarik Gheit, Iris Cornet, Djamel Saidj, Claudia Zannetti, Uzma Hasa, and Rosita Accardi to study the mechanism by which the Merkel cell carcinoma T antigen locus downregulates Toll-like receptor 9 (TLR9), a key receptor in the host innate immune response that senses viral or bacterial dsDNA.
- **FRANCE:** Dr. Stephen Thorne is collaborating with Dr. Georges Vassaux. Dr. Thorne will provide oncolytic viral therapies for Dr. Vassaux to test in canine cancers (grant supported).
- **FRANCE:** Dr. Theresa Whiteside has an ongoing collaboration with Prof. Edgardo Carosella, Institut Universitaire d’Hematologie, Paris, France to study HLA-G on tumor-derived exosomes and their role in promoting tumor immune escape.
- **GERMANY:** Dr. Theresa Whiteside has an ongoing collaboration with Prof. Stefan Lang, Dept. of Otolaryngology, University of Essen, Essen Germany to study novel approaches for immune therapies for patients with Head and Neck Cancer.
- **GERMANY:** Dr. Bennett Van Houten, at the request of Dr. Caroline Kisker, Dean Graduate Student Studies, University of Wurzburg, Wurzburg, Germany, serves on the Graduate Education Advisory Board, with yearly meetings in Wurzburg.
- **GERMANY:** Dr. Kathy Shair is collaborating with Dr. Wolfgang Hammerschmidt on Epstein-Barr virus BAC and mutants for infection studies.
- **GERMANY:** Dr. Anette Duensing is collaborating with Dr. Sebastian Bauer from University of Duisburg-Essen to study the biology of gastrointestinal stromal tumors (GIST).
- **GERMANY:** Dr. Theresa Whiteside is collaborating with Dr. Patrick J. Schuler, Dept. of Otolaryngology, University of Ulm, Ulm, Germany. This project evaluates the adenosine pathway components in modulating immunosuppressive activities of regulatory B cells (Breg) and regulatory T cells Treg) in patients with cancer.

- **GERMANY:** Dr. Michael Shurin is collaborating with Professor Viktor Umansky (Cancer Research Center, Heidelberg) on the antitumor and immunomodulatory potential of ultra-low dose Taxol in different animal tumor models. Preparation of first clinical trial testing ultra-low dose taxol in melanoma patients.
- **GERMANY:** Dr. Anette Duensing is collaborating with Markus Wartenberg from “Das Lebenshaus (German gastrointestinal stromal tumors (GIST) patient advocacy group)” to conduct educational sessions on cancer biology and therapy, patient outreach.
- **GERMANY, SLOVAKIA, UK,:** Dr. Bennett Van Houten collaborated with Drs. Peter McHugh - Oxford Caroline Kisker - University of Wurtzburg, Germany Miroslav Pirsal - Slovak Academy of Sciences 1R13ES022908-01 (Van Houten) to support the second EU-US FEBS Workshop on Nucleotide excision repair and interstrand crosslink repair – from molecule to man (C. Kisker, P. McHugh, M. Pirsal, and B. Van Houten co-organizers) Smolenice Castle, Slovakia, June 9-13, 2013.
- **GREECE:** Dr. Edward Chu is collaborating with Dr. Kostas Syrigos. Dr. Syrigos is working closely with members of the UPCI Lung Cancer Program. In addition, he has had his senior fellows and junior faculty members spend time at UPCI observing the various disease teams, such as GI, Lung Cancer, and Phase I teams as well as spend time in various research labs, with a focus on cancer drug development.
- **HONG KONG:** Dr. Kathy Shair is working with Dr. George Tsao on using nasopharyngeal cell lines for study of Epstein-Barr virus associated nasopharyngeal carcinoma.
- **INDIA:** Dr. Shivendra Singh collaborated with Prof R. K. Kale, Vice-Chancellor, Central University of Gujrat as Co-Organizer of the International Conference titled “Recent Advances in Cancer Prevention and Therapeutics”, Central University of Gujrat, Gandhinagar, India (November 19-20, 2013).
- **INDIA:** Dr. Shivendra Singh with Prof. Grish Sharma co-organized the International Symposium on “Frontiers in Cancer Research: Prevention to Therapeutics”, Amity University Uttar Pradesh (NOIDA), India (November 15-16, 2013).
- **INDIA:** Dr. Shivendra Singh, at the request of Prof. R. P. Singh, served as a member of thesis committee for Dhanir Tailor, Central University of Gujrat, Ahmedabad, India.
- **INDIA:** Drs. Alan Wells and Rajiv Dhir worked with AmPath Inc. to establish a hospital-based reference laboratory for the Hyderabad market along with local pathologists and investors.
- **IRELAND:** Dr. Patrick Moore is collaborating with Dr. Gary Loughran on ribosomal profiling of Merkel cell polyomavirus infected cells.
- **IRELAND:** Dr. Barton Branstetter is working with Peter Widdess-Walsh to host a multidisciplinary neurology-neuroradiology teaching conference at Beacon Hospital that is held monthly via teleconference.
- **IRELAND:** Dr. Patrick Moore is collaborating with Drs. John Atkins and Gary Loughran to study ribosomal profiling, specifically how it is used to determine how Merkel cell polyomavirus sT viral oncoprotein targeting of 4E-BP1 results in an oncogenic transformation.
- **IRELAND:** Dr. Carola Neumann is collaborating with Dr. Ciaran Morrison on studies of Rad51 cysteine mutants in oxidative stress in breast cancer.
- **IRELAND:** Dr. Philip E. Auron is collaborating with Drs. Luke O’Neill and Gillian Tannahill on a study that defined differences in the mechanisms regulating induction and tolerance of the two

immediate-early cytokine genes IL1B and TNFalpha The results provided an explanation for the observation that the IL1B gene has a greater sensitivity to the metabolic state of the cell and a lower sensitivity to the phenomenon of endotoxin tolerance than the TNFalpha gene.

- **ISRAEL:** Dr. Paul Kinchington is collaborating with Dr. Ronald Goldstein, melding the expertise of a world renowned hESC-neurons biologist and a University of Pittsburgh molecular herpes virologist, to develop a novel system for modeling viral persistence.
- **ISRAEL:** Inna Belfer MD PhD collaborates with Jean-Jacques Vatine, MD on a collaborative study with material transfer on psychosocial and genetic risk factors of pain in patients with Complex Regional Pain Syndrome.
- **ITALY:** Dr. Robert W. Sobol is collaborating with Dr. Menico Rizzi on the crystal structure of NAD binding enzymes.
- **ITALY:** Inna Belfer, MD, PhD collaborated with Massimo Allegri, MD and Gregori Manuela, MD on a collaborative study on OPRM1 genetic variation in breast cancer patients (grant submitted to Italian ministry of public health: Opioids and breast cancer recurrence: a new pharmacogenetic approach to better influence outcome in post-mastectomy patients) and on the pain Omics consortium (genetic and epigenetic pilot studies on BC outcomes, post mastectomy pain and analgesia).
- **ISRAEL:** Dr. Michael Shurin collaborates with Dr. Ron Apte (Ben Gurion University) to study the intrinsic and extrinsic participation of IL-1 in regulating tumor-associated myeloid regulatory cells. He is also teaching a Clinical and Tumor Immunology course at Ben Gurion University.
- **JAPAN:** Dr. Charles Horn is collaborating with Takafumi Sakai and Ichiro Sakata to record gastrointestinal motility in free moving animals using their strain gauge methodology.
- **JAPAN:** Dr. Hideyuki Kano, MD, PhD is working at multiple sites in Japan to perform hemangioblastoma outcome analysis.
- **KAZAKHSTAN:** UPCI is working with Dr. V. Openko to develop screening tests for early detection of ovarian and pancreatic cancers.
- **LATIN AMERICA:** Dr. Anette Duensing is collaborating with Drs. Piga Faernandez and Norman Scherzer of the Alianza GIST (Latin American gastrointestinal stromal tumors (GIST) patient advocacy) on educational sessions on ongoing research and patient outreach.
- **NETHERLANDS:** Dr. Robert W. Sobol is collaborating with Dr. Conchita Vens on studies of base excision repair in human tumors.
- **NETHERLANDS:** Dr. Paula Sherwood is collaborating with Drs. Florein Boele and Martin Klein. Dr. Florein used her data in an analysis comparing neuro-oncology caregiver needs between the US and the Netherlands. An abstract and manuscript have been submitted.
- **NEW ZEALAND:** Dr. Carola Neumann is collaborating with Drs. Christine Winterbourne and Mark Hampton from University of Otago, Christchurch, New Zealand on a comprehensive review on 2-cysteine-peroxiredoxins in redox signaling.
- **NEW ZEALAND:** Dr. Albert Donnenberg at the request of Dr. Rod Dunbar lectured and conducted workshops at Australasian Flow Cytometry group and Victoria University in Wellington, and University of Auckland, on Rare Event Flow Cytometry.
- **PERU, SOUTH AFRICA, THAILAND:** Dr. Ross Cranston, who studies anal dysplasia and cancer, is working with Drs. Linda-Gail Bekker, Suwat Chariyalertsak, Pedro Gonzales, and

Timothy Holtz to assess the safety and acceptability of oral tenofovir/emtricitabine and rectally administered 1% tenofovir gel in men who have sex with men and transgender women.

- **POLAND:** Dr. Theresa Whiteside is collaborating with Dr. Mirosław J. Szczepanski, Dept. of Otolaryngology and Clinical Immunology Univ. of Warsaw, Warsaw Poland. Their project studies tumor-associated antigens and tumor-derived factors that impact the development of anti-tumor immunity in patients with Head and Neck cancer.
- **QATAR:** Dr. Lisa Butterfield is collaborating with Drs. Francesco Marincola and Ena Wang (UPCI 09-021) on trial tumor biopsy transcriptome analysis.
- **SINGAPORE:** Drs. Jian-Min Yuan and Woon-Puay Koh are collaborating with Dr. Hin-Peng Lee on a cancer epidemiology cohort of 63,000 Chinese men and women in Singapore is to assess the roles of dietary and other environmental exposures and genetic factors in the etiology of cancer.
- **SLOVAKIA:** Dr. Paula Sherwood is mentoring Dr. Renata Zelinakova, who is a junior faculty member at the University of Ostrava. Dr. Zelinakova does evidence-based research to study neuro-oncology caregivers.
- **SOUTH KOREA:** Dr. Edward Chu is collaborating with Tae-Won Kim, MD, PhD. Dr. Kim is working closely with the UPCI Phase I Team and the GI colorectal cancer team to develop novel agents and/or combination regimens that can be used to treat metastatic colorectal cancer and other advanced solid tumors. Dr. Kim will be sending one of his junior faculty members to spend two years with our Phase I/Cancer Drug Development Team and work with UPCI clinical investigators as well as Dr. Chu's research laboratory which is focused on identifying and developing new treatments for colorectal cancer.
- **SWEDEN:** Dr. Altschuler is working with Dr. Mikael Nilsson on the Embryological characterization of a new population of mouse thyroid stem cells.
- **SWITZERLAND:** Drs. Michael Gach, Carolyn Anderson and Anda Vlad have a MTA with Dr. Cristina Mueller at the Paul Scherrer Institute to work with one of her folate receptor targeted agents for imaging ovarian cancer.
- **TAIWAN:** Dr. Edward Chu is collaborating with Dr. Marcus Yeh from the Taiwan National Cheng-Keung Medical University. Dr. Yeh spent one year in Dr. Chu's research lab focused on the regulation of thymidylate synthase in non-small cell lung cancer. Now that he is back in Taiwan, the two groups are continuing to collaborate on identifying novel mechanisms of resistance to pemetrexed therapy in the treatment of non-small cell lung cancer. Efforts are also being placed on developing novel approaches to treat non-small cell lung cancer.
- **TAIWAN:** Dr. Edward Chu is collaborating with Dr. Li-Tzong Chen from the Taiwan National Health Research Institute - Institute of Cancer Research. Drs. Chu and Chen are working to develop a Chinese herbal medicine as an adjunct treatment to chemotherapy for metastatic colorectal cancer. The goal of this Chinese herbal medicine is to reduce the GI toxicity associated with chemotherapy and to enhance overall patient quality of life.
- **TAIWAN:** Dr. Peter Wipf is working with Dr. Graciela Mahler on chemistry studies focused on Dynamic Libraries and Neglected Tropical Diseases.
- **THAILAND:** Dr. Heidi Donovan is working with Dr. Phensiri Dumrongpakapakorn, PhD, RN. They held a workshop with faculty at the Boromorojanani College of Nursing at Nakhon Phanom University to conduct integrative reviews. They are working to gain certification for a Master's Program in Nursing at their university which serves the Mekong River Sub-region.

- **TRINIDAD AND TOBAGO:** Dr. Clareann Bunker is collaborating with Dr. Alan Patrick on a prostate cancer screening cohort study, 3600 men of African descent on the island of Tobago followed since 1997.
- **TURKEY:** Dr. Carolyn Anderson is working with Dr. Meltem Ocak, currently a postdoc in Dr. Anderson's lab. Dr. Ocak is returning to Istanbul at the end of June where Dr. Ocak and her colleagues will use a Cu-64 compound developed in Pittsburgh in Dr. Anderson's lab into humans with neuroendocrine tumors.
- **TURKEY:** Dr. Albert Donnenberg collaborated with Dr. Birol Guvenc where he assisted with setup of new Hematopoietic Stem cell Laboratory for Blood and Bone Marrow Transplantation at Cukerova University.
- **TURKEY:** Dr. Lyn Barry Robertson is collaborating with Dr. Memnun Seven on a study comparing breast screening practices of women in several area throughout Turkey to those of women in the Pittsburgh are. Study included an educational intervention.
- **UNITED KINGDOM:** Dr. Bennett Van Houten is collaborating with Dr. Neil Kad on Single molecule analysis of DNA repair enzymes using fluorescence microscopy and Qdot-tagged proteins. Grant:1R01ES019566.
- **UNITED KINGDOM:** Dr. Robert W. Sobol is collaborating with Dr. Marie Migaud to perform studies on NAD biology in human tumor cells.
- **UNITED KINGDOM:** Dr. Carola Neumann is collaborating with Dr. Elizabeth Veal from Newcastle University, UK on a comprehensive review on 2-cysteine-peroxiredoxins in redox signaling.
- **UNITED KINGDOM:** Dr. Carola Neumann is collaborating with Dr. Melanie Flint on studies related to stress and breast cancer.
- **UNITED KINGDOM:** UPCI investigators are working with Drs. V. Openko, Usha Menon and Ian Jacob to validate early/preclinical biomarkers of ovarian cancer in United Kingdom Clinical Trial of Ovarian Cancer Screening (UKCTOCS) cohort.
- **WORLDWIDE:** Dr. Anette Duensing is collaborating with Martin Wettstein, Helga Meier, Markus Wartenberg, and Norman Scherzer of the New Horizons GIST (global gastrointestinal stromal tumors (GIST) patient advocacy group) on educational sessions on cancer biology and therapy, updates on ongoing research, and patient outreach.

University of Southern California Norris Comprehensive Cancer Center

Related Link: [USC Global Health](#)

Institute-wide activities and consortia

- **AUSTRALIA, CANADA, ISRAEL:** Therapeutic Advances Against Childhood Leukemia and Lymphoma (TACLL). This 35-member International Consortium headquartered at Children's Hospital L.A. conducts Phase 1 trials of new agents for pediatric leukemias and lymphomas. It is led by Dr. Alan Wayne and involves Drs. Pau Gaynon, Stuart Siegel, Wei Li Sun from CHLA/USC. The consortium includes many of the leading pediatric cancer centers in the U.S. and Canada (3 sites), and includes institutions in Israel (1 site), and Australia (4 sites) as well. TACL pioneered the study of Bortezomib in A.L.L> that has led to a current Phase 3 trials in relapsed disease in the Children's Oncology Group (COG).

- **MEXICO AND LATIN AMERICA:** As part of the NCI's SEER program, the Los Angeles Cancer Surveillance Program (CSP) routinely collects demographics and other tumor and clinical characteristics of newly diagnosed cancer patients in Los Angeles County, including birthplace information. Given the large size of the County's population, the CSP has a sizable collection of immigrant cancer patients of first generation (foreign-born, easy to identify by birthplace) and even second generation (US-born to foreign-born parents, can be identified through patient-contact research studies). Surveillance of immigrant patients has unique challenges, as compared to non-immigrants, due to the potential return to country of origin and culturally-based behaviors that may affect the efficacy of the surveillance mechanisms, especially for cancer survival outcomes. But the environmental changes happening to immigrants and the differences in the duration of their US-residency make the research on immigrant cancer patients extremely valuable, especially considering the diverse racial/ethnic backgrounds of the immigrants in Los Angeles County.

The vast majority of Los Angeles's new immigrants come from Asian and Latin American countries where rapid economic development and modernization are happening. Consequently, we have seen cancer incidence increase dramatically over a short period of time in these countries, overwhelming the local existing public health infrastructures and health care delivery systems. Given the geographic location of Los Angeles and the international and cultural connections of its faculty/staff/students, USC Norris is in an advantageous position to seize the historical opportunities with vision and strong leadership to establish new international patient and training programs for global cancer control and prevention. The CSP wishes to facilitate and participate in such endeavors.

Investigator-initiated activities

- **AFRICA:** Dr. Jadvar was invited by the International Atomic Energy Agency (IAEA) to give targeted lectures at the First Symposium on Radiopharmacy in Africa on November 2013. The IAEA-sponsored activity will continue and Dr. Jadvar will be asked to give educational lecture at other third-world or developing countries.
- **AUSTRALIA, CANADA, UK:** The Adolescent and Young Adult (AYA) team of USC is working with researchers from the University of Michigan, Canada, UK, and Australia to validate a distress thermometer adapted to identify and manage distress amongst AYA cancer patients. This project includes the development of a modified distress thermometer with checklist, assessment tool and care plan; an accompanying manual that outlines the care pathway and training for health care professionals working with AYAs.
- **BRAZIL:** Dr. Laird was awarded a USC/FAPESP Grant in the amount of \$9,960.00 for activities related to the project on "Integrated transcriptome and methylome analysis of undifferentiated and differentiated Brazilian pluripotent cell lines." These funds provide for travel (air tickets), health insurance and living allowances for researchers from California, USA, visiting the State of Sao Paulo.
- **CANADA:** New Agents to Neuroblastoma Therapy (NANT) - This multi-institutional clinical trials consortium based at Children's Hospital Los Angeles involves institutions in the U.S. and Canada. It is funded by an NCI Program Project Grant and focuses on Phase 1, 2 And pilot Phase 3 trials of new individual and combination therapies for neuroblastoma. Results of studies are used by the Children's Oncology Group in the design of group-wide trials. Dr. Robert Seeger is the Principal Investigator on this NCI-funded effort which includes Drs. Shahab Asgharzadeh, Araz Marachelian, Judith Villablanca, Hung Chi Tran, Richard Sposto, Susan Groshen, Yves De Clerck.

- **CANADA:** Dr. Epstein has collaboration with Dr. Annie Huang at University of Toronto, Hospital for Sick Kids, on a highly malignant childhood brain tumor called Atypical Teratoid Rhabdoid Tumor.
- **CHINA:** As Director and PI of the USC Surveillance, Epidemiology and End-Results Program Los Angeles Cancer Registry, Dr. Deapen collaborates with other international cancer registry directors. At the request of NCI, he has agreed to participate in a cancer registry and research training program in China in 2014 engaging several countries.
- **COLOMBIA:** Dr. Laird-Offringa gave a lecture via Skype at a conference: “DNA methylation alterations in lung adenocarcinoma” Cali, Colombia, Congress on Biomedical Science, August 2013 and arranged for another lecture by USC postdoc Dr. Suhn Rhie on SNPs and epigenetics. This conference is meant to provide Columbian investigators exposure to recent developments in biomedical science.
- **FRANCE:** Dr. Laird-Offringa is hosting a master’s student for his summer internship, which is required for his master’s degree in Biological Engineering at Polytech Clermont-Ferrand (CUST), Blaise Pascal University School of Engineering, France. DAAD RISE info: After the successful third round of RISE worldwide in 2013 – in which DAAD supports 254 projects by funding undergraduate German students to serve as research assistants – the program is returning again in 2014. Students in the early stages of their studies who have an excellent background in the fields of engineering, natural sciences, medicine and related disciplines, including earth sciences and the ambition to work abroad and gain hands-on research experience in their fields will be matched with researchers worldwide who wish to engage in a meaningful cooperation with a young German research assistant. DAAD will support these short-term summer internships by awarding scholarships to successful applicants to help cover part of the living and travel costs.
- **GERMANY:** Dr. Laird-Offringa participates in the DAAD RISE (Research Internships in Science and Engineering), hosting competitively-selected top notch students for training abroad. Dr. Laird-Offringa’s lab is hosting a student in the summer of 2014.
- **INDIA:** Based on requests for a childhood obesity and multiple health risk behavior prevention program by HRIDAY-SHAN and the PHFIs of India, two formative evaluation studies have been conducted with New Delhi school children with the intention of translating an evidence-based prevention program Pathways (funded by NICHD and NIDA as an RCT with school children in the U.S.) for Indian school children using an RCT design with school as the unit of random assignment. The studies conducted thus far have yielded information on cultural translation of program materials as well as data on teacher implementation of the program.
- **JAPAN:** Dr. Ouelette serves/has served as “Supervisor” on the following awards to Tokiyoshi Ayabe, MD, PhD, Professor (Principal Investigator), Innate Immunity Laboratory, Department of Cell Biological Science, Faculty of Advanced Life Science, Hokkaido University, Sapporo, Hokkaido, Japan:
 - Special Research Grant, 2011 – 2015, Hokkaido University, Center of Innovation – Trial (COI-T) program, 2013 – 2014, Japan Science and Technology Agency (JST)
 - Knowledge Cluster Initiative (Bio-S), 2007 – 2011, Ministry of Education, Culture, Sports, Science and Technology (MEXT), Japan Grant-in-Aid for Scientific Research (B), 2012 – 2013, Japan Society for Promotion of Science (JSPS).

The awards support one trip annually to Sapporo for meetings with Dr. Ayabe and the members of the Innate Immunity Laboratory, with whom the Ouellette lab has collaborated for several years on studies of Paneth cells, inflammation and the microbiota. In addition, lectures are given in English to Hokkaido University undergraduate students in The School of Science and medical students in The School of Medicine under a one week “part-time lecturer” appointment.

- **JAPAN:** Since 2010, Dr. Wu has collaborated with investigators in Japan, including Dr. Koichi Shudo, current Director of Research Foundation Itsuu Laboratory and formerly President of National Institute of Health Sciences in Japan. The project aims to develop effective therapy for treatment of cancer chemotherapy-induced neutropenia.
- **NETHERLANDS:** Dr. Laird-Offringa has an ongoing collaboration with investigators at the Department of Neurology, University of Leiden, which has already led to a recently submitted manuscript, entitled: Pulido, MP*, DerHartunian, MK*, Qin Z, Chung EM*, Lee DS*, Tsou JA*, Klooster R, Wang L, Liu SV, Verschuuren JJGM, Aswad DW and Laird-Offringa IA. Isoaspartylation of ELAVL4 (HuD) is implicated in small cell lung cancer-associated autoimmune response. Submitted to Cancer Cell. (*=students ILO lab).
- **SCOTLAND:** Dr. Laird-Offringa has an ongoing collaboration with pathologist Dr. Keith Kerr, who was the PI on a subcontract for the R01: DNA Methylation Changes During Development and Progression of Lung Adenocarcinoma - \$1,548,500, NIH/NCI R01. 2007-2012, Principal Investigator, 25%. Aimed at identifying new epigenetic events that contribute to lung cancer development and determining their role in progression to cancer.
- **SOUTH KOREA:** Drs. Wendy Cozen and Thomas Mack are involved in developing collaborations between South Korean investigators at Seoul National University and USC to study the effects of short and long-term immigration of South Koreans in Los Angeles and Seoul on diet, gut microbiome and obesity. In addition, cancer patterns in Korean-Americans and South Koreans are being examined by Drs. Dennis Deapen and Eunjung Lee, with future collaborations with the South Korean cancer registry directors.
- **UGANDA:** In 2009, Drs. Haiman and Henderson reached out to Dr. Stephen Watya, a senior urologist at Mulago Hospital/Makerere University, to access the feasibility of enrolling prostate cancer cases and controls in Kampala, as a means to further develop a collaborative network of NCI-funded research of prostate cancer in men of African ancestry. Mulago Hospital is the largest hospital in Uganda with a bed capacity of 1500, and it serves as a national referral and teaching hospital in the region. As a senior urologist, Dr. Watya sees the vast majority of the prostate cancer patients at Mulago Hospital. The pilot phase of the study was designed to enroll 200 incident cases (diagnosed between January 1, 2010 and December 31, 2012) and 200 age-matched controls (details of the study design and enrollment procedures are described below), with the target recruitment depending on future funding (but ideally in excess of 2,000 cases and 2,000 controls). The study protocol was reviewed and approved by the Uganda National Council of Science and Technology (UNCST), Makerere University, Research and Ethics Committee (MUREC), as well as the Institutional Review Board of the University of Southern California. Initial start-up funding for the study in the amount of \$40,000 was provided by the USC Department of Preventive Medicine at NCCC. This money has gone directly to support activities on the ground in Kampala and also allowed for the purchase of biopsy guns and disposable needles. These items were critical as the devices at Mulago were not portable and required needles that had to be sterilized for reuse and were often dull, so biopsies were difficult and of poor quality. This initial support not only demonstrated USC's dedication to cancer research capacity building in this low income country but also in improving clinical care for patients as the more modern guns could be used anywhere conveniently and safely.

Over the past two years, they have enrolled men with prostate cancer from the Urology unit at Mulago Hospital and men without prostate cancer (i.e. controls) from other clinics (i.e. surgery) at the hospital. All patients meeting the inclusion criteria (cases: > 40 years of age; controls: > 40 years of age, PSA level < 4 ng/ml to rule out undiagnosed prostate cancer) and willing to give consent were recruited into the study. Written consent is obtained and two identical informed consent forms translated into Luganda are provided to each participant for them to read or to be read to them, sign or thumb print. After enrollment each study participant undergoes an interview using a standardized questionnaire to collect descriptive and prostate cancer risk factor information. A biospecimen is collected using the Oragene saliva collection kit. A tumor block for each case is reviewed by pathologists at Mulago to define tumor stage and Gleason grade. The saliva samples, questionnaires and histology information are sent to Dr. Haiman's laboratory at the NCCC where the samples are stored, DNA is extracted and the data are entered into a secure computer database. Over the past three years, USC researchers Drs. Haiman and Henderson have visited Uganda yearly to develop and review the study protocol with Dr. Watya. Monthly conference calls between investigators at USC and Mulago Hospital also take place to discuss the study progress, obstacles in recruiting and timelines for shipping samples and questionnaires. Over this two year period, we have enrolled >500 incident prostate cancer cases and >400 controls. As part of the collaboration, all risk factor and genetic data collected are shared between USC NCCC study investigators and those in Kampala. They remain hopeful that we can secure funding to double the number of cases and controls collected over the next year and continue to take steps towards increasing cancer research capacity for population-based cancer research in Uganda.

- **VIETNAM:** Scientific research collaboration on use of snake venom-derived peptides as potential candidate drugs for cancer treatment in Vietnam. This represents a collaboration between USC Norris Comprehensive Cancer Center, Keck School of Medicine, the Haiphong Medical University, Vietnam and the Research Institute for Rural Technology Development, Vietnam Union of Science & Technology Association. At the present time there are over 50,000 breast and prostate cancer patients admitted to the National Cancer Institute Hanoi, Hue & Ho Chi Minh City, Vietnam, annually. The Markland laboratory in the Norris Cancer Center is recognized for the isolation and characterization of potentially clinically important proteins from snake venom. One class of these proteins, known as disintegrins, serve as very effective anti-cancer agents in animals models of human cancer and dramatically inhibit tumor progression and angiogenesis. Therefore, the focus of this collaboration is three fold: (1) to establish a collaborative research program on snake venom to search for candidate drugs using peptides from Vietnamese snakes for cancer treatment in Vietnam; (2) to establish a faculty and postdoctoral fellow scientists' exchange program in the Cancer Research Laboratory of Professor Markland at USC; and (3) to train the Vietnamese scientists in protein isolation and molecular biological techniques, and animal model methodology to complete the necessary preclinical studies in Vietnam in order to establish a clinical trial course of the candidate drugs for treatment of breast and prostate cancer patients in Vietnam.
- **VIETNAM:** Dr. Laird-Offringa has just been invited to become part of the Vietnamese Educational Foundation, which selects top-ranked Vietnamese students to receive fellowships in STEM fields to carry out PhD research at U.S. universities. We anticipate that in the future, a number of such students will enter into the programs in Biomedical and Biological Sciences (PIBBS, which Dr. Laird-Offringa directs) to carry out their PhDs at Keck School of Medicine labs (among which there are a large number of cancer center labs).
- **WORLDWIDE:** Dr. Kast functions as the secretary/treasurer of the International Papillomavirus Society. This society promotes the implementation of vaccines against cancer causing HPV

and stimulates research on the epidemiology/public health aspects, screening, biomarkers, carcinogenesis and treatment of HPV.

- **WORLDWIDE:** Dr. Villablanca along with Dr. Stu Siegel, Dr. Shahab Asgharzadeh, Dr. Hiroyuki Shimada from CHLA are all part of an international working group to update and revise the International Neuroblastoma Response Criteria, an effort sponsored by the NCI.

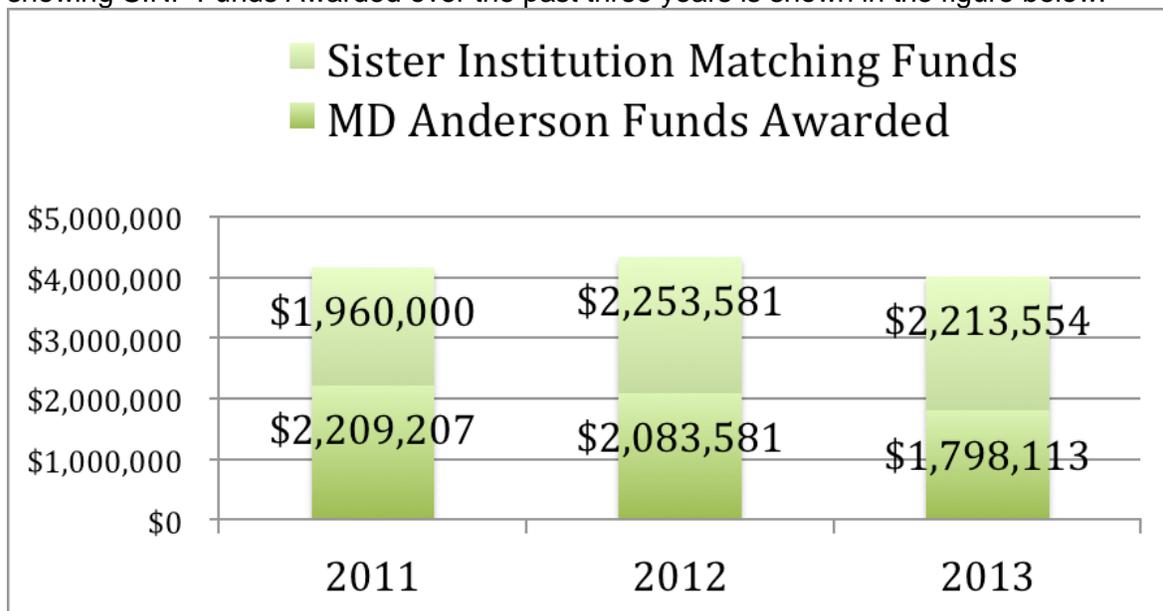
University of Texas MD Anderson Cancer Center

Related Link: [MD Anderson Cancer Center Global Academic Programs \(GAP\)](#)

Institute-wide activities and consortia

- **CHINA:** Grants entitled “*International Center of Traditional Chinese Medicine for Cancer*” ([R21 CA108084](#) and [U19 CA121503](#)) totaling of \$2.5 million USD have been awarded from NCI on the joint projects between MDACC and Fudan University Cancer Center.
- **CHINA:** An active RO1 grant entitled [Placebo Controlled Trial Of Acupuncture To Prevent Radiation-Induced Xerostomia](#) (CA148707) is also ongoing between MDACC and Fudan University Cancer Center.
- **WORLDWIDE:** MDACC collaborations with international partners also results into many grants awarded by the local governments.
- **WORLDWIDE:** MD Anderson Cancer Center runs a large program called the Global Academic Programs (GAP): <http://www.mdanderson.org/gap>. The mission of GAP is to create a global collaborative network dedicated to basic, translational, clinical and population-based research, prevention, and education, to accelerate our mission of Making Cancer History®. Sister institution relationships with prestigious international partners have been established since 2002. Currently 27 sister institutions in 20 countries have been collaborating with MDACC on four mission areas aimed at reducing the world’s cancer burden.
- **WORLDWIDE:** [The Sister Institution Network Fund \(SINF\)](#) is the first financial support GAP has offered to researchers at MD Anderson who are working with our Sister Institutions (SIs) worldwide. Launched in 2010, the first round of funding occurred in FY11 with subsequent rounds in FY12 and FY13. The goal of the SINF program is to seed collaborative research between MD Anderson, our SIs and other global partners. This initial support is intended to assist projects that will ultimately compete for funding from external agencies. A total of 61 projects have been awarded since its inception. MDACC contributes a total of over \$6.1 million dollars with a compatible matched amount from our sister institutions as shown in the figure below. The awarded SINF projects successfully partnered MD Anderson faculty with more than 36 collaborating institutions in 23 countries. Several of the SINF projects are outlined below in the “Investigator-initiated activities” section. Collaboration with Sister Institutions has resulted in a significant increase in numbers of publications with international partners. High impact publications from SINF projects have begun to appear (Nature [2], NEJM, Cell, Mol.Cell, Nat. Cell Biol., JBC [2]) and peer-reviewed extramural funds are also following on from the projects (5 NCI RO1 grants, 2 CPRIT grants; foundation support). Additional information on MDACC publication statistics and examples of joint publication are listed in Appendix D. A graphic

showing SINFF Funds Awarded over the past three years is shown in the figure below:



- **WORLDWIDE: Joint conferences:** Many joint conferences take place yearly throughout our sister institution networks. These conferences attract not only regional audience but also international participants as well. The most notable conference is the annual GAP conference. Starting from 2011 the annual GAP conferences have been held alternating between MDACC and, on rotational basis, various sister institutions every other year.
- **WORLDWIDE: Observership/training programs:** Each year MDACC hosts approximately 80-90 physicians/researchers from our sister institutions as a commitment for educational exchange. They either visit clinic/OR or participate in the basic/clinical research projects for a period from 1 month to 3 years. As a result, many trainees/visitors upon return to their home institutions accent to leadership positions. The most prominent one was the formal president of Fudan University Cancer Center, Dr. Guoliang Jiang, who has conducted research projects in Dr. Kian Ang's group for several years.
- **WORLDWIDE: Nursing program on-site training:** Our nursing division has applied UICC grants to conduct on-site oncology nursing training with international partners.
- **WORLDWIDE: Distant educational training:** MDACC also develops the professional oncology education program for distant training purpose (www.mdanderson.org/poe).

Investigator-initiated activities

Below are samples of the 43 grants highlighting not only individual but also a network of collaborative projects funded through the SINFF program.

- **BRAZIL:** Dr. Eric Jonasch is collaborating on [biomarker development for renal cell carcinoma](#) (RCC) with a number of Brazilian institutes including Dr. Sergio Serrano at Barretos Cancer Hospital, Dr. Maria Nirvana Formiga at AC Carmargo Hospital, and Dr. Oren Smaletz at Hospital Israelita Albert Einstein. Validation of a number of biomarkers with a sample set provided by Brazilian Sister Institutions and sharing the scientific efforts required to complete the project aims between Sister Institutions and MD Anderson Cancer Center will move the field one step closer towards developing validated prognostic and predictive biomarkers that can be broadly used for patients with RCC.

- **BRAZIL, CHILE, MEXICO, NORWAY, and PERU:** Dr. Ricardo Alvarez is working with researchers from a number of countries on [a pilot study of prognostic utility of circulating tumor cells \(CTCs\) assessed by Adnagen Technology and clinical outcome of patients with stage II breast cancer who completed locoregional and systematic treatment](#). The central hypothesis of this proposal is that CTC characteristics predict the risk of relapse in patients with stage III breast cancer. Blood samples will be collected prospectively from such patients at MD Anderson and 5 Sister Institutions. They will use ultrasensitive methods to detect and characterize CTCs in those samples. The group will determine the relationship between CTC number and relapse risk and between the expression profiles of epithelial-mesenchymal transition-inducing transcription factors in CTCs and relapse risk. Collaborators on the project include Dr. Gustavo Zucca at Barretos Cancer Hospital in Barretos, Brazil, Dr. Claudio Salas at Clinica Alemana in Santiago, Chile, Dr. Eduardo Cervera at Instituto Nacional de Cancerología INCan in Mexico City, Mexico, Dr. Bjorn Naume at Norwegian Cancer Consortium – Oslo University Radium Hospital in Oslo, Norway, and Dr. Henry Gomez at Instituto Nacional de Enfermedades Neoplásticas INEN in Lima, Peru.
- **BRAZIL, COLOMBIA, MEXICO and PERU:** Dr. Kathleen Schmeler is collaborating with a group of four Latin American institutions studying [conservative surgery for women with low-risk, early stage cervical cancer](#). The current standard treatment for women with early stage cervical cancer in the United States and abroad consists of a radical hysterectomy and pelvic lymph node dissection. While this is an effective treatment, it is associated with significant morbidity including bladder, bowel, sexual dysfunction, and loss of fertility. Many of these side effects are due to removal of the parametrium, the tissue adjacent to the cervix that contains autonomic nerve fibers. Dr. Schmeler and colleagues are conducting a prospective study to evaluate the safety and efficacy of performing conservative surgery designed to avoid the aforementioned side effects in women with early stage cervical cancer. The PIs at collaborating institutes are Dr. Jose Humberto Fregnani at Barretos Cancer Hospital in Barretos, Brazil, Dr. Rene Pareja at Instituto de Cancerología – Clinica Las Americas in Medellin, Colombia, Dr. David Cantu at Instituto Nacional de Cancerología INCan in Mexico City, Mexico, and Dr. Aldo Lopez Blanco at Instituto Nacional de Enfermedades Neoplásticas INEN in Lima, Peru.
- **BRAZIL, INDIA, and JORDAN:** Dr. David Hui is collaborating with several groups on [novel symptom response criteria and predictors in advanced cancer patients](#). To systematically assess symptoms experienced by advanced cancer patients, Bruera et al. developed the Edmonton Symptom Assessment Scale (ESAS), which is widely used for patient care and research. However, the magnitude of change in symptom intensity that is considered clinically meaningful – the minimal clinically important difference – and the predictors of treatment response have yet to be defined. This study is designed to better define ESAS treatment response and pave the way for adequately powered symptom control trials. Furthermore, the study would identify subgroups of patients with symptoms least likely to respond to palliative care interventions, allowing further personalization of treatments. The PIs at the collaborating institutes are Dr. Carlos Pavia at Barretos Cancer Hospital in Barretos, Brazil, Dr. Mary Ann Muckaden at Tata Memorial Cancer Center in Mumbai, India, and Dr. Fadwa Ali Attiga at King Hussein Cancer Center in Amman, Jordan.
- **BRAZIL and LEBANON:** Dr. Ray Hachem is working on [improved management of central line associated bloodstream infection \(CLABSI\) with antimicrobial lock therapy](#) with Dr. Ivan Franca e Silva at AC Camargo Hospital in Sao Paulo, Brazil, Dr. Nelson Hamerschlag at Hospital Israelita Albert Einstein in Sao Paulo, and Dr. Souha Kanj at American University of Beirut, Lebanon. A multicenter pilot study involving 180 patients with CLABSI is being conducted to study the safety, efficacy, and cost-effectiveness of a new lock solution in improving the management of CLABSI without the removal of the infected catheter. This novel management strategy will have a profound impact in improving the clinical care of high risk patients with CLBSI.

- **BRAZIL and SOUTH KOREA:** Dr. George Calin is collaborating on [deciphering the role of non-coding pyknons in colorectal cancer](#) with Dr. Emmanuel Dias-Neto at AC Camargo Hospital in Sao Paulo, Brazil, Dr. Rui Manuel Reis at Barretos Cancer Hospital in Barretos, Brazil, and Dr. Sang Kil Lee at Yonsei University Medical Center in Seoul, Korea. Dr. Calin and colleagues discovered that the computationally predicted class of molecules known as pyknons represents a novel category of non-coding RNAs. In addition, they found that in colorectal cancer (CRC) patients these transcripts' expression can predict overall survival. This study's aims include: (1) the genome-wide identification of pyknon expression in two cohorts of patients; (2) the identification of the transcriptional regulation of pyknons in CRCs; (3) the identification of biological effects of differentially expressed pyknons in CRCs; (4) the identification of potential diagnostic and prognostic significance by measuring of the plasma levels of pyknons in CRC patients.
- **CHINA:** Dr. Michael Wang is conducting [a phase II, multicenter, international study of lenalidomide and rituximab in relapsed/refractory mantle cell lymphoma, diffuse large B-cell non-Hodgkin lymphoma, transformed large cell lymphoma, and grade 3 follicular lymphoma](#) with Drs. Xiaohong Han and Yuankai Shi at Chinese Academy of Medical Sciences and Yizhuo Zhang at Tianjin Medical University Cancer Institute and Hospital. The majority of studies have been conducted in Western populations showing good efficacy and minimal toxicity and this study seeks to investigate the safety and efficacy of this drug combination in an Asian population. This pilot study will generate data that can be used to initiate a future phase III trial for registration with the Chinese State Food and Drug Administration for potential approval of these drugs for use in China.
- **CHINA:** Dr. Wei Zhang is collaborating with two institutes in China on [characterization of soft-tissue leiomyosarcoma and the clinical significance of mesenchymal-to-epithelial transition in this cancer](#). Bone metastasis and skeletal complications are the major contributing factors to prostate cancer morbidity and mortality. The goal of this project is to understand the relationship between bone marrow-derived mesenchymal cells (BM-MSCs) and prostate cancer cells in pathological bone remodeling in prostate cancer metastasis. To achieve the goal, three specific aims have been proposed: (1) examine the effect of osteoblastic and osteolytic prostate cancer cells on cancer-associated BM-MSCs *in vitro*; (2) determine the role of cancer-associated BM-MSCs in bone remodeling *in vivo*; and (3) identify the unique miRNA(s) network in cancer-associated BM-MSCs responsible for the pathogenic lesion of prostate cancer bone metastases. Drs. Jian Wang and Yingqiang Shi at Fudan University Cancer Hospital in Shanghai and Drs. Guowen Wang and Jilong Yang from Tianjin Medical University Cancer Institute and Hospital in Tianjin are collaborating on the project.
- **CHINA:** Dr. Qingyi Wei is part of [a parallel study at sister institutes investigating sequence variations in the microRNA binding sites at the 3' untranslated region \(UTR\) of the apoptosis genes CASP3, CASP6 and CASP7 and risk of gastric cancer](#). The researchers hypothesize that genetic variants in the predicted miRNA-binding sites of caspase genes are associated with abnormal expression of mRNAs in peripheral blood mononuclear cells (PBMCs) and are associated with risk of gastric cancer. To test this hypothesis, they are performing a case-control analysis of available biological materials (PBMCs and DNA samples) of 500 cases and 500 cancer-free controls at each of the participating institutions to determine: (1) associations of 14 predicted miRNA-binding site SNPs in CASP3, CASP6 and CASP7 with gastric risk in a total of 500 cases and 500 controls; (2) associations of mRNA levels of these genes in PBMCs with risk of gastric cancer in a subset of 200 cases and 200 controls; (3) correlations among genotypes, levels of mRNA of the selected caspase genes in a subset of 200 cases and 200 controls; and (4) differences between Caucasian and Chinese subjects in all genotypes and phenotypes (including

the risk). Collaborators on the project are Dr. Yanqiao Zhang at Harbin Medical University Cancer Hospital in Harbin and Dr. Jin Li at Fudan University Cancer Hospital in Shanghai.

- **CHINA, JAPAN and TAIWAN:** Dr. Mien-Chie Hung is investigating [Hedgehog \(Hh\) pathways and tumor initiating cells in esophagus cancer](#) with collaborators Dr. Quentin Liu at Sun Yat-sen University Cancer Center in Guangzhou, China, Dr. Hideyuki Saya at Tokyo Oncology Consortium – Keio University in Tokyo, Japan, and Dr. Jen-Liang Su at China Medical University in Taichung, Taiwan. There are significant differences in the prevalence of different types of esophageal cancer between the Western world, where esophageal adenocarcinoma incidence is rising dramatically, and Asia, where esophageal squamous cell carcinoma remains the most prevalent esophageal cancer. The etiological difference between these two types of esophagus cancers is not clear and this collaborative investigation between the U.S. and Asian investigators aims to decipher the differences. The Hh/Gli pathway is frequently activated in both cancer types and is a potential therapeutic target. However, several pathways, independent of Hh can also activate Gli1. The mechanisms that activate Gli1 through the non-canonical Hh pathway are the subject of this study.
- **CHINA and POLAND:** Dr. Shao-Cong Sun is working on [oncogenic activation of non-canonical NF-κB in B-cell lymphomas](#) with Dr. Ye Guo at Fudan University Cancer Hospital in Shanghai, China, Dr. Huilan Rao at Sun Yat-sen University Cancer Center in Guangzhou, China, and Przemyslaw Juszczynski at Polish Cancer Consortium – Polish Academy of Sciences in Warsaw, Poland. The collaboration will use animal models and human lymphoma cells to investigate: (1) the role of noncanonical NF-κB pathway in the initiation and maintenance of B-cell lymphomas; and (2) how two novel NIK regulators, Otud7b and TBK1, negatively regulate noncanonical NF-κB signaling and determine the role of these novel factors in regulating B-cell lymphomagenesis.
- **CHINA and SOUTH KOREA:** Dr. Ju-Seog Lee is collaborating on a project [investigating the Hippo pathway in hepatocellular carcinoma](#) with Dr. Minshan Chen at Sun Yat-sen University Cancer Center in Guangzhou, China, Dr. Young Nyun Park at Yonsei University Medical Center in Seoul, Korea. The overall goal of this proposal is to uncover molecular mechanisms that lead to inactivation of Hippo pathway in HCC and validation of mechanisms in well-defined cell culture condition. The four specific aims of the study are: (1) validation of association of silence of hippo pathway (SOH) gene expression signature with prognosis in independent HCC cohorts; (2) identification of genetic or epigenetic events associated with silence of Hippo pathway in HCC; (3) proteomic characterization of HCC associated with inactivation of Hippo pathways; (4) identification of potential serological markers in independent cohorts.
- **CHINA and TAIWAN:** Dr. Sue-Hwa Lin is investigating [bone marrow-derived mesenchymal stem cells in prostate cancer-induced bone remodeling](#) with Dr. Chia-Ling Hsieh at China Medical University in Taichung, Taiwan, and Dr. Jinpu Yu at Tianjin Medical University Cancer Institute and Hospital in Tianjin, China. Very little is known about the genomic and molecular attributes of soft-tissue leiomyosarcoma, and there are no recognized targets for drug development. It was recently discovered that epithelial-mesenchymal transition (EMT) occurs in leiomyosarcoma. Clinical correlation studies revealed that EMT is associated with longer survival in leiomyosarcoma. Through this multicenter, multidisciplinary, hypothesis-driven, and exploratory collaboration, the group seeks to definitively validate EMT as a clinically relevant phenomenon in soft-tissue leiomyosarcoma, characterize the signaling pathways of this process, and identify potential aberrant genetic events that may provide therapeutic targets for existing drugs or for future drug development for this disease.
- **ISRAEL:** Dr. Vicki Huff in collaboration with Dr. Benjamin Dekel at Sheba Medical Center is studying cancer stem cells (CSC) in mice and human Wilm's tumor (WT). The investigators will isolate CSCs from human and mouse tumors, identify via proteomic analyses cellular signaling

pathways that are activated in the CSCs and also the original primary tumors, and compare these data between human-mouse and between CSC-primary tumor to identify those pathways whose activation underlies the "stemness" phenotype. These studies will pave the way for in vivo animal studies with the ultimate goal of providing therapeutic targets for patients. Dr. Anil Sood is targeting STIL for ovarian and breast cancer in collaboration with Dr. Shai Izraeli at Sheba Medical Center. They hypothesize that drugs identified through connectivity map analysis (C-MAP, <http://www.broadinstitute.org/cmap>) of cancer cells treated with siRNA against STIL could enhance the activity of systemic siRNA therapy of STIL. They will then analyze the cytotoxicity of these drugs, their effects on STIL protein and on centrosome biology in-vitro and in-vivo. This study reflects the ongoing synergistic collaboration of unique contributions by the PIs in the two sister institutions. Hence, it is highly likely that this SINP project will lead to substantial progress, resulting in major extramural funding and eventually clinical trials in several sister institutions of MDACC.

- **JAPAN:** Dr. Naoto Ueno is collaborating with Dr. Hideyuki Saya at Tokyo Oncology Consortium – Keio University to understand [epithelial growth factor receptor's \(EGFR's\) role in triple-negative breast cancer](#) (TNBC). EGFR is considered a poor prognostic marker, and recent clinical data showed that treatment of metastatic TNBC with an anti-EGFR antibody improved disease control, suggesting that EGFR is an important target in TNBC. Current EGFR-overexpressing mouse models of TNBC have mutant H-Ras, a characteristic not common in human TNBC. Drs. Ueno and Saya seek to create a more clinically relevant animal model so they may ultimately elucidate the biological role of the EGFR pathway in TNBC. In this collaboration between MD Anderson Cancer Center and the Tokyo Oncology Consortium, EGFR will be transfected into mammary epithelial cells with different genetic backgrounds and it will be determined whether these cells induce tumors and metastases in recipient mice. The group will then determine the biological phenotype of the established tumors whether they resemble human EGFR-overexpressing TNBC.
- **JORDAN:** Dr. Ana Maria [Gonzalez-Angulo](#) is working with Dr. Hikmat Abdel-Razeq at King Hussein Cancer Center on [frequency and outcome of BRCA1/2 mutations in Jordanian breast cancer women treated at King Hussein Cancer Center](#). Breast Cancer is the leading cause of cancer-related deaths among Jordanian women. Approximately 40% of new breast cancer cases are diagnosed before the age of 45 years. The high proportion of cases in young women might reflect a high prevalence of hereditary breast cancers in the Jordanian population. Germ-line mutations in BRCA 1 and BRCA2, the two autosomal dominant breast cancer susceptibility genes, account for the majority of breast and ovarian cancers in high risk families. However, the contribution of BRCA 1 12 mutations to hereditary breast cancer is not currently known in the Jordanian population. This project is designed to evaluate the frequency of germ line mutations in BRCA 1/2 in Jordanian breast cancer women with a selected high risk profile, and postulate that these mutations will have a significant contribution to hereditary breast cancer in Jordan. In addition, the investigators will compare clinical & pathological features and outcome between mutation carriers and non-carriers. Moreover, the relative predictive importance of demographic, clinical, pathologic and family history characteristics in identifying BRCA 1/2 mutation carriership will be analyzed. There is great paucity of data related to the role of BRCA 1/2 mutations in the Arab population, with only few studies evaluated BRCA mutation status in Arabs from Saudi-Arabia, east Jerusalem and Egypt, and none from Jordan.
- **JORDAN and LEBANON:** Dr. Christopher Garrett is investigating [the survival advantage associated with metformin usage in patients with colorectal cancer \(CRC\) and type 2 diabetes](#) (DM) with Dr. Amal Al Omari at King Hussein Cancer Center in Amman, Jordan and Dr. Ali Shamseddine at American University of Beirut in Lebanon. Type 2 DM and CRC are chronic diseases with major health implications in the United States and the Middle East; in fact, the rate of rise in prevalence of type 2 DM and CRC in the Middle East is amongst the highest in the

world. The knowledge gained by this study will be crucial for determining if the anti-cancer effect of metformin is generalizable to patients developing insulin resistance, or even to non-diabetic CRC patients.

- **NORWAY:** Dr. Michael Rosenblum is working with Dr. Kristian Berg of the Norwegian Radium Hospital on a project to study [the application of photochemical internalization \(PCI\) to optimize delivery of VEGF 121-rGel to the vasculature of invasive solid tumors](#). Macromolecules with potential clinical benefit are frequently prohibited from penetrating cell membranes and are endocytosed and are degraded by hydrolytic enzymes in the lysosomes. PCI is a novel technology for release of endocytosed macromolecules into the cytosol. PCI has been shown to potentiate the biological activity of a large variety of macromolecules and other molecules that do not readily penetrate the plasma membrane. PCI may be utilized for treatment of most solid tumors and the first phase I/II clinical trial with PCI of bleomycin for several cancer indications has recently been completed with encouraging results.
- **NORWAY:** Dr. [Sendurai Mani](#) is working with Ola Myklebost, (Norwegian Cancer Consortium - Oslo University Hospital - Norwegian Radium Hospital) on [the role of hmga2 in cancer; epithelial-mesenchymal transition, stem cells and cancer progression](#). Metastasis accounts for the majority of cancer related deaths and the molecular and cellular mechanisms that allow tumor cells to escape the primary tumor site and be able to establish secondary tumors are attractive targets for therapy. A key element in the metastatic spread of epithelial tumors is the epithelial-mesenchymal transition process, where adherent epithelial tumor cells detach and become invasive cells with mesenchymal traits. The induction of EMT in cells will also induce stem cell characteristics, and thereby generating so-called “cancer stem cells”. The CSCs have the capacity to escape classical cancer treatment, and subsequently function as a “seed” of a new tumor, either causing relapse or metastasis. The architectural transcription factor HMGA2, which is normally expressed during embryogenesis, is aberrantly re-expressed in cancers where the expression correlates with tumor aggressiveness. HMGA2 is a central regulator of stemness and differentiation during embryogenesis, and this has recently also been shown for cancer stem cells. However, the exact functions of HMGA2 in stem cells have not been thoroughly investigated. Interestingly, the HMGA2 protein is necessary and sufficient in transforming growth factor- β (TGF- β)-induced EMT in a mouse model system. We therefore would like to delve deeper into the role of HMGA2 during the generation of CSC through EMT. Furthermore, we want to reduce the HMGA2 expression to prevent generation of CSCs or induce differentiation of existing CSCs, thereby sensitizing the cells to traditional therapies and preventing relapse and metastasis.
- **POLAND:** Dr. Waldemar Priebe is collaborating with Drs. Aleksander Sochanik and Bogdan Lesyng of the Polish Cancer Consortium on [targeting resistance to BRAF inhibitors with WP760, a melanoma selective agent](#). Their recent research efforts focus on the development of novel molecules to control expression of specific genes at the transcriptional level. They are designing and developing libraries of non-peptide, non-oligonucleotide small molecule DNA binders aimed to potently and selectively compete with transcriptional factors for their DNA binding sites, using an innovative modular approach (“LEGO” Block’s Approach). A compound called WP760 was repeatedly found to be selectively cytotoxic to melanoma, while showing little or no cytotoxicity to other tumors including breast, lung, brain, colon, and leukemia. The group is investigating whether WP760, due to its selective cytotoxicity against melanoma cell lines and its unique mode of action, is also highly active against melanomas resistant to BRAF inhibitors (tumors bearing wildtype BRAF or acquired resistance). Preclinical development of WP760 including its formulation and studies of its exact mechanism(s) of action might lead to a new class of therapeutics and bring completely new agent to clinical studies in melanoma patients.

- **SPAIN:** Drs. Michael Riben and Kevin McCabe are working with Dr. Juan Fernando Garcia at MD Anderson International Espana on [development and testing of a collaborative digital pathology network for research, education and clinical care](#). In this era of collaborative science, tools that facilitate efficient information sharing among collaborators accelerate knowledge discovery, integration, and re-use. A collaborative digital pathology network (DPN) infrastructure is a cornerstone for an enterprise collaboration framework (ECF) to support cancer biomarker research, drug-discovery, and personalized cancer therapy. These researchers propose to design, deploy and test a collaborative digital pathology network that can scale globally to integrate MD Anderson's entire sister institution network (SIN) and form the cornerstone of an ECF for research, education and clinical care.
- **TAIWAN:** Dr. Richard T. Lee is collaborating with Dr. Su-Peng Yeh at China Medical University on [a pilot study of acupuncture for the treatment of chronic, chemotherapy-induced peripheral neuropathy \(CIPN\) in cancer survivors](#). Thousands of cancer patients receive taxane- and platinum-based chemotherapy, and upwards of 50-60% of these patients develop CIPN, a painful and potentially debilitating condition. Although researchers have investigated a variety of pharmacologic treatments for CIPN, a definitive, successful treatment for the condition has not been identified. This group aims to determine whether acupuncture will also be beneficial for patients who have developed chronic CIPN. Prior to developing a large randomized clinical trial to test this hypothesis, they are conducting a pilot study to evaluate the use of electrical stimulation and total dose of acupuncture for chronic, taxane- and platinum-induced peripheral neuropathy in cancer survivors.
- **TAIWAN:** Dr. Ellen Gritz is working with Dr. Cheng-Chieh Lin at China Medical University on [biobehavioral and cultural determinants of betel quid chewing, dependence, and withdrawal in Taiwan](#). Previous research has established a strong link between betel quid chewing, a common practice among Taiwanese men, and oral cancer. This project extends upon existing collaboration between MD Anderson and China Medical University Hospital and seeks to characterize betel quid chewers and their withdrawal symptoms, in order to address an urgent cancer epidemiology issue in Taiwan. In a two phase study, the researchers are using a qualitative approach (guided focus group and interviews), followed by assessment of betel quid withdrawal in current chewers.

Below are examples of multi-institution, international clinical trials MDACC has been involved in.

- **CHINA:** MDACC and Fudan University Cancer Center completed a Phase I clinical trial of Hua Chan Su on Pancreatic cancer patients (funded by a U19 Grant).
- **CHINA:** MDACC and Fudan University Cancer Center investigators are collaborating on a placebo controlled trial of acupuncture to prevent radiation-induced xerostomia.
- **COLOMBIA:** MDACC PI Kathleen Schmeler and Colombian PI Rene Pareja-Franco are conducting a trial on conservative surgery for women with low-risk, early stage cervical cancer.
- **COLOMBIA:** MDACC PI Pedro Ramirez and Colombian PI Rene Pareja-Franco are collaborating on a trial investigating a laparoscopic approach to cervical carcinoma: a phase III randomized clinical trial of laparoscopic or robotic radical hysterectomy versus abdominal radical hysterectomy in patients with early stage cervical cancer.
- **JAPAN:** MDACC investigators and researchers from the Tokyo Oncology Consortium (at St. Luke's International Hospital and Keio University) are conducting a phase II study of lapatinib and trastuzumab followed by concurrent lapatinib, trastuzumab, and paclitaxel followed by surgery for primary HER2-positive breast cancer. This is the first investigator-initiated NCI Cancer Therapy Evaluation Program clinical trial in Japan.

University of Wisconsin Carbone Cancer Center

Institute-wide activities and consortia

- **CHINA:** Dr. Wilding and staff from the University of Wisconsin Carbone Cancer Center (UWCCC) participated in the initial meeting of the US-China Anti-Cancer Association (USCACA) and as members of the US delegation, in 2009, visited Beijing Cancer Hospital, the Chinese Academy of Medicine Cancer Hospital, Guangdong Province Hospital, Cancer Center of Sun Yat-sen University Hospital, RenJi Hospital and the Cancer Center of Fu Dan University. With members of the USCACA and the Chinese Society of Clinical Oncology (CSCO), Dr. Wilding developed and conducted a course on early phase clinical trials in conjunction with CSCO 2011 in Xiamen. Seven Chinese cancer centers were invited to send up to four junior faculty members each. The goal is to develop Good Clinical Practice-level clinical research at Chinese cancer centers. Through funding from the USCACA, the UWCCC provided oncology phase I clinical trials training in 2013 to a research nurse from Guangdong General Hospital. Dr. Wilding and staff visited the Guangdong General Hospital in 2013 and met with Dr. Wu and his faculty for presentations and outcome discussions on the UWCCC International Training Program and the recent scholarship recipient. In collaboration with the USCACA, Dr. Wilding attended the 2013 Guangzhou International Symposium on Oncology and chaired a panel on immunotherapy treatments in cancer.
- **CHINA:** Dr. Wilding and staff traveled to China in November, 2013 and met with Minghang District leaders to discuss plans for a fall, 2014 UW-China conference in Shanghai and also met with professors from the Shanghai Chest Hospital to discuss potential collaborative research proposals.
- **CHINA:** University of Wisconsin Madison has established a research office in Shanghai to serve as a resource for the research and training efforts in China.

Investigator-initiated activities

- **CHINA:** Dr. Bruce Harms from the Department of Surgery has established a faculty exchange program with Beijing PLA 301 Hospital for surgical oncology.
- **SOUTH KOREA:** Dr. Howard Bailey, leader of the Chemoprevention Program, has established collaborations with the Asan Medical Center, South Korea, which was included in his recent chemoprevention clinical trial consortium grant renewal. In May, 2013, Dr. Howard Bailey and nine additional UW faculty, traveled to the Asan Medical Center for a two day symposium on chemoprevention. In November, 2013 ten clinicians and scientists from the Asan Medical Center, visited the UWCCC for discussions and plans for chemoprevention collaboration proposals. A scientist from the Asan Medical Center was selected to train in a UWCCC research lab focusing on GI and GYN cancers, from January through March, 2014. UWCCC staff will visit the Asan Medical Center in May, 2014 to attend discussion and outcomes presentation of the UWCCC Observership Program and meetings on personalized medicine and global health initiatives in clinical trials. Finally, Dr. Wilding is invited to present the Plenary Lecture "Comprehensive Cancer Center Program for Precision Medicine" at the 12th Annual Meeting of Korean Association for Clinical Oncology, May, 2014.
- **WORLDWIDE:** Dr. James Cleary, leader of the UWCCC Pain and Policy Research Program, works with multiple countries and the WHO on pain management and narcotic analgesics.

Vanderbilt-Ingram Cancer Center

Related Link: [Vanderbilt Institute for Global Health](#)

Vanderbilt works to promote and increase the influence and leadership of Vanderbilt-Ingram Cancer Center (VICC) and Vanderbilt University in the global health area. Leveraging years of experience in conducting international collaborative research and capitalizing on an established global health network, investigators will serve as ambassadors and liaisons for the global health initiative at VICC. They will assist with the identification of overlapping interests and priorities between VICC and potential partners and coordinate and facilitate communication, information sharing, and scientific exchanges between partner institutes. They will assist in the development of new scientific initiatives and the implementation of plans relevant to global health and cancer control.

Institute-wide activities and consortia

- **ASIA:** VICC investigators lead the Asian Genetic Epidemiology Network (AGEN) consortium work group on Obesity-Related Phenotypes, which conducts an ongoing study including over 135,000 men and women. Seven novel loci for obesity have been identified; three have been published in *Nature Genetics* and another paper describing the four others is currently under review by *Molecular Human Genetics*. In addition, VICC members are major investigators on five other AGEN consortium projects investigating genetic susceptibility markers for type 2 diabetes, height, lipids, blood pressure, and smoking behavior.
- **ASIA:** Recently, VICC investigators led the design of an exome array specific to Asians. Multiple research groups have used this array to genotype over 60,000 samples, providing many new opportunities for collaboration to identify novel genetic susceptibility genes for cancers and other chronic diseases.
- **ASIA:** VICC investigators lead two consortia in Asia for genome-wide association studies of breast and colorectal cancers. The breast cancer consortium includes approximately 50,000 cases and controls from more than 20 East Asian studies. The colorectal consortium includes more than 40,000 cases and controls recruited from studies conducted in China, Japan, Korea, and Singapore. Several genetic risk markers of breast and colorectal cancers have been identified. These results have been published in *Nature Genetics* (<http://www.nature.com/ng/journal/v41/n3/abs/ng.318.html>; <http://www.nature.com/ng/journal/vaop/ncurrent/abs/ng.2505.html>) and other highly ranked journals.
- **ASIA:** VICC investigator Dr. Wei Zheng is a leader of the Asian Cohort Consortium (ACC), which includes 19 cohort studies conducted in China, Japan, Korea, Singapore, and India and involves over 1 million individuals. VICC investigators led the first project in the consortium to quantify the association between body mass index and total and cause-specific mortality (<http://www.ncbi.nlm.nih.gov/pubmed/21345101>). Currently, VICC investigators are leading a project estimate the impact of tobacco smoking on mortality in Asians, which will provide important information for government policy making.
- **CENTRAL AMERICA:** VICC investigators lead the Gastric Cancer Epidemiology Initiative in Central America, which has been in place for the last decade with collaborators in Honduras, Nicaragua, and El Salvador. This population-based epidemiology program systematically investigates aspects of host response and genetics, *H. pylori* virulence, and dietary and environment factors related to carcinogenesis, as well as prevention projects. In addition to NCI funding, support has included the Gates Foundation and other scientific foundations. Investigators (Drs. Doug Morgan and Jennifer Pietenpol) were recently awarded funding from

the NCI Center for Global Health for a Cancer Bioinformatics network and capacity building in the Central America LMICs.

- **CHINA:** Vanderbilt collaborates with the Cancer Institute of the Chinese Academy of Medical Sciences (CICAMS) and the Chinese CDC to undertake research and training related to HIV and cervical cancer in Yunnan Province in southern China, the epicenter of the HIV epidemic in China. With NIH-Fogarty International Center support ([Vanderbilt University-CIDRZ AIDS International Training And Research Program](#)), the first training workshop in China focused on HIV and cervical cancer was held in Kunming, the capital of Yunnan Province. Over 100 physicians and nurses were trained in cervical cancer prevention in the context of HIV/AIDS care. An HIV-cervical cancer prevention research study in Yunnan is now being developed, which will be incorporated within the population-based screening program organized by CICAMS with support from Chinese federal government.
- **CHINA:** VICC investigators Drs. Wei Zheng and Xiao Ou Shu lead two large, population-based cohort studies that include approximately 136,000 men and women in Shanghai, China. Approximately 90% of study participants provided biological samples (blood or buccal cells and urine). The resources established in these studies have generated over 250 publications and supported over 50 research projects, including multiple international research consortia.
- **CHINA:** The Fogarty International Center-funded [Vanderbilt-Shanghai Chronic Disease Research Training Program](#) (CDRTP) partners with the Shanghai Institutes of Preventive Medicine (SIPM), Fudan University, and the Shanghai Cancer Institute (SCI) to build capacity for research of cancer and chronic disease in China. The specific aims of the VU-Shanghai CDRTP are: (1) to train a cadre of experts to conduct multi-disciplinary chronic disease research and build training capacity in China, (2) to train a new generation of scientists and future leaders in chronic diseases research in China, (3) to build research capacity in China and establish long-term collaborative relationships with Vanderbilt chronic disease researchers, (4) to ensure and document the long-term success of the training programs in China that are being facilitated and upgraded through this award, and (5) to build national and international leadership in chronic disease prevention and control through existing and newly established networks. This program has trained 16 researchers/scholars from China and organized two 5-days workshops on chronic disease research and prevention in Shanghai. Currently, the program sponsors 3 additional researchers from China who will spend 6 to 12 months at Vanderbilt for methodological training in chronic disease research and prevention. An international conference focusing on chronic disease research and prevention in developing countries will be held in China May 28-31, 2014.
- **COLOMBIA:** VICC has been supported by NCI for more than 25 years to investigate the etiology of gastric cancer in Colombia, a "population laboratory" with subgroups at very high and very low risk for gastric cancer.
- **NORTHERN IRELAND:** Queen's University Belfast and Vanderbilt University have formed a formal collaboration in cancer epidemiology that includes faculty, postdoctoral, and student exchanges beginning in 2013. As a result, several VICC members are engaged in cancer-related research projects with collaborators at Queen's University Belfast. Highlights include: 1) Drs. Wei Zheng, Harvey Murff, and Martha Shrubsole are studying genetic and epigenetic predictors of adenoma recurrence, 2) Dr. Qi Dai is contributing to a study of magnesium intake with esophageal cancer and Barrett's esophagus, 3) Drs. Dan Beauchamp and Liebler may use NI samples for validation of their signatures and proteomics work, 4) Dr. Xiao-Ou Shu is planning to submit a grant application to organize a new consortium study to identify predictive biomarkers for triple-negative breast cancer (i.e., lack of estrogen and progesterone receptor,

and HER2 expression). In addition to these projects, several other joint projects are also in development.

- **ZAMBIA:** A partnership with the Center for Infectious Disease Research in Zambia (CIDRZ), the Zambian Ministry of Health, and the University Teaching Hospital (UTH) in Lusaka, Zambia includes training and capacity building efforts in support of the Cervical Cancer Prevention Program in Zambia (CCPPZ). The CCPPZ is the first and the largest population-based screening program in sub-Saharan Africa built upon the HIV/AIDS treatment and care infrastructure developed through PEPFAR. Drs. Mulindi Mwanahamuntu and Groesbeck Parham are in-country collaborators and training efforts are supported by the Fogarty International Center ([Vanderbilt University-CIDRZ AIDS International Training And Research Program](#)) and CDC. This program has screened over 130,000 women through December 2013 who have received VIA and treatment by same-day cryotherapy or referral for a loop electrosurgical excision procedure (LEEP) when indicated. This work has successfully demonstrated the programmatic feasibility of scaling up a PEPFAR-funded allied health project that strengthens AIDS treatment and care programs. The Zambian program has been hailed as a model program by PEPFAR and UNAIDS and was recently selected as the first program worldwide to launch a comprehensive, integrated cervical and breast cancer prevention initiative as part of the Pink Ribbon Red Ribbon partnership through the George W. Bush Institute, Susan G. Komen for the Cure, and UNAIDS.

Investigator-initiated activities

- **ASIA:** An R01-supported consortium study in Asia to identify molecular biomarkers for subtypes of *H. pylori* that are related to stomach cancer risk was initiated in 2013. This study, led by Dr. Meira Epplein, involves 2,000 cases and 2,000 controls from 5 cohort studies conducted in China, Korea, and Japan and will have its first investigator meeting in May 2014 in Shanghai, China.
- **CHINA:** Drs. Wei Zheng and Xiao-Ou Shu serve on the expert panel of the Basic Research for Cancer Personalized Medicine program, a newly funded 5-year program, at the Sun Yat-sen University Cancer Center. The main objectives of this program are to understand the mechanisms of genetic susceptibility, establish risk models for screening high-risk populations and develop effective personalized preventive interventions to reduce cancer morbidity and mortality through molecular and genetic epidemiological studies.
- **DENMARK and FINLAND:** In collaboration with investigators from Denmark and Finland, Drs. Debra Friedman and Xiao-Ou Shu submitted a UM1 grant to establish the Adolescent and Young Adult Cancer Survivor Study. This cohort will include over 90,000 cancer patients diagnosed between age 15 and 39 years and will establish an offspring cohort of over 60,000 of their children. The resources established by this study will permit future simultaneous investigation of cancer diagnosis, treatment, and non-cancer related treatments on physiologic and psychosocial outcomes among young adult cancer survivors and their children.
- **EUROPE and AUSTRALIA:** VICC investigators are collaborating with investigators from Australia and Europe on studies of genetic markers for endometrial, breast, prostate, and colorectal cancers.
- **GHANA:** Dr. Leon Raskin (VICC member), a member of the African Colorectal Cancer Research Consortium, is leading an ongoing, collaborative study of colorectal cancer with researchers from the University of Ghana in Accra, Ghana. This collaborative work will establish a hospital-based, case-control study of colorectal cancer in Ghana, the first in Sub-Saharan

Africa, to investigate clinical, pathological, molecular, and genetic features of colorectal cancer, as well as nutritional and lifestyle factors associated with risk for colorectal cancer in Ghana.

- **INDIA:** Dr. Vikrant Sahasrabudhe, who is currently on detail to the NCI's intramural Division of Cancer Epidemiology and Genetics, is the co-PI of a study being conducted in India as part of the 'Intramural-to-India' initiative funded by the NIH Office of AIDS Research. This joint initiative with the Indian Council of Medical Research is a multicentric study recruiting a cohort of HIV-infected women with the goal of evaluating novel, low-cost, and potentially sustainable HPV-based biomarkers for improving secondary prevention of cervical cancer. This study will permit validation of an array of clinical and laboratory implementation protocols and provide a resource for etiologic and prevention studies on HIV-HPV co-infection.
- **ISRAEL:** Dr. Leon Raskin is leading an NCI-funded (R00) study investigating the genetic basis of familial colorectal cancer type X (FCCTX). This study focuses on the identification of new genes harboring rare mutations that considerably increase the risk of colorectal cancer. Dr. Raskin collaborates with Tel Aviv University in Israel to identify patients with FCCTX for this study.
- **KENYA:** Dr. Harold "Bo" Lovvorn, a Vanderbilt researcher and pediatric surgeon, is studying Wilms' tumor in Kenya. This two-year, NCI-funded study, [Molecular Analysis of Ethnic Variations In Wilms' Tumor](#), is uniquely designed to explore the biological basis for ethnic variation in the development and progression of this lethal childhood kidney cancer. One full-time VICC staff member lives in Kenya to work on this research.
- **NIGERIA:** Dr. Leon Raskin leads an ongoing research project focusing on the molecular biology of colorectal cancer in Nigeria with a collaborator from University of Ibadan in Ibadan, Nigeria. This study will evaluate the molecular and genetic landscape of 150 colorectal tumors.
- **ZAMBIA:** Dr. Sten Vermund is co-PI of the University of Zambia initiative, [Programmatic: Expanding Innovative Multidisciplinary Medical Education In Zambia](#) (an FIC-funded Medical Education Partnership Initiative grant). This initiative is focused on curriculum reform and incorporates an M-Ed program (where trainees get a Master's degree, while getting a PhD) and enhancements to infrastructure, in addition to conducting simulations, teaching in labs, and enhancing the HIV track. Dr. Vermund also received an award entitled [Fogarty International Clinical Research Scholars Support Center @ Vanderbilt-AAMC](#) for related work.

Winship Cancer Institute of Emory University

Related Link: [Emory Global Health Institute](#)

Institute-wide activities and consortia

- **ARMENIA, GEORGIA, MEXICO, ETHIOPIA, RWANDA, VIETNAM AND ZAMBIA:** Emory AIDS International Training and Research Program (AITRP) aims include: providing long, medium, short term, and in-country training and research opportunities in HIV/AIDS to a diverse group of outstanding young researchers, providing collaborative training and research among Emory, CDC, and investigators in Armenia, Georgia, Mexico, Ethiopia, Rwanda, Vietnam and Zambia on HIV prevention and care, providing interdisciplinary cross-training, by offering short-term training programs, building in-country research capacity by conducting and supporting a variety of in-country training activities.

- **AUSTRALIA:** [Queensland Emory Development \(QED\) Alliance](#) is a partnership between The University of Queensland, the QIMR Berghofer Medical Research Institute and Emory University to collaborate on new drugs and vaccines for treating cancer and infectious diseases.
- **CHILE:** [Global Environmental Health Hub](#) based in Chile for education and advocacy to support environmental and occupational public health concerns in coordination with Chilean institutions and governmental agencies with the University of Chile and the University of Georgia.
- **CHINA:** The Emory Global Health Institute-China Tobacco Control Partnership (GHI-CTP) was established as a result of a five-year grant from the Bill and Melinda Gates Foundation to the Emory Global Health Institute in November 2008. The goal of the GHI-CTP is to reduce the health, social, environmental, and economic burdens of tobacco use by increasing China's in-country capacity to develop and implement effective, accountable, and sustainable tobacco prevention and control initiatives designed to change the social norms surrounding tobacco use.
- **ETHIOPIA:** [Multi-disciplinary partnership](#) to facilitate the training and retention of outstanding doctors and public health professionals in Ethiopia with Addis Ababa University, Soddo Christian Hospital, and Myungsung Christian Medical Center.
- **MIDDLE EAST:** Participant in the **Middle East Cancer Consortium (MECC)**. The objective of the MECC is to reduce the incidence and impact of cancer in the Middle East through the solicitation and support of collaborative research. Major activities have been the Cancer Registry Project (CRP), the Small Grants Programme, and the Palliative Care Project (PCP). A partnership has developed between MECC and IARC (<http://gicr.iarc.fr/en/whatwedo-issue.php>) under the Global Initiative for Cancer Registry Development, with one of MECC cancer registries (Izmir, Turkey) serving as a HUB for this initiative (<http://gicr.iarc.fr/en/whatwedo-progress.php>).
- **SAUDI ARABIA:** King Abdullah, the ruler of Saudi Arabia, endowed this program in 2011 with the goal of building public health human capacity in the Kingdom of Saudi Arabia (KSA). The first class of the King Abdullah Fellowship Program includes six Saudi students who will obtain their Masters in Public Health at the Rollins School of Public Health of Emory University. During their two years at Emory, the students will conduct their MPH thesis research in the KSA.
- **SOUTH AFRICA:** The [Emory South Africa Drug Discovery Program](#) consists of training and infrastructure development to support drug discovery in South Africa. The long-term goal is to improve the health and economic self-sufficiency of the people throughout the Sub-Saharan region.

Yale Cancer Center

Institute-wide activities and consortia

- **EASTERN CARIBBEAN:** Dr. Marcela Nunez-Smith is PI on [Eastern Caribbean Health Outcomes Research Network \(ECHORN\)](#) which has two aims: (1) To form a research collaborative across the Eastern Caribbean islands of Puerto Rico, the U.S. Virgin Islands, Barbados, and Trinidad & Tobago to recruit and follow a community-dwelling adult cohort to estimate the prevalence of known and potential risk factors associated with the development of heart disease, cancer, and diabetes and (2) To enhance health outcomes research leadership capacity in the region through a series of dedicated activities locally and abroad. ECHORN will

expand clinical research with racial/ethnic minority populations in a transitioning part of the globe now threatened with an epidemic of non-communicable chronic diseases (NCD). ECHORN's findings will have direct implications for the health disparities research and policy agenda on the mainland United States. In the long term, the links ECHORN will facilitate with local health policy delegations and global strategic organizational partners will promote the translation of research to improve health outcomes across the region. The collection and storage of biological specimens will also contribute to national biomonitoring projects and has the potential to identify unique risk and protective factors in the development of NCD.

- **EGYPT:** Yale Cancer Center (YCC) has a number of potential projects they would like to develop in Egypt. Dr. Fatma Shebl is interested in hepatitis C infection and infection-related liver cancer. Dr. Betsy Bradley, the Director of Yale's Global Health Leadership Institute is interested in capacity building and strengthening partnerships in Egypt. The School of Nursing is looking at cancer outcomes in the Muslim population and hoping to grow research activities in that area.
- **NIGERIA:** Yale has a strategic partnership with University College of London (UCL), working on Kaposi Sarcoma and HPV and cervical cancer in Nigeria. Drs. Martin Widschwendter and Adeola Olaitan are gynecological surgeons involved in this project.
- **WORLDWIDE:** Dr. Frank Detterbeck is one of the founders and current president of the International Thymic Malignancies Interest Group (ITMIG) that is devoted to the advancement of clinical care and research in thymic and other mediastinal malignancies. Coordinated global collaboration is essential because this is an orphan set of diseases. An international database and tissue banking system is accruing patients, and research studies are under development. ITMIG is developing novel research approaches (i.e. Bayesian statistics) to overcome some of the hurdles posed by international collaboration, limited data, limited resources and the need for more rapid dissemination of new knowledge.
- **WORLDWIDE:** The Targeted Area of Research Excellence (TARE) included a research agenda that generated a new body of knowledge on racial/ ethnic disparities in breast cancer care from a global health perspective. Specifically the three TARE projects examined the utilization of breast cancer care services by geographically mobile populations across multiple healthcare systems, the exploration of geographic mobility as an unrecognized determinant of cancer care outcomes, and the quality of care for individuals who are geographically isolated

Investigator-initiated activities

- **ASIA:** Dr. Leiping Chen is working with several groups of investigators from Asia on a number of projects. He is collaborating with Dr. Shengdian Wang at the Chinese Academy of Sciences in Beijing in conducting research in chronic hepatitis and subsequent liver cancer. The study focuses on (1) the basic immune mechanisms which respond but eventually fail to control to HBV- and HCV-induced hepatitis and liver cancer and (2) new approaches to treat chronic hepatitis and liver cancers. Dr. Chen has also worked with Dr. In-Hak Choi at the Inje University School of Medicine in Busan, South Korea, to explore the role of co-stimulatory and co-inhibitory molecules in viral hepatitis progression to liver cancer. In addition, Dr. Chen collaborates with a group of scientists and physicians at the Sun Yat-Sen University and affiliated hospitals on several immune modulation approaches for the treatment of EBV-associated nasopharyngeal cancer.
- **BELIZE:** Drs. Kupfer and Grinage collaborate on the ACS Audrey Mars Fellowship for International Fellows, which educates foreign MDs in cancer care.
- **CHINA:** Dr. Yawei Zhang is collaborating with Gansu Provincial Tumor Hospital to study etiology and prognosis of cancers of the thyroid, lung, esophagus and liver. Dr. Zhang is also

collaborating with the Chinese Academy of Medical Sciences to study etiology and prognosis of pancreatic cancer.

- **CHINA:** Dr. [Tongzhang Zheng](#) has two NIH-funded grants. One is in partnership with the Chinese NCI, [Research Training For Cancer Epidemiology & Biostatistics In China](#), and focuses on epidemiology and biostatistics for a study in Daqing City in Inner Mongolia. The other grant, [Research Training For Study Of Air Pollution Control In China](#), focuses on environmental factors in partnership with the Chinese NIEHS.
- **CHINA:** Dr. Harvey Risch from the School of Public Health is the PI of the large-scale, population-based [Case Control Study of Pancreas Cancer in Shanghai, China](#). The study explores the etiology of pancreatic cancer related to risk factors including nitrite exposure and Helicobacter pylori colonization. Dr. Risch has conducted a similar study in the U.S and seeks to ultimately determine how differences in pancreatic cancer incidence arise in Chinese and U.S. populations.
- **EGYPT and JORDAN:** Dr. Mark Lazenby is working to ascertain the role of Muslims' beliefs around suffering in the palliative care treatment decisions of patients in treatment for metastatic non-small cell lung cancer, to determine whether early palliative care interventions will improve quality of life and mood of participants, and to determine the effect palliation of symptoms will have on the meaning participants make of their cancer experience. The study will be conducted at the King Hussein Cancer Center in Amman, Jordan and at the National Cancer Institute in Cairo, Egypt.
- **FRANCE:** Dr. Brash has a project whose goal is to understand how UV-exposed skin melanin facilitates melanoma by generating UV-like DNA damage in the dark. Collaborators at the French Atomic Energy Agency (CEA) perform mass spectrometry analyses of DNA. Collaborators at the University of Sao Paulo advise us on excited-state chemistry and perform mass spectrometry analysis of melanin reaction products.
- **ISRAEL:** Drs. Schatz and Goldber work with the US-Israel Binational Science Foundation on the regulation of V(D)J recombination by a RAG1-MDC1 interaction. The goal of this project is to characterize the mechanism of the interaction between the RAG1 and MDC1 proteins and define the function of this interaction during V(D)J recombination.
- **ISRAEL:** Drs. Kupfer works with Dr. Tamary on Congenital Dyserythropoeitic Anemia, whose goal is to understand the pathophysiology of CDA and of red cell production.
- **JORDAN:** Dr. Maysa Abu-Khalaf is a member of the Jordan Breast Cancer program advisory board and her collaborative efforts have focused on looking at BRCA mutations in the high-risk breast cancer population in the Middle East. She has initiated efforts in education on clinical trial participation and clinical research infrastructure-building in the region. Dr. Abu-Khalaf is actively working to develop clinical trial collaborations between Yale and the King Hussein Cancer Center in Jordan.
- **KOREA:** Dr. Sang-Kwon Lee has a project which aims to develop a nanotechnology platform to capture rare circulating tumor cells and perform molecular phenotyping. The ultimate goal is to create a new tool for early stage diagnosis of cancer metastasis or therapeutic stratification of patients.
- **LATIN AMERICA:** Dr. Beth Jones is an Epidemiology Consultant on the Molecular Profiling of Breast Cancer Study, part of United States–Latin America Cancer Research Network (US-LA CRN), an initiative of NCI's Center for Global Health.

- **SWITZERLAND:** Drs. Ruddle, Detmar and Halin, collaborate on various studies, the purpose of which is to evaluate lymphatic vessels using in vivo imaging to determine how they carry antigen in chronic inflammation and cancer.
- **UGANDA:** Dr. Ashgar Rastegar leads a training program in Kampala, Uganda at Makerere University that focuses on non-communicable diseases (NCDs) and general internal medicine with some focus on oncology.
- **UNITED KINGDOM:** Dr. Jordan Pober (Yale) and Dr. Bradley (U. of Cambridge) have discovered that TNF, acting through TNF receptor 2 expressed on renal clear cell carcinomas, provides a signal for mitogenesis. Recent work has shown that TNFR2 signals in cardiac progenitor cells produce both cell cycle entry and differentiation. The current focus is to determine if renal cancer stem cells also proliferate and differentiate in response to TNFR2 signaling.
- **UNITED STATES (LATINA POPULATION):** Drs. Marcella Nunez-Smith (PI), Beth Jones and Cary Gross (co-PIs) are conducting a one-year pilot project funded through YCC's TARE award entitled "Impact of geographic mobility on cancer screening in Hispanic/Latinas in the Northeast, US". This is a three part, one-year pilot project. Dr. Jones leads project I, which aims to assess how interruptions in care caused by geographic mobility influence access to care, breast cancer knowledge and beliefs, and adherence to breast cancer screening guidelines. Dr. Gross leads project II, which will use Medicate data to conduct a retrospective analysis of beneficiaries with breast cancer to compare the quality of care received in the U.S. territories vs. in the mainland United States. Dr. Nunez-Smith leads project III, which is a mixed-methods research strategy to study healthcare circulators who have a home base in the eastern Caribbean and the location and quality of their cancer services utilization, outcomes, and out-of-pocket costs.
- **WORLDWIDE:** Dr. Anees Chagpar chairs the study section for the Innovation Grants for ASCO which are aimed to improve cancer control in low-middle income countries, often with partnerships with higher income countries.

Appendix A: Data Collection Status of NCI-Designated Cancer Centers

Cancer Center	Status
Abramson Cancer Center - University of Pennsylvania	Updated March 2014
Albert Einstein Cancer Center - Yeshiva University	International Activities Included
Alvin J. Siteman Cancer Center - Washington University	International Activities Included
The Barbara Ann Karmanos Cancer Institute - Wayne State University	Updated March 2014
The Cancer Therapy & Research Center - University of Texas Health Science Center at San Antonio	Updated March 2014
Case Comprehensive Cancer Center - Case Western Reserve University	International Activities Included
Chao Family Comprehensive Cancer Center - University of California, Irvine	Updated March 2014
City of Hope Comprehensive Cancer Center	International Activities Included
Cold Spring Harbor Cancer Center	Basic Science Only
The Comprehensive Cancer Center of Wake Forest University	Updated March 2014
Dan L. Duncan Cancer Center - Baylor College of Medicine	International Activities Included
Dana-Farber/Harvard Cancer Center	Updated March 2014
David H. Koch Institute for Integrative Cancer Research at MIT	Basic Science Only
Duke Cancer Institute	Updated March 2014
Eppley Cancer Center - University of Nebraska	International Activities Included
Fox Chase Cancer Center - Temple Health	Pending Receipt of Information
Fred Hutchinson Cancer Research Center - University of Washington Cancer Consortium	Updated March 2014
Georgetown Lombardi Comprehensive Cancer Center	International Activities Included
H. Lee Moffitt Cancer Center	Updated March 2014
Harold C. Simmons Cancer Center - University of Texas Southwestern	No International Activities Reported- March 2014
Herbert Irving Comprehensive Cancer Center - Columbia University	International Activities Included
Holden Comprehensive Cancer Center - University of Iowa	Updated March 2014
Hollings Cancer Center - Medical University of South Carolina	Updated March 2014
Huntsman Cancer Institute - University of Utah	Updated March 2014
Indiana University Melvin and Bren Simon Cancer Center	Updated March 2014
The Jackson Laboratory Cancer Center	Basic Science Only
Jonsson Comprehensive Cancer Center - University of California at Los Angeles	Updated March 2014
Kimmel Cancer Center - Thomas Jefferson University	International Activities Included

Cancer Center	Status
Knight Cancer Institute - Oregon Health and Science University	No International Activities Reported
Laura and Isaac Perlmutter Cancer Center at Langone Medical Center	Updated March 2014
Masonic Cancer Center - University of Minnesota	Updated March 2014
Massey Cancer Center - Virginia Commonwealth University	Updated March 2014
Mayo Clinic Cancer Center	Updated March 2014
Memorial Sloan-Kettering Cancer Center	Updated March 2014
Norris Cotton Cancer Center at Dartmouth	Updated March 2014
The Ohio State University Comprehensive Cancer Center	International Activities Included
Purdue University Center for Cancer Research	Basic Science Only
Robert H. Lurie Comprehensive Cancer Center - Northwestern University	Updated March 2014
Roswell Park Cancer Institute	International Activities Included
Rutgers Cancer Institute of New Jersey	Updated March 2014
Salk Institute Cancer Center	Basic Science Only
Sanford-Burnham Medical Research Institute	Basic Science Only
Sidney Kimmel Comprehensive Cancer Center - Johns Hopkins University	Updated March 2014
St. Jude Children's Research Hospital	Updated March 2014
Stanford Cancer Institute	International Activities Included
University of Alabama at Birmingham Comprehensive Cancer Center	International Activities Included
University of Arizona Cancer Center	International Activities Included
University of California at San Francisco Helen Diller Family Comprehensive Cancer Center	Updated March 2014
University of California Davis Cancer Center	Updated March 2014
University of California San Diego Moores Cancer Center	International Activities Included
The University of Chicago Comprehensive Cancer Center	Updated March 2014
University of Colorado Cancer Center	Updated March 2014
University of Hawaii Cancer Center	International Activities Included
The University of Kansas Cancer Center	Updated March 2014
University of Maryland Marlene and Stewart Greene-Baum Cancer Center	Updated March 2014
University of Michigan Comprehensive Cancer Center	International Activities Included
University of New Mexico Cancer Center	Updated March 2014
University of North Carolina Lineberger Comprehensive Cancer Center	Updated March 2014

Cancer Center	Status
University of Pittsburgh Cancer Institute	Updated March 2014
University of Southern California Norris Comprehensive Cancer Center	Updated March 2014
University of Texas MD Anderson Cancer Center	Updated March 2014
University of Virginia Cancer Center	No International Activities Reported- March 2014
University of Wisconsin Carbone Cancer Center	Updated March 2014
Vanderbilt-Ingram Cancer Center	Updated March 2014
Winship Cancer Institute of Emory University	Updated March 2014
Wistar Institute Cancer Center	Basic Science Only
Yale Cancer Center	Updated March 2014

Appendix B: Commonly Used Abbreviations

Abbreviation/Acronym	Full Name
AfrOx	Africa Oxford Cancer Foundation
AIDS	Acquired Immune Deficiency Syndrome
AITRP	AIDS International Training and Research Program
ALL	Acute Lymphoblastic Leukemia
AMC	AIDS Malignancy Clinical Trials Consortium
AML	Acute Myeloid Leukemia
AORTIC	African Organization for Research and Training in Cancer
ASCO	American Society for Clinical Oncology
BHGI	Breast Health Global Initiative
CCSG	Cancer Center Support Grant
CDC	Centers for Disease Control and Prevention
CFAR	Center for AIDS Research
CICAMS	Cancer Institute of the Chinese Academy of Medical Sciences
CIDRZ	Center for Infectious Disease Research in Zambia
CIMBA	Consortium of Investigators of Modifiers of BRCA1 and BRCA2
CLL	Chronic Lymphocytic Leukemia
CME	Continuing Medical Education
CRC	Colorectal Cancer
CSC	Cancer Stem Cells
CTC	Circulating Tumor Cells
DCCPS	Division of Cancer Control and Population Sciences (NCI)
DF/HCC	Dana-Farber/Harvard Cancer Center
DLDCC	Dan L. Duncan Cancer Center
DUMC	Duke University Medical Center
EBV	Epstein-Barr Virus
EMT	Epithelial-Mesenchymal Transition
FHCRC	Fred Hutchinson Cancer Research Center
FIC	Fogarty International Center
GAP	Global Academic Programs (MD Anderson)
GI	Gastrointestinal
HCC	Hepatocellular Carcinoma
HCCC	Holden Comprehensive Cancer Center

Abbreviation/Acronym	Full Name
HCV	Hepatitis C Virus
HIV	Human Immunodeficiency Virus
HNC	Head and Neck Cancer
HPV	Human Papillomavirus
IARC	International Agency for Research on Cancer
IOP	International Outreach Program (St. Jude)
IRB	Institutional Review Board
ITC	International Tobacco Control
JHSIMC	Johns Hopkins Singapore International Medical Centre
JHSPH	Johns Hopkins Bloomberg School of Public Health
KCMC	Kilimanjaro Christian Medical Centre
KS	Kaposi Sarcoma
KUCC	University of Kansas Cancer Center
LEEP	Loop Electrosurgical Excision Procedure
LMIC	Low- and Middle-Income Countries
MDACC	MD Anderson Cancer Center
MDS	Myelodysplastic Syndrome
MECC	Middle East Cancer Consortium
MEPI	Medical Education Partnership Initiative
MEZCOPH	Mel and Enid Zuckerman College of Public Health (University of Arizona)
MOU	Memorandum of Understanding
MRC	Medical Research Council (UK)
MSKCC	Memorial Sloan-Kettering Cancer Center
NCD	Non-Communicable Disease
NCI	National Cancer Institute
NGO	Non-Governmental Organization
NIA	National Institute on Aging
NICHHD	National Institute for Child Health and Human Development
NIEHS	National Institute for Environmental Health Sciences
NIH	National Institutes of Health
NRDC	Natural Resources Defense Council
NSFC	Nature Science Foundation of China
OSU	The Ohio State University

Abbreviation/Acronym	Full Name
OSUCCC	The Ohio State University Comprehensive Cancer Center
PCORI	Patient-Centered Outcomes Research Institute
PEPFAR	U.S. President's Emergency Plan for AIDS Relief
PGI	Postgraduate Institute of Medical Education and Research
PI	Principal Investigator
PPSCC	Pan-Pacific Skin Cancer Consortium
RCC	Renal Cell Carcinoma
RSM	Royal Society of Medicine
SCI	Shanghai Cancer Institute
SEER	Surveillance, Epidemiology and End Results
SINF	Sister Institution Network Fund
SPORE	Specialized Programs of Research Excellence
TIFR	Tata Institute of Fundamental Research
TMU	Taipei Medical University
TNBCC	Triple Negative Breast Cancer Consortium
TRIO	Translation Research in Oncology
UACC	University of Arizona Cancer Center
UC	University of California
UCI	Uganda Cancer Institute
UCSD	University of California, San Diego
UCSD MCC	UCSD Moores Cancer Center
UICC	Union for International Cancer Control
UK	United Kingdom
UMCCC	University of Michigan Comprehensive Cancer Center
UMGCC	University of Maryland Marlene and Steward Greene-Baum Cancer Center
UNC	University of North Carolina
UNMC	University of Nebraska Medical Center
UPCI	University of Pittsburgh Cancer Institute
UPCID	Uganda Program in Cancer and Infectious Diseases
UPMC	University of Pittsburgh Medical Center
UPSOM	University of Pittsburgh School of Medicine
USAID	U.S. Agency for International Development
USCACA	US-China Anti-Cancer Association

Abbreviation/Acronym	Full Name
UWCCC	University of Wisconsin Carbone Cancer Center
VIA	Visual Inspection with Acetic Acid
VICC	Vanderbilt-Ingram Cancer Center
VNU-HCM	Vietnam National University Ho Chi Minh City
WFIRM	Wake Forest Institute for Regenerative Medicine
WFSM	Wake Forest School of Medicine
WHO	World Health Organization
WSU	Wayne State University
WT	Wilm's Tumor
YCC	Yale Cancer Center

Appendix C: URLs from Links Embedded in Report

Albert Einstein Cancer Center – Yeshiva University

- Albert Einstein College of Medicine Global Health Center
 - <http://www.einstein.yu.edu/centers/global-health/>
- Developing Rwandan Research Capacity in Cervical Cancer and Other HIV-Associated Malignancies
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8123343&icde=11127711

Alvin J. Siteman Cancer Center - Washington University

- Cancer Control Research Training Summer Institute
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8051253&icde=11323534&ddparam=&ddvalue=&ddsub=

Case Comprehensive Cancer Center - Case Western Reserve University

- Case Center for AIDS Research
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8068871&icde=11236132&ddparam=&ddvalue=&ddsub=

Chao Family Comprehensive Cancer Center - University of California, Irvine

- Middle East Cancer Consortium
 - <http://mecc.cancer.gov/>

City of Hope Comprehensive Cancer Center

- Phase I Molecular and Clinical Pharmacodynamic Trials
 - http://projectreporter.nih.gov/project_info_details.cfm?aid=8223279&icde=15306614&ddparam=&ddvalue=&ddsub=&cr=13&csb=default&cs=ASC
- Low Dose Tamoxifen in Hodgkin Lymphoma Survivors for Breast Cancer Risk Reduction
 - http://projectreporter.nih.gov/project_info_details.cfm?aid=8270552&icde=15306179&ddparam=&ddvalue=&ddsub=&cr=7&csb=default&cs=ASC
- Role of STAT3 in Tumor Immune Evasion and Immune Suppression
 - http://projectreporter.nih.gov/project_info_details.cfm?aid=8282711&icde=15306011&ddparam=&ddvalue=&ddsub=&cr=22&csb=default&cs=ASC
- Targeting STAT3 to Improve Immunotherapy
 - http://projectreporter.nih.gov/project_info_details.cfm?aid=8252197&icde=15306011&ddparam=&ddvalue=&ddsub=&cr=29&csb=default&cs=ASC

Dan L. Duncan Cancer Center - Baylor College of Medicine

- International Case-Control Study of Malignant Glioma
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8207243&icde=15184108&ddparam=&ddvalue=&ddsub=&cr=44&csb=default&cs=ASC
- Genetic Epidemiology of Glioma International Consortium
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8413753&icde=15184108&ddparam=&ddvalue=&ddsub=&cr=33&csb=default&cs=ASC
- Baylor International Pediatric AIDS Initiative (BIPAI) in Malawi
 - <http://bipai.org/Malawi/>

Dana-Farber/Harvard Cancer Center

- Harvard Global Health Institute
 - <http://globalhealth.harvard.edu/>
- Promoting Tobacco Control Among Teachers In India
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8206840&icde=11359300&ddparam=&ddvalue=&ddsub=
- Mumbai Worksite Tobacco Control Study
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8206840&icde=11359300&ddparam=&ddvalue=&ddsub=

Duke Cancer Institute

- Duke Global Health Institute
 - <http://globalhealth.duke.edu/>
- Developing Research Capacity In Africa For Studies On HIV-Associated Malignancies

- http://projectreporter.nih.gov/project_info_description.cfm?aid=8149830&icde=11127711&ddparam=&ddvalue=&ddsub

Eppley Cancer Center - University of Nebraska

- Program in HIV and AIDS-Associated Malignancies
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8267725&icde=15104184&ddparam=&ddvalue=&ddsub=&cr=8&csb=default&cs=ASC
- Cancer Epidemiology Education in Special Populations
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8327110&icde=15103970&ddparam=&ddvalue=&ddsub=&cr=1&csb=default&cs=ASC

Fred Hutchinson Cancer Research Center - University of Washington Cancer Consortium

- University of Washington Department of Global Health
 - <http://globalhealth.washington.edu/>
- Impact Of HIV And HHV-8 Co-Infection On Antiretroviral Therapy Efficacy In Africa
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8145306&icde=11144845&ddparam=&ddvalue=&ddsub
- Building Sustainable Translational Research Teams in HIV-Associated Malignancies
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8145306&icde=11144845&ddparam=&ddvalue=&ddsub

Georgetown Lombardi Comprehensive Cancer Center

- Gender Differences in Bladder Cancer Risk Factors
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=7777429&icde=11177037&ddparam=&ddvalue=&ddsub=
- Egypt Smoking Prevention Research Initiative
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=7098053&icde=11177130&ddparam=&ddvalue=&ddsub=
- O'Neill Institute For National And Global Health Law
 - <http://www.law.georgetown.edu/oneillinstitute/index.cfm>

H. Lee Moffitt Cancer Center

- Ponce School Of Medicine-Moffitt Cancer Center Partnership
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8415587&icde=14994014&ddparam=&ddvalue=&ddsub=&cr=8&csb=default&cs=ASC
- Research Training In Cancer Prevention And Control In Morocco.
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8183213&icde=11322569&ddparam=&ddvalue=&ddsub
- Natural History Of HPV Infection In Men: The HIM Study
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8197745&icde=11322569&ddparam=&ddvalue=&ddsub

Herbert Irving Comprehensive Cancer Center - Columbia University

- Columbia-South Africa Training Program For Research On HIV-Associated Malignancies
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8134977&icde=11235180&ddparam=&ddvalue=&ddsub
- Prenatal Under Nutrition And Mortality Through Age 63 Project
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8049170&icde=11264621&ddparam=&ddvalue=&ddsub
- Developmental Effects Of Early-Life Exposure To Airborne PAHs
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8070053&icde=11264729&ddparam=&ddvalue=&ddsub=%3E

Jonsson Comprehensive Cancer Center - University of California at Los Angeles

- AIDS Malignancy Clinical Trials Consortium (AMC)
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8336956&icde=14988698&ddparam=&ddvalue=&ddsub=&cr=8&csb=default&cs=ASC
- Translation Research in Oncology
 - <http://www.cirg.org/html/index.html>

Kimmel Cancer Center - Thomas Jefferson University

- RTOG

- <http://www.rtog.org/>
- Canada Research Chairs Program
 - http://www.chairs-chaire.gc.ca/about_us-a_notre_sujet/index-eng.aspx

Massey Cancer Center - Virginia Commonwealth University

- Waterpipe Tobacco Smoke: Toxicant Exposure And Effects
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8204869&icde=11720966&ddparam=&ddvalue=&ddsub=&cr=1&csb=default&cs=ASC
- Realtime Waterpipe Tobacco Smoke Toxicant Sampling In The Natural Environment
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8209049&icde=11720945&ddparam=&ddvalue=&ddsub=&cr=1&csb=default&cs=ASC

Mayo Clinic Cancer Center

- Council of Scientific and Industrial Research
 - http://rdpp.csir.res.in/csir_acsir/Home.aspx
- Center for Individualized Medicine
 - <http://mayoresearch.mayo.edu/center-for-individualized-medicine/>

Memorial Sloan Kettering Cancer Center

- Dr. Murray Brennan
 - <http://www.mskcc.org/cancer-care/doctor/murray-brennan>
- MSKCC's International Center
 - <http://www.mskcc.org/cancer-care/international-patients>
- Mammadi & Alireza Soudavar Traveling Fellowships
 - <http://www.mskcc.org/education/fellowship/mammadi-alireza-soudavar-traveling-fellowships>

Roswell Park Cancer Institute

- International Tobacco Control (ITC) Policy Evaluation Project
 - <http://www.itcproject.org/>
- TTURC, P50 CA111236
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=7908136&icde=15520288&ddparam=&ddvalue=&ddsub=&cr=1&csb=default&cs=ASC
- P01 CA138389
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8537603&icde=15520356&ddparam=&ddvalue=&ddsub=&cr=1&csb=default&cs=ASC

Sidney Kimmel Comprehensive Cancer Center - Johns Hopkins University

- Johns Hopkins Medicine International Collaborations
 - http://www.hopkinsmedicine.org/international/international_affiliations/
- Johns Hopkins Center for Global Health
 - <http://hopkinsglobalhealth.org/>
- Jhpiego
 - <http://www.jhpiego.org/jmgs/pdfs/CECAP.pdf>
- Jhpiego's current initiatives in the Philippines
 - <http://www.jhpiego.org/en/content/philippines>
- Johns Hopkins Singapore International Medical Center
 - <http://www.imc.jhmi.edu/>
- Institute for Global Tobacco Control
 - <http://www.jhsph.edu/research/centers-and-institutes/institute-for-global-tobacco-control/>
- Instituto Tecnológico y de Estudios Superiores de Monterrey in Mexico
 - http://www.hopkinsmedicine.org/international/international_affiliations/latin_america_caribbean/instituto_tecnologico_estudios_superiores_monterrey.html
- Medcan Clinic in Canada
 - http://www.hopkinsmedicine.org/international/international_affiliations/north_america/medcan_clinic.html
- Perdana University Graduate School of Medicine in Malaysia
 - http://www.hopkinsmedicine.org/international/international_affiliations/asia_pacific/perdana_university_graduate%20school_of_medicine_perdana_university_hospital.html

St. Jude Children's Research Hospital

- Adrenocortical Tumors and International Pediatric Adrenocortical Tumor Registry (IPACTR)

- <http://www.stjude.org/ipactr>

University of Alabama at Birmingham Comprehensive Cancer Center

- Network for Tobacco Control among Women in Paraná, Brazil
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8323426&icde=15455360&ddparam=&ddvalue=&ddsub=&cr=1&csb=default&cs=ASC
- Pancreatic SPORE
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8375489&icde=15455217&ddparam=&ddvalue=&ddsub=&cr=4&csb=default&cs=ASC
- Novel Heparanase Inhibitors for Cancer Therapy
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8403830&icde=15454913&ddparam=&ddvalue=&ddsub=&cr=39&csb=default&cs=ASC

University of Arizona Cancer Center

- Global Health Institute
 - <http://ghi.arizona.edu/>
- Global Health Alliance
 - <https://sites.google.com/a/email.arizona.edu/gha/>
- Bridging the Gap
 - <http://bridgingthegapconference.com/>
- NCT00837499
 - <http://www.clinicaltrials.gov/ct2/results?term=nct00837499&Search=Search>
- Native American Cancer Prevention (NACP) program
 - <http://azcc.arizona.edu/research/disparities/nacp/>
- CA143924
 - http://projectreporter.nih.gov/project_info_details.cfm?aid=8302390&icde=15307463&ddparam=&ddvalue=&ddsub=&cr=9&csb=default&cs=ASC
- CA143925
 - http://projectreporter.nih.gov/project_info_details.cfm?aid=8323500&icde=15307525&ddparam=&ddvalue=&ddsub=&cr=3&csb=default&cs=ASC
- Community outreach program
 - <http://azcc.arizona.edu/research/disparities/nacp/outreach>
- Global Health Unit
 - <http://www.globalhealth.arizona.edu/>
- Residency in pediatric global health
 - <http://www.peds.arizona.edu/residency/internationalElective.asp>
- Global Health: Why Cultural Perceptions, Social Representations, and Biopolitics Matter
 - <http://www.uapress.arizona.edu/Books/bid1949.htm>
- NIEHS Superfund Component Project
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8253751&icde=15443230&ddparam=&ddvalue=&ddsub=&cr=15&csb=default&cs=ASC
- Gastrointestinal Cancer SPORE
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8073527&icde=15443280&ddparam=&ddvalue=&ddsub=&cr=9&csb=default&cs=ASC
- 5th International Conference on Epithelial Mesenchymal Transition
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8129099&icde=15443317&ddparam=&ddvalue=&ddsub=&cr=1&csb=default&cs=ASC

University of California at San Francisco Helen Diller Family Comprehensive Cancer Center

- Incidence Of HPV Among Indian Men Who Have Sex With Men
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8121704&icde=11456573&ddparam=&ddvalue=&ddsub
- HPV-Related Neoplasia Among HIV-Seropositive Indian Men Who Have Sex With Men
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8121084&icde=11456580&ddparam=&ddvalue=&ddsub
- UCSF-GIVI CFAR
 - <http://cfar.ucsf.edu/>
- Uganda-UCSF Research Training in HIV-malignancies

- http://projectreporter.nih.gov/project_info_description.cfm?aid=8139786&icde=11456495&ddparam=&ddvalue=&ddsub
- Antiretroviral Therapy of AIDS-Related Kaposi's Sarcoma in Africa
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=7656912&icde=14991505&ddparam=&ddvalue=&ddsub=&cr=6&csb=default&cs=ASC

University of Hawaii Cancer Center

- Pathogenesis of Mesothelioma
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=7933989&icde=14994225&ddparam=&ddvalue=&ddsub=&cr=3&csb=default&cs=ASC
- Gene Environment Interactions in Mesothelioma
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8133346&icde=14994225&ddparam=&ddvalue=&ddsub=&cr=1&csb=default&cs=ASC

University of Maryland Marlene and Stewart Greene-Baum Cancer Center

- University of Maryland Global Health Initiatives
 - <http://global.umaryland.edu/>

University of Michigan Comprehensive Cancer Center

- University of Michigan Global Health Initiatives and Activities
 - <http://www.globalhealth.umich.edu/index.html>

University of North Carolina Lineberger Comprehensive Cancer Center

- UNC Lineberger Comprehensive Cancer Center Global Oncology
 - <http://www.unclineberger.org/global>

University of Southern California Norris Comprehensive Cancer Center

- USC Global Health
 - <http://globalhealth.usc.edu/>

University of Texas MD Anderson Cancer Center

- MD Anderson Cancer Center Global Academic Programs (GAP)
 - <http://www.mdanderson.org/education-and-research/education-and-training/schools-and-programs/global-academic-programs/index.html>
- R21 CA108084
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=6804597&icde=15567663&ddparam=&ddvalue=&ddsub=&cr=1&csb=default&cs=ASC
- U19 CA121503
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=7499077&icde=15567665&ddparam=&ddvalue=&ddsub=&cr=4&csb=default&cs=ASC
- Placebo Controlled Trial Of Acupuncture To Prevent Radiation-Induced Xerostomia
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8444600&icde=15567708&ddparam=&ddvalue=&ddsub=&cr=1&csb=default&cs=ASC
- Global Academic Programs (GAP)
 - <http://www.mdanderson.org/gap>
- The Sister Institution Network Fund (SINF)
 - <http://www.mdanderson.org/education-and-research/education-and-training/schools-and-programs/global-academic-programs/sister-institution-network-fund/global-academic-programs-sister-institution-network-fund.html>
- Professional oncology education program
 - www.mdanderson.org/poe
- Biomarker development for renal cell carcinoma
 - <http://www.mdanderson.org/education-and-research/education-and-training/schools-and-programs/global-academic-programs/2012-sinf-grant-recipients-jonasch.html>
- A pilot study of prognostic utility of circulating tumor cells (CTCs) assessed by Adnagen Technology and clinical outcome of patients with stage II breast cancer who completed locoregional and systematic treatment
 - <http://www.mdanderson.org/education-and-research/education-and-training/schools-and-programs/global-academic-programs/2012-sinf-grant-recipients-alvarez.html>
- Conservative surgery for women with low-risk, early stage cervical cancer

- <http://www.mdanderson.org/education-and-research/education-and-training/schools-and-programs/global-academic-programs/2012-sinf-grant-recipient-schemeler.html>
- Novel symptom response criteria and predictors in advanced cancer patients
 - <http://www.mdanderson.org/education-and-research/education-and-training/schools-and-programs/global-academic-programs/2012-sinf-grant-recipient-hui.html>
- Improved management of central line associated bloodstream infection (CLABSI) with antimicrobial lock therapy
 - <http://www.mdanderson.org/education-and-research/education-and-training/schools-and-programs/global-academic-programs/2012-sinf-grant-recipient-hachem.html>
- Deciphering the role of non-coding pykons in colorectal cancer
 - <http://www.mdanderson.org/education-and-research/education-and-training/schools-and-programs/global-academic-programs/2012-sinf-grant-recipient-calin.html>
- A phase II, multicenter, international study of lenalidomide and rituximab in relapsed/refractory mantle cell lymphoma, diffuse large B-cell non-Hodgkin lymphoma, transformed large cell lymphoma, and grade 3 follicular lymphoma
 - <http://www.mdanderson.org/education-and-research/education-and-training/schools-and-programs/global-academic-programs/2012-sinf-grant-recipient-wang.html>
- Characterization of soft-tissue leiomyosarcoma and the clinical significance of mesenchymal-to-epithelial transition in this cancer
 - <http://www.mdanderson.org/education-and-research/education-and-training/schools-and-programs/global-academic-programs/2012-sinf-grant-recipient-zhang-w.html>
- A parallel study at sister institutes investigating sequence variations in the microRNA binding sites at the 3' untranslated region (UTR) of the apoptosis genes CASP3, CASP6 and CASP7 and risk of gastric cancer
 - <http://www.mdanderson.org/education-and-research/education-and-training/schools-and-programs/global-academic-programs/2012-sinf-grant-recipient-wei.html>
- Hedgehog (Hh) pathways and tumor initiating cells in esophagus cancer
 - <http://www.mdanderson.org/education-and-research/education-and-training/schools-and-programs/global-academic-programs/2012-sinf-grant-recipient-hung.html>
- Oncogenic activation of non-canonical NF-kB in B-cell lymphomas
 - <http://www.mdanderson.org/education-and-research/education-and-training/schools-and-programs/global-academic-programs/2012-sinf-grant-recipient-sun.html>
- Investigating the Hippo pathway in hepatocellular carcinoma
 - <http://www.mdanderson.org/education-and-research/education-and-training/schools-and-programs/global-academic-programs/2012-sinf-grant-recipient-lee-j.html>
- Bone marrow-derived mesenchymal stem cells in prostate cancer-induced bone remodeling
 - <http://www.mdanderson.org/education-and-research/education-and-training/schools-and-programs/global-academic-programs/2012-sinf-grant-recipient-lin.html>
- Connectivity Map
 - <http://www.broadinstitute.org/cmap>
- Epithelial growth factor receptor's (EGFR's) role in triple-negative breast cancer
 - <http://www.mdanderson.org/education-and-research/education-and-training/schools-and-programs/global-academic-programs/2012-sinf-grant-recipient-ueno.html>
- Gonzalez-Angulo
 - http://www.experts.scival.com/mdanderson/expert.asp?n=Ana+Maria+Gonzalez-Angulo&u_id=470
- Frequency and outcome of BRCA1/2 mutations in Jordanian breast cancer women treated at King Hussein Cancer Center
 - <http://www.mdanderson.org/education-and-research/education-and-training/schools-and-programs/global-academic-programs/2011-sinf-grant-recipient-gonzalez.html>
- The survival advantage associated with metformin usage in patients with colorectal cancer (CRC) and type 2 diabetes
 - <http://www.mdanderson.org/education-and-research/education-and-training/schools-and-programs/global-academic-programs/2012-sinf-grant-recipient-garrett.html>

- The application of photochemical internalization (PCI) to optimize delivery of VEGF 121-rGel to the vasculature of invasive solid tumors
 - <http://www.mdanderson.org/education-and-research/education-and-training/schools-and-programs/global-academic-programs/2012-sinf-grant-recipient-rosenblum.html>
- Sendurai Mani
 - http://www.experts.scival.com/mdanderson/expert.asp?n=Sendurai+A+Mani&u_id=863
- The role of hmg2 in cancer; epithelial-mesenchymal transition, stem cells and cancer progression
 - <http://www.mdanderson.org/education-and-research/education-and-training/schools-and-programs/global-academic-programs/2011-sinf-grant-recipient-mani.html>
- Targeting resistance to BRAF inhibitors with WP760, a melanoma selective agent
 - <http://www.mdanderson.org/education-and-research/education-and-training/schools-and-programs/global-academic-programs/2012-sinf-grant-recipient-priebe.html>
- Development and testing of a collaborative digital pathology network for research, education and clinical care
 - <http://www.mdanderson.org/education-and-research/education-and-training/schools-and-programs/global-academic-programs/2012-sinf-grant-recipient-riben.html>
- A pilot study of acupuncture for the treatment of chronic, chemotherapy-induced peripheral neuropathy (CIPN) in cancer survivors
 - <http://www.mdanderson.org/education-and-research/education-and-training/schools-and-programs/global-academic-programs/2012-sinf-grant-recipient-lee.html>
- Biobehavioral and cultural determinants of betel quid chewing, dependence, and withdrawal in Taiwan
 - <http://www.mdanderson.org/education-and-research/education-and-training/schools-and-programs/global-academic-programs/2012-sinf-grant-recipient-gritz.html>

Vanderbilt-Ingram Cancer Center

- Vanderbilt Institute for Global Health
 - <http://globalhealth.vanderbilt.edu/>
- Publications
 - <http://www.ncbi.nlm.nih.gov/pubmed/22344219>
 - <http://www.nature.com/ng/journal/v41/n3/abs/ng.318.html>
 - <http://www.nature.com/ng/journal/vaop/ncurrent/abs/ng.2505.html>
 - <http://www.ncbi.nlm.nih.gov/pubmed/21345101>
- Vanderbilt University-CIDRZ AIDS International Training And Research Program
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8049671&icde=11175585&ddparam=&ddvalue=&ddsub
- Vanderbilt-Shanghai Chronic Disease Research Training Program
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8132485&icde=11176125&ddparam=&ddvalue=&ddsub
- Vanderbilt University-CIDRZ AIDS International Training And Research Program
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8049671&icde=11175585&ddparam=&ddvalue=&ddsub
- Molecular Analysis of Ethnic Variations In Wilms' Tumor
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8191920&icde=11176404&ddparam=&ddvalue=&ddsub
- Programmatic: Expanding Innovative Multidisciplinary Medical Education In Zambia
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8152108&icde=11175717&ddparam=&ddvalue=&ddsub
- Fogarty International Clinical Research Scholars Support Center @ Vanderbilt-AAMC
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8118571&icde=11163382&ddparam=&ddvalue=&ddsub

Winship Cancer Institute of Emory University

- Emory Global Health Institute
 - <http://www.globalhealth.emory.edu/>
- Queensland Emory Development (QED) Alliance
 - http://news.emory.edu/stories/2013/11/queensland_emory_research_alliance_targets_cancer_treatments/index.html

- Global Environmental Health Hub
 - <http://www.fic.nih.gov/Grants/Search/Pages/geohealth-R24TW009545.aspx>
- Multi-disciplinary partnership
 - <http://www.vecd.org/trainee-sites/emory-ethiopia-collaboration/>
- A partnership has developed between MECC and IARC
 - <http://gicr.iarc.fr/en/whatwedo-issue.php>
- MECC cancer registries (Izmir, Turkey) serving as a HUB
 - <http://gicr.iarc.fr/en/whatwedo-progress.php>
- Emory South Africa Drug Discovery Program
 - <http://www.chemistry.emory.edu/faculty/ESDDP/>

Yale Cancer Center

- Eastern Caribbean Health Outcomes Research Network (ECHORN)
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8334556&icde=15004291&ddparam=&ddvalue=&ddsub=&cr=2&csb=default&cs=ASC
- Tongzhang Zheng
 - http://publichealth.yale.edu/people/tongzhang_zheng.profile
- Research Training For Cancer Epidemiology & Biostatistics In China
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8134892&icde=11163613&ddparam=&ddvalue=&ddsub
- Research Training For Study Of Air Pollution Control In China
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8069325&icde=11163613&ddparam=&ddvalue=&ddsub
- Case Control Study of Pancreas Cancer in Shanghai, China
 - http://projectreporter.nih.gov/project_info_description.cfm?aid=8079555&icde=11163591&ddparam=&ddvalue=&ddsub

Appendix D: MD Anderson Cancer Center Supplemental Information

Institutional Resource Commitments

MD Anderson supports the conference and Sister Institution Network Fund (SINF) activities managed by the Global Academic Programs department with philanthropic funds as follows:

- For the annual GAP conference approximately \$120,000 a year
- For the SINF \$6.1M have been committed over 4 years, reflecting support for 61 projects at \$100,000/2 years per project to the MD Anderson investigators. Participating institutions fund their investigators independently.

MD Anderson supports the operation of the GAP department (10 members) at the level of \$2.1M a year including salary, benefits and travel support, from institutional funds.

Papers Published from SINF Projects

1. Weiwei Yang, Yan Xia, Haitao Ji, Yanhua Zheng, Ji Liang, Wenhua Huang, Xiang Gao, Kenneth Aldape, Zhimin Lu. Nuclear PKM2 regulates β -catenin transactivation upon EGFR activation. *Nature*. Nature Publishing Group; 2011 Nov 21; 480(7375):118–22.
2. Dietrich S, Glimm H, Andrulis M, Kalle von C, Ho AD, Zenz T. BRAF inhibition in refractory hairy-cell leukemia. *N Engl J Med*. 2012 May 24;366(21):2038–40.
3. Weiwei Y, Xia Y, Hawke D, Li X, Liang J, Xing D, et al. PKM2 Phosphorylates Histone H3 and Promotes Gene Transcription and Tumorigenesis. *Cell*. Elsevier Inc; 2012 Aug 17;150(4):685–96.
4. Zhang M, Maiti S, Bernatchez C, Huls H, Rabinovich B, Champlin RE, et al. A New Approach to Simultaneously Quantify Both TCR - and -Chain Diversity after Adoptive Immunotherapy. *Clinical Cancer Research*. 2012 Aug 30; 18(17):4733–42.
5. Liu M, Lee D-F, Chen CT, Yen C-J., Li L-Y, Lee H-J, Chang C-J, Chang W-C, Hsu J-M, Kuo H-P, Xia W, Wei Y, Chiu P-C, Chou C-K, Du Y, Dhar D, Karin M, Chen C-H and Hung M-C. IKK α activation of NOTCH links tumorigenesis via FOXA2 suppression. *Mol Cell* 45(2):171-184, 2012.
6. Yang W-H, Lan H-Y, Huang C-H, Tai S-K, Tzeng C-H, Kao S-Y, Wu K-J, Hung M-C and Yang M-H. RAC1 activation mediates Twist1-induced cancer cell migration. *Nat Cell Biol* 14(4):366-374, 2012.
7. OTUD7B controls non-canonical NF- κ B activation through deubiquitination of TRAF3. Hu H, Brittain GC, Chang JH, Puebla-Osorio N, Jin J, Zal A, Xiao Y, Cheng X, Chang M, Fu YX, Zal T, Zhu C, Sun SC. *Nature*. 2013 Feb 21; 494(7437):371-4. doi: 10.1038/nature11831. Epub 2013 Jan 20.
8. Regulation of tumor cell migration by protein tyrosine phosphatase (PTP)-proline-, glutamate-, serine-, and threonine-rich sequence (PEST). Zheng, Yanhua; Lu, Zhimin. 2013. *Chin J Cancer*, Vol. 32 Issue 2.
9. Differential Regulation of c-Jun Protein Plays an Instrumental Role in Chemoresistance of Cancer Cells. Yan Xia, Weiwei Yang, Wen Bu, Haitao Ji, Xueqiang Zhao, Yanhua Zheng, Xin Lin, Yi Li, and Zhimin Lu. July 5. 2013. *J. Biol. Chem.*, Vol. 288, No. 27.
10. EGF-enhanced vascular cell adhesion molecule-1 (VCAM-1) expression promotes macrophage and glioblastoma cell interaction and tumor cell invasion. Yanhua Zheng, Weiwei Yang, Kenneth Aldape, Jie He, Zhimin Lu. Accepted Sept. 17, 2013. *J. Biol. Chem.*

Grants Obtained that are connected to SINF Projects

Dr. Zhimin Lu

- Principal Investigator, 25%, The Mechanisms of PKM2-Regulated Gene Expression in Tumor Development, 4/1/2013-3/31/2018, 1R01CA169603-01, NIH/NCI, \$1,942,015
- Principal Investigator, 20%, Regulation of nuclear Beta-catenin in EGFR-promoted tumor development, 7/1/2012-6/30/2017, 2R01CA109035-06, NIH/NCI, \$1,331,460
- Principal Investigator, regulation of PKM2 in glioblastoma development, The James S. McDonnell Foundation, 7/1/2012-06/30/2017, \$450,000 (\$90,000/year)
- Principal Investigator, Targeting the Warburg effect for human cancer treatment, Cancer Prevention & Research Institute of Texas (CPRIT), 12/1/2012-11/30/2014, \$199,639

Dr. Radhe Mohan

Seed funding from SINF grant, Intensity Modulated Particle Therapy, was used in part to produce data for a funded K25 award and for the following applications:

- An NCI K25, Mentored Quantitative Research Development Award was awarded. The title of the grant is, 4D Robust Optimization in Intensity-Modulated Proton Therapy is funded from August 13, 2012 through July 31, 2016. Direct costs: \$125,174 per year
- Competing renewal for P01 CA021239, titled, Improving the Clinical Effectiveness and Understanding of the Biophysical Basis. The renewal application was submitted on May 25, 2013 and scheduled for review December 3-4, 2013 and the outcome of review will be forwarded to the January 2014 National Cancer Advisory Board for consideration. Total direct costs: \$5,567,864.

Dr. Jeffrey Myers

- RP120258-02 Myers (PI) 12/1/2011-11/30/2014, Cancer Prevention & Research Institute of Texas (CPRIT) Towards Personalized Cancer Therapy: Stratification of Oral and Pharyngeal Cancer based on p53 Mutational Status, Major goals: To determine ifTP53 mutation is a plausible candidate biomarker in both OSCC and OPSCC patients and to develop accurate estimates of the functional impact of TP53 somatic mutations.

Dr. Kathleen Schmeler

With Dr. Rebecca Richards-Kortum, Rice University: NCI Global Health project in the fundable range. Based on a pilot study with Barretos Cancer Hospital funded through SINF.

- The grant is from the NCI Center for Global Health: "Pilot Collaborations with LMICs in Global Cancer Research or Global Health Research at NCI - designated Cancer Centers (P30 Core Grant supplement)". \$200,000 for one year. Title: A Low-Cost Optical Imaging Tool For Cervical Cancer Prevention