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## MESSAGE FROM THE PROGRAM CO-DIRECTORS

KGI and City of Hope have a remarkable history of innovation in science and medical care. Our faculty members have made major contributions in translational research and biomedicine, and are widely recognized as leaders in their fields. This program joins two great innovators: KGI, dedicated to application-based scientific research and education, and City of Hope, an institution that helped establish the biotechnology industry.

KGI was established in response to a call by our nation's leaders to rethink higher education and embrace an interdisciplinary approach. Bringing together engineering, the life sciences and business, with an emphasis on professional degrees prepares students for careers in clinical and regulatory affairs, pharmaceuticals, bioinstrumentation, medical devices, and biotechnology. The broad, interdisciplinary approach to science education makes KGI graduates of great potential value to a broad range of biotech industry companies and to governmental agencies and nonprofit organizations that are tasked with regulatory responsibilities and the advancement of safe and effective medicines and medical products.

City of Hope helped launch the biotech industry by investigators who created the technology that led to the first human recombinant gene products, insulin and human growth hormone, which are now in use by millions of people worldwide. The most recent class of blockbuster drugs, humanized monoclonal antibodies, is based upon a core technology developed by Beckman Research Institute researchers. Both basic science and translational biomedical research flourish here, in a collegial atmosphere where cross-communication thrives and basic science findings are often applied to the cure of life-threatening diseases.

We welcomed our inaugural class in 2018 and look forward to the growth of this program. We know that the partnership between Henry E. Riggs School of Applied Life Sciences at KGI and the Irell & Manella Graduate School of Biological Sciences at City of Hope in offering the MSTM program will serve to our graduates as a great stepping stone to a variety of research careers in biotechnology, pharmaceutical industry, clinical or academic laboratories, as well as doctoral research or medical education.



[Anastasia Levitin, PhD](#)

Professor of Practice in Translational Medicine  
Henry E. Riggs School of Applied Life Sciences  
Keck Graduate Institute



[Yilun Liu, Ph.D.](#)

Professor, Associate Chair  
Department of Cancer Genetics & Epigenetics  
Beckman Research Institute  
City of Hope

## PROGRAM OVERVIEW

The MSTM program is a two-year Master's program. This program is aimed at providing students with an applied research experience and an in-depth understanding of how to translate basic research into medical products from the perspectives of both academic research (discovery) and downstream commercial development. Graduates will be uniquely positioned to begin careers in biotech/pharmaceutical industry, clinical or academic laboratories, or pursue further education at the doctoral level, medical education or both.

MSTM students will enroll as full-time students in both the Henry E. Riggs School of Applied Life Sciences at KGI and Irell & Manella City of Hope throughout the entire two-year program. During the first year, students will spend 90 percent of their academic hours at KGI, where they will be taking a series of core and advanced courses that emphasize the process of taking our basic science discovery at the bench side to therapeutic development at the bedside. The courses will cover fundamental and advanced molecular biology techniques (Molecular Biotechnology, Fundamental Papers in Applied Medicine); population genetics in human diseases (Molecular Basis of Disease, Pharmacogenomics and Precision Medicine); drug target discovery and development (Pharmaceutical Discovery, Pharmaceutical Development, Advanced Pharmaceutical Discovery with Lab), statistical analysis for clinical trials (Application of statistics, Clinical Biostatistics). In addition to classes at KGI, students will go through advanced technical training conducted by the core facilities of City of Hope, such as Flow Cytometry, Microscopy and Digital Imaging, Bioinformatics, Mass Spectrometry & Proteomics, Multi-Scale Translational Research and 3D tumor imaging center. MSTM students will also attend City of Hope Phase I/Early Therapeutic Disease Team meetings to learn how clinical trials work and have the opportunity to shadow our clinicians through our clinical mentorship program. MSTM students will attend roundtable discussions with City of Hope faculty and visit laboratories to learn research topics available here at City of Hope (Independent Research). By the end of the first year, the students will identify a suitable thesis mentor and will spend 95 percent of their time at City of Hope during the second year to conduct their thesis research. Throughout the entire two years of the program, students will also go through rigorous training in scientific writing and research presentation.

## CURRICULUM AND DEGREE REQUIREMENT

Students in the MSTM program are required to complete a total of 60 units over the course of two years of study. City of Hope and KGI will grant a joint MSTM degree upon completion of all of the necessary requirements. Of the 60 total units, students must complete 12.0 units of core courses (C), 3.0 units of professional development courses (PD), 12 units of advanced technical (AT) and general elective courses, 3 units of Independent Research, and 30 units of the MSTM Thesis Research. The ALS 342 and ALS 360 requirements could be waived for students who pass the initial assessment. Waived units must be replaced with advanced technical or general elective units.

A summary of the MSTM curriculum is as follows:

Course ID	Course Name	Location	Credit Units
<b>Year One – Fall</b>			
ALS 300	Molecular Biotechnology (C)	KGI	1.5
ALS 330	Pharmaceutical Discovery (C)	KGI	1.5
ALS 333	Pharmaceutical Development (C)	KGI	1.5
ALS 434	Clinical Biostatistics (AT)	KGI	3.0
ALS 481a	Fundamental Papers in Applied Medicine (C)	KGI	1.5
ALS 360	Business/Science Communications (PD)	KGI	1.5
ALS 342	Applications of Statistics (C)	KGI	1.5
ALS 493	Independent Research	City of Hope	1.5
ALS 397	Professional Development (PD)	KGI	0.0
<b>Year One – Spring</b>			
ALS 402	Molecular Basis of Disease (C)	KGI	3.0
ALS 407	Pharmacogenomics and Precision Medicine (AT)	KGI	3.0
ALS 430	Advanced Pharmaceutical Discovery (AT)	KGI	3.0
ALS 481b	Fundamental Papers in Applied Medicine (C)	KGI	1.5
ALS 341	Healthcare / Life Sciences Industry Ethics (PD)	KGI	1.5
ALS 493	Independent Research	City of Hope	1.5
	General Elective Courses (Fall/Spring)	KGI/City of Hope	3.0
<b>Year One - Summer</b>			
ALS 496	Master's Research Thesis	City of Hope	0.0
<b>Year Two – Fall</b>			
ALS 496	Master's Research Thesis	City of Hope	15.0
<b>Year Two – Spring</b>			
ALS 496	Master's Research Thesis	City of Hope	15.0

## **COURSE INFORMATION**

### **[ALS 300 Molecular Biotechnology \(KGI\)](#)**

Students will be exposed to the conceptual foundations of biotechnology and the role played by discoveries and applications of molecular biology principles in advancing biotechnology horizons. This is a case-based course in which students will read landmark original papers and patents that shaped biotechnology, and discuss these in the class. The case-based approach will follow the first few weeks of background material where a more standard lecture style will be used so as to bring students with different backgrounds on par with modern molecular biology

### **[ALS 330 Pharmaceutical Discovery \(KGI\)](#)**

This course is designed to provide students with an understanding of how pharmaceutical and biotechnology companies discover new drugs. This course will focus on the discovery of small molecule drugs. The course will follow the process of pharmaceutical drug discovery from selection of targets to discovery of a product candidate, and the characterization of that drug necessary for initiation of clinical trials.

### **[ALS 333 Pharmaceutical Development \(KGI\)](#)**

The course will provide the terminology, timelines and practical examples for successfully understanding the challenges in progressing an idea for a drug from the earliest discovery stages through to product approval and launch. Case studies from industry will be presented detailing companies and products that utilize state-of-the-art discovery technologies and advanced drug delivery systems.

### **[ALS 341 Healthcare/Life Sciences Industry Ethics \(KGI\)](#)**

This course explores the ethical challenges for commerce in healthcare systems and biosciences industry as it will be increasingly important for healthcare and bioscience leaders to consider the ethical ramifications of their work. The class will focus more on the practical application of ethical principles through real-world case studies, rather than emphasizing theories.

### **[ALS 342 Applications of Statistics \(KGI\)](#)**

This course offers an introduction to the terms, concepts and applications of statistical analysis, and re-enforces the necessary algebraic skills. Topics covered include data types, single variable regression, normal distributions, and significance tests. Students will apply concepts to practical examples in the life sciences using MS Excel software and gain proficiency in the visual interpretation and communication of data.

### **[ALS 360 Business/Science Communication \(KGI\)](#)**

This course is designed around four broad themes: effective writing, oral communication, teamwork and leadership. Classes will be a blend of interactive lectures from faculty and

industry executives, and workshops. Students will participate in faculty and peer reviews to help each other improve professional skills.

#### **ALS 397 Professional Development (KGI)**

In two four-hour intensive workshops and a selection of modules, students learn how to build their professional presence, gain insight into the process and timing of finding employment, learn skills that will improve their competitiveness, and develop expertise at showcasing their accomplishments.

#### **ALS 402 Molecular Basis of Disease (KGI)**

This course examines the role of genes, proteins and RNA in causing or combating diseases, and emphasizes the current conceptual and analytical tools that are brought to bear, and their limitations, on our understanding.

#### **ALS 407 Pharmacogenomics and Precision Medicine (KGI)**

This course will focus on the opportunities presented by the growing contribution of human evolutionary and population genetics, and of human genomic information and technologies to interdisciplinary approaches in the study of variable responses of humans to drugs and toxic agents, and how research may benefit the individual. The course will provide an in depth analysis of salient examples where genetical thinking has impacted pharmacological sciences, including issues on genetic variability in biochemistry and physiology of drug action, drug uptake and metabolism; the opportunities for discovery and design of new therapeutic agents.

#### **ALS 430 Advanced Pharmaceutical Discovery (KGI)**

This course should provide students with a deeper knowledge of drug pharmacokinetics and pharmacodynamics, as well as with a deeper understanding of how pharmaceutical and biotechnology companies discover new drugs, and how larger companies manage their drug discovery portfolios.

#### **ALS 434 Clinical Biostatistics (KGI)**

This course provides a basic primer in statistical methods commonly used in the design of clinical trials. Topics covered are expected include data reporting and descriptive statistics, probability, estimation, hypothesis testing (parametric, non-parametric, and categorical), multisample inference, regression and correlation. Sample size and power estimation methods will be developed for various hypothesis testing scenarios.

#### **ALS 481 Fundamental Papers in Applied Medicine (KGI)**

This course delves into a few ground-breaking original research papers that have shaped the concepts and technologies of modern biomedical research, with a special focus on cancer. The goal is to understand the logic and principles of doing biological experiments: the importance of models and hypotheses, testable versus untestable hypotheses,

controls, the limits of interpretation dictated by the results, how changing paradigms influence the progress of science.

**ALS 493 Independent Research (City of Hope)**

The goal of this course is to enable students to gain a comprehensive understanding of the recent biomedical research advances and Phase I clinical studies at City of Hope through roundtable discussions with the City of Hope faculty, laboratory experiences and City of Hope Phase I/Early Therapeutic Disease Team meetings. Students will also have the opportunity to shadow clinicians through our clinical mentorship program to gain a better understanding for how to link research at bench side to bedside. Furthermore, students will also go through rigorous hands-on training on how to use various instruments and computational technologies within City of Hope Share Resource Facilities and apply these technologies to their thesis studies. By the end of the course, students are expected to identify thesis research topic and thesis mentor.

**ALS 496 Master's Thesis Research (City of Hope)**

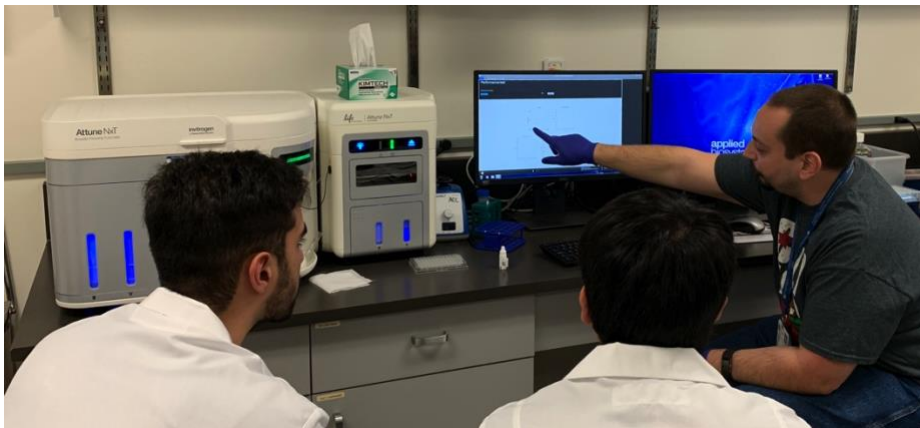
The goal of this course is to enable students to conduct rigorous primary research leading to the completion of a master's thesis at a research laboratory at City of Hope. Students must complete ALS 493 Independent Research prior to this course. During the Master's thesis research, students will achieve the following milestones:

## TECHNOLOGY TRAINING

As part of the first year's curriculum, our MSTM students will go through advanced technical training conducted by the center of bioinformatics, the research shared resources, as well as clinical services at City of Hope. Our students will have hands-on experience in handling state-of-the-art equipment and technology. These training sessions will equip our students the relevant skills that they can apply to their Master's thesis research and future biomedical/clinical careers.

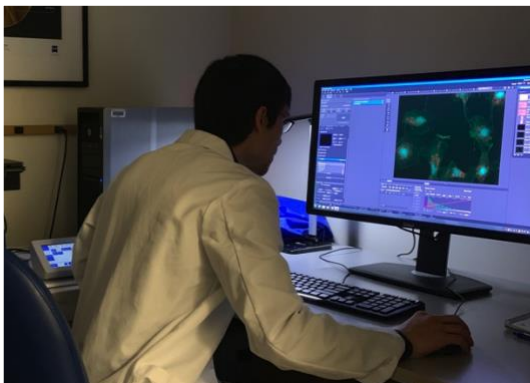
### Analytical Cytometry

- Students will be given an overview of the fundamentals of flow cytometry
- Students will learn how to use an Attune Flow Cytometer
- Students will be provided with cell samples to perform analysis using an Attune Flow Cytometer



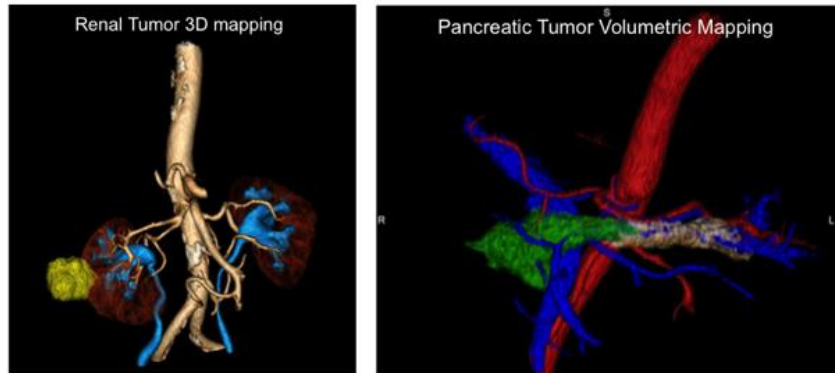
### Light Microscopy/Digital Imaging

- Students will have one-on-one training sessions with the instructor to learn how to use a light microscope and a confocal microscope
- Students will be given sample slides to practice how to take and process images



### 3D Oncologic Imaging

- Students will be given an overview of the fundamentals of the 3D advanced imaging technology developed at the 3D Oncologic Imaging Center at City of Hope
- Students will learn how the 3D advanced imaging technology allows accurate visualization of the tumor and surrounding tissues to aid surgical procedure
- Students will learn how the technology provides volumetric and qualitative assessment of the tumor



### Mass Spectrometry

- Students will be given an overview of the fundamentals of mass spectrometry
- Students will learn how to use different mass spectrometric instruments and have an understanding of various features of each instrument
- Students will be provided with protein samples to analyze and are expected to identify the sequence of the given protein

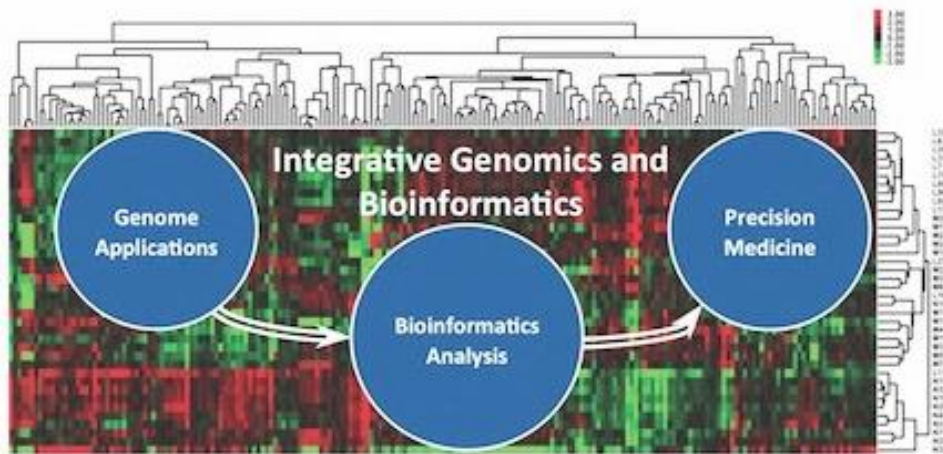


### Center for Comparative Medicine

- Students will receive training directed at the appropriate care of animals.
- Students will develop the necessary skills to utilize aseptic technique and handling of animal models.

## Integrative Genomics and Bioinformatics

- Students will be introduced to next-generation sequencing technologies and file formats.
- Students will learn how to perform normalization, differential expression analysis, clustering, peak findings, motif analysis, gene-ontology and pathway analysis.
- Students will obtain hands-on lab training on clustering, pathway analysis, motif analysis, miRNA target prediction, and Integrative Genome Viewer.



## CLINICAL MENTORSHIP

Through the MSTM Professional Mentorship Program, our students will have the opportunity to interact with members from the professional community at KGI and City of Hope, and receive mentorship in areas where the students can strengthen to become more competitive applicants in their careers. Students interested in pursuing a medical education after graduation will be connected to one to two faculty members within our clinical community at City of Hope. Through this mentorship program, students will have the opportunity to shadow their clinical mentors in our National Cancer Institute-designated comprehensive cancer center hospital; to obtain first-hand experience in understanding the current challenges that our clinicians are facing in cancer treatments; and to obtain guidance in preparing for their future medical education.



**Helford Clinical Research Hospital, City of Hope**

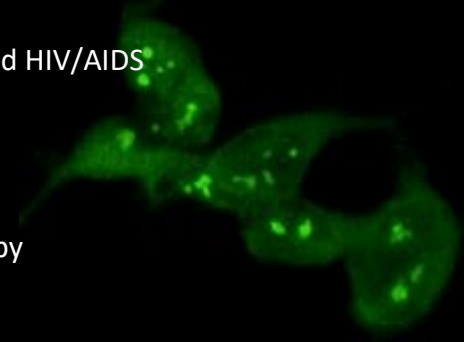


**MSTM students meeting with Dr. Steven Rosen (center), MD, Provost and Chief Scientific Officer at City of Hope**

## RESEARCH MENTORS AT CITY OF HOPE

City of Hope is dedicated to interdisciplinary and translational biomedical research in the following areas:

- Disease Mechanisms for Cancer, Diabetes and HIV/AIDS
- Molecular and Cellular Mechanisms of Aging
- Genomics and Epigenetics Research
- Pharmaceutical Discovery and Development
- Immunotherapy, CAR-T and Stem Cell Therapy
- Bioinformatics and Precision Medicine



**[Karen Aboody, MD](#)** Dr. Aboody, Professor at the Department of Developmental & Stem Cell Biology, received her MD from Mount Sinai School of Medicine. She is interested in modifying and developing human neural stem cells into a novel therapeutic vehicle for delivering different cancer therapeutic agents to tumor sites in animal models.



**[David Ann, PhD](#)** Dr. Ann, Professor at the Department of Diabetes Complications & Metabolism, received his PhD from Purdue University. He is investigating cancer metabolism to identify novel nutrient-restriction cancer therapy. His team is dissecting the molecular mechanism by which tumor cells become auxotrophic for arginine.



**[Saro Armenian, DO](#)** Dr. Armenian, Professor at the Department of Pediatrics and Population Sciences, received his DO from Western University of Health Sciences. He focuses on understanding the effect of childhood cancer on cardiovascular disease and on developing strategies for cardiovascular screening of cancer survivors.



**[Kimlin Ashing, PhD](#)** Dr. Ashing, Professor at the Department of Population Sciences, received her PhD from University of Colorado, Boulder. She focuses on identifying how social disparities impact health and patient centered outcomes with the goal of developing strategies to improve quality of life and reduce health inequities.



**[Behnam Badie, MD](#)** Dr. Badie, Vice Chair and Professor at the Department of Surgery, received his MD from UCLA. He focuses on exploring novel immunotherapeutic strategies through the activation of microglia and macrophages to treat malignant brain tumors; and developing minimally invasive devices to deliver drugs into brain tumors.



**[Michael Barish, PhD](#)** Dr. Barish, Chair of the Department of Developmental & Stem Cell Biology, received his PhD from Stanford University. He uses large-field imaging techniques to visualize tumor initiating cells in patient-derived tumor xenografts, the spatial relationships of migrating tumor cells and sites of proliferation and engraftment.



**[Leslie Bernstein, PhD](#)** Dr. Bernstein, Professor at the Division of Biomarkers of Early Detection and Prevention and Department of Population Sciences, received her PhD from USC. Her research utilizes data from the California Teacher Study to examine questions of cancer etiology, prevention and the impact of modifiable risk factors.



**[Andrea Bild, PhD](#)** Dr. Bild, Professor at the Department of Medical Oncology & Therapeutics Research, received her PhD from University of Colorado, Denver. Her research team uses large-scale translational genomic and pharmacological studies to interrogate and treat tumor heterogeneity and evolution to refractory states.



**[Mark Boldin, PhD](#)** Dr. Boldin, Associate Professor at the Department of Molecular & Cellular Biology, received his PhD from Weizmann Institute of Science (Israel). He focuses on defining the regulation of gene expression by both microRNAs and long noncoding RNAs during hematopoiesis and the activation of immune responses.



**[Charles Brenner, PhD](#)** Dr. Brenner, Professor and Chair of the Department of Diabetes and Cancer Metabolism, received his PhD from Stanford University. His team examines how nicotinamide adenine dinucleotide is disturbed by diseases and conditions including cancer, neuropathy, fatty liver, postpartum and viral infection.



**[Christine Brown, PhD](#)** Dr. Brown, Professor at the Department of Hematology & Hematopoietic Cell Transplantation, received her PhD from UC Berkeley. As the Associate Director of the T Cell Therapeutic Research Laboratory, she provides scientific oversight for the pre-clinical research program, and the development of CAR-T cells.



**[Elizabeth Lihua Budde, MD, PhD](#)** Dr. Budde, Assistant Professor at the Department of Hematology & Hematopoietic Cell Transplantation, received her MD and PhD from Duke University. She is investigating and designing novel means of immunotherapy for patients with lymphoma and leukemia.



**[John Burnett, PhD](#)** Dr. Burnett, Assistant Professor at the Department of Molecular & Cellular Biology, received his PhD from UC Berkeley. His laboratory focuses on engineering biological therapeutics, such as specialized RNA aptamers for targeted delivery and genome editing technologies, for genetic and infectious diseases.



**[Michael Caligiuri, MD](#)** Dr. Caligiuri, President of City of Hope National Medical Center and Deana & Steve Campbell Physician-in-Chief Distinguished Chair, received his MD from Stanford University. His team focuses on the development and activation of natural killer cells for the treatment of leukemia, myeloma, and glioblastoma.



**[Angelo Cardoso, MD, PhD](#)** Dr. Cardoso, Research Professor of Center for Gene Therapy, received his PhD from University of Paris XI Medical School, respectively. He studies how oncogenic signals interact with micro-environmental cues to identify novel targets for high-risk and refractory relapsed pediatric acute lymphoblastic leukemia.



**[Nadia Carlesso, MD, PhD](#)** Dr. Carlesso, Professor at the Department of Hematologic Malignancies Translational Science, received her PhD from University of Genoa & Dana-Farber Cancer Institute. She studies tumor microenvironment in leukemia progression to identify novel approaches to defeat leukemia drug resistance and relapse.



**Wing-Chun (John) Chan, MD** Dr. Chan, Professor in Hematologic Cancer, received his MD from University of Hong Kong. He uses genomics approaches to explore the molecular pathogenesis and classification of lymphoma, and to identify molecular signature to improve lymphoma diagnosis, outcome prediction & treatment response.



**Saswati Chatterjee, PhD** Dr. Chatterjee, Professor at the Department of Surgery, received her PhD from McGill University, Canada. She uses recombinant Adeno-Associated Virus vectors to genetically modify hematopoietic stem cells with the ultimate goal of treating an array of diseases including HIV and cancer.



**Ammar Chaudhry, MD** Dr. Chaudhry, Assistant Clinical Professor at the Department of Diagnostic Radiology, received his MD from University of South Florida. He focuses on the development and translation of noninvasive biomedical imaging technologies to improve diagnosis and treatment of cancer, metabolic and inflammatory disorders.



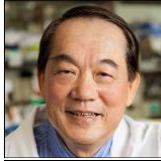
**Chun-Wei (David) Chen, PhD** Dr. Chen, Assistant Professor at the Department of Systems Biology, received his PhD from University of Rochester. He studies the epigenetic mechanisms underlying the therapeutic resistance in cancers and develops novel technology in precision epigenome editing and transcriptional regulations.



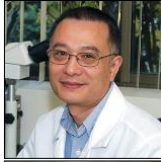
**Jianjun Chen, PhD** Dr. Chen, Professor & Chair of the Department of Systems Biology, received his PhD from Chinese Academy of Sciences. He focuses on basic and translational research associated with N6 methyl-adenosine (m6A) RNA modification and TET-mediated DNA methylation in the development and drug response of cancers.



**Mike Chen, MD, PhD** Dr. Chen, Associate Professor at the Division of Neurosurgery, received his MD from Thomas Jefferson University. He specializes in complex operations for the removal of brain and spine tumors. He is also investigating epigenetic pathways of metastasis and the development of novel medical devices.



**Shiuan Chen, PhD** Dr. Chen, Chair of the Department of Cancer Biology, received his PhD from University of Hawaii. He is refining current treatment strategies and available drugs for better application against breast cancer. He also studies how environmental chemicals and diet modulate the development of hormone-dependent cancers.



**Wenyong Chen, PhD** Dr. Chen, Associate Professor at the Department of Cancer Biology, received his PhD from University of Alabama at Birmingham. His laboratory is interested in understanding epigenetic regulation of hematopoietic stem cell aging, leukemia development and drug resistance in leukemia stem cells.



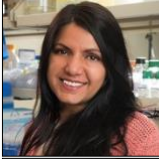
**Zhen Chen, PhD** Dr. Chen, Associate Professor at the Department of Diabetes Complications & Metabolism, received her PhD from UC Riverside. Her lab investigates the role of non-coding RNA and chromatin remodeling in endothelial stress response and their implications in diabetes complications and cancer.



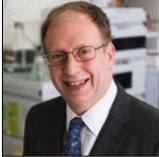
**Alexey Danilov, MD, PhD** Dr. Danilov, Professor at the Department of Hematology and Transplantation, received his MD from Yaroslavl Medical Academy. His research focuses on blood cancers, including chronic lymphocytic leukemia and many forms of lymphoma. He also directs an effort in experimental therapeutic in B-cell malignancies.



**[Thanh Dellinger, MD](#)** Dr. Dellinger, Assistant Professor at the Department of Surgery, received her MD from UC Irvine. Dr. Dellinger's research focuses on understanding the molecular pathways leading to ovarian and uterine cancers and the development of therapies to interdict these processes.



**[Sangeeta Dhawan, PhD](#)** Dr. Dhawan, Assistant Professor at the Department of Translational Research & Cellular Therapeutics, received her PhD from Indian Institute of Science. She studies the epigenetic mechanisms that regulate the differentiation, regeneration, and survival of the insulin producing beta cells, in health and diabetes.



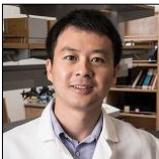
**[Don Diamond, PhD](#)** Dr. Diamond, Professor at the Department of Immuno-Oncology, received his PhD from Harvard Medical School. He is focusing on developing a novel approach that uses attenuated salmonella encoding a short hairpin RNA to decrease the expression of molecules contributing to tumor rejection and controlling metastasis.



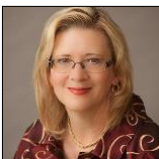
**[Richard Ermel, DVM, PhD](#)** Dr. Ermel, Director of Residency/Graduate Training Program in Laboratory Animal Medicine, received his PhD from UC Davis. His collaborative research includes identifying natural compounds with anti-cancer potential, new diabetic vascular disease inhibitors, & novel techniques for infectious disease detection.



**[Marwan Fakh, MD](#)** Dr. Fakh, Professor at the Department of Medical Oncology & Therapeutic Research, received his MD from American University of Beirut, Lebanon. His research focuses on developing novel therapeutics for patients with advanced colorectal cancer, including targeted therapies for tumors driven by RAS and BRAF mutations.



**[Mingye Feng, PhD](#)** Dr. Feng, Assistant Professor at the Department of Immuno-Oncology, received his PhD from Johns Hopkins School of Medicine. His research focuses on the mechanisms of macrophage-mediated immunosurveillance with the ultimate goal of developing novel anti-cancer immunotherapies.



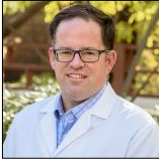
**[Betty Ferrell, PhD](#)** Dr. Ferrell, Director and Professor at the Division of Nursing Research and Education and the Department of Population Sciences, received her PhD from Texas Woman's University. She is interested in examining quality of life, pain management and palliative care for cancer patients.



**[Yuman Fong, MD](#)** Dr. Fong, Chair and Professor at the Department of Surgery, received his MD from Cornell University Medical College. Dr. Fong's research is currently focusing on developing genetically engineered viruses to effectively target and destroy cancer cells, especially those that are resistant to chemo- and radiation therapies.



**[Stephen Forman, MD](#)** Dr. Forman, Chair and Professor at the Department of Hematology and Hematopoietic Cell Transplantation, received his MD from USC. His research is focused on developing genetically engineered CAR-T cells to promote adoptive immunotherapy in the treatment of a wide range of cancers.



**[Patrick Fueger, PhD](#)** Dr. Fueger, Associate Professor at the Department of Molecular & Cellular Endocrinology, received his PhD from Vanderbilt University. He is investigating molecular mechanisms that regulate glucose homeostasis during health and diabetes to identify novel strategies for increasing functional pancreatic islet mass.



**[Carlotta Glackin, PhD](#)** Dr. Glackin, Associate Professor at the Department of Developmental & Stem Cell Biology, received her PhD from USC. Her laboratory focuses on understanding the molecular mechanisms underlying the functional properties of TWIST1 in cancer cells and developing TWIST1 inhibitors.



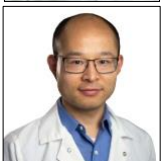
**[Ajay Goel, PhD](#)** Dr. Goel, Professor and Chair of the Department of Translational Genomics and Oncology, received his PhD from Panjab University. His work focuses on prevention of gastrointestinal cancers using integrative and alternative approaches including botanical products.



**[Stacy Gray, MD](#)** Dr. Gray, Associate Clinical Professor at the Department of Medical Oncology & Therapeutic Research, received her MD from University of Chicago. Dr. Gray focuses her research on understanding the psychological effects a person might experience after receiving genetic test results.



**[Stephen Gruber, MD, PhD](#)** Dr. Gruber, Director of the Center for Precision Medicine, received his MD from University of Pennsylvania and PhD from Yale University. He studies genetic epidemiology of cancer, with an emphasis on solid tumors, bringing clinical cancer genetics and translational research to cancer prevention.



**[Zhaohui Gu, PhD](#)** Dr. Gu, Assistant Professor at the Department of Computational and Quantitative Medicine & System Biology, received his PhD from Shanghai Jiao Tong University. His research has focused on leukemia genomics and led to productive publications including Nature, Nature Genetics and Nature Communications, PNAS etc.



**[Nora Heisterkamp, PhD](#)** Dr. Heisterkamp, Professor at the Department of Systems Biology, received her PhD from University of Rotterdam. She studies how non-leukemia cells stimulates precursor B-lineage acute lymphoblastic leukemia cell growth and provide chemotherapeutic resistance via direct cell contact.



**[Robert Hickey, PhD](#)** Dr. Hickey, Associate Professor at the Department of Molecular Medicine, received his PhD from City University of New York. Dr. Hickey is interested in using mass spectrometry to identify novel cancer related biomarkers and their corresponding mechanistic role in the development and progression of the cancer.



**[David Horne, PhD](#)** Dr. Horne, Vice Provost & Associate Director of the Beckman Research Institute, received his PhD from MIT. His team focuses on developing new synthetic methods and strategies for the total synthesis of architecturally complex, biologically active natural compounds and their analogs as potential novel therapeutic agents.



**[Wendong Huang, PhD](#)** Dr. Huang, Professor at the Department of Diabetes Complications & Metabolism, received his PhD from UT Houston. His team is identifying novel signaling pathways in regulating liver, gastrointestinal and gut microbiota metabolism to understand pathogenesis and develop therapy for diabetes and cancer.



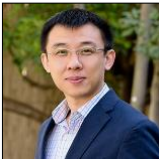
**[Susanta Hui, PhD](#)** Dr. Hui, Clinical Professor at the Department of Radiation Oncology and the Director of Small Animal Imaging Core, received his PhD from University of Calcutta. He is investigating the response of bone and marrow to radiation treatment, the macro- and micro- environment of bone and marrow in malignancy.



**[Rahul Jandial, MD, PhD](#)** Dr. Jandial, Associate Professor at the Department of Surgery, received his MD and PhD from USC and UCSD, respectively. He studies the interplay between the brain microenvironment and metastatic cancer cells, and the efficacy of a potential chemotherapeutic agent for treating metastatic brain cancer.



**[Marta Jankowska, PhD](#)** Dr. Jankowska, Associate Professor at the Department of Population Sciences, received her PhD from San Diego State University and UC Santa Barbara. Her research focuses on addressing complicated questions linking health and environments.



**[Lei Jiang, PhD](#)** Dr. Jiang, Assistant Professor at the Department of Molecular & Cellular Endocrinology, received his PhD from Shanghai Institute for Biological Sciences. His laboratory explores the coordinated metabolic adaptation under both normal physiological and specific pathological conditions for both cancer and diabetes.



**[Tijana Jovanovic-Talisman, PhD](#)** Dr. Talisman, Associate Professor at the Department of Molecular Medicine, received her PhD from Columbia University. She uses pointillistic super-resolution imaging techniques that offer high spatial resolution and single-molecule sensitivity to study biological processes contributing to human diseases.



**[John Kaddis, PhD](#)** Dr. Kaddis, Assistant Professor at the Department of Diabetes and Cancer Discovery Science, received his PhD from USC. He is currently focused on developing data systems and tools to address cutting edge questions relating to type 1 diabetes.



**[Michael Kahn, PhD](#)** Dr. Kahn, Professor and Chair of the Department of Molecular Medicine, received his PhD from Yale University. He focuses on dissecting the signaling pathways in somatic and cancer stem cell development. Their second generation of CBP/ $\beta$ -catenin antagonist is currently in the clinical trials for cancers and liver fibrosis.



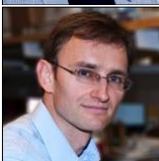
**[Markus Kalkum, PhD](#)** Dr. Kalkum, Professor at the Department of Molecular Imaging & Therapy, received his PhD from Freie Universität Berlin. His laboratory focuses on the development of novel proteomic technology to study pathogenic fungal and bacterial proteomes for vaccine development.



**[Fouad Kandeel, MD, PhD](#)** Dr. Kandeel, Professor and Chair of the Department of Clinical Diabetes Endocrinology and Metabolism. He is testing the safety and efficacy of islet cell transplantation for type 1 diabetic patients and is also interested in understanding genetic factors contributing to type 2 diabetes and cardiovascular disease in Hispanics.



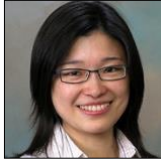
**[Rick Kittles, PhD](#)** Dr. Kittles, Professor at the Department of Population Sciences and Director of Division of Health Equities, received his PhD from George Washington University. His research interest focuses on genetic and environmental factors and their mechanisms in contributing to disease risks and drug resistance.



**[Marcin Kortylewski, PhD](#)** Dr. Kortylewski, Professor at the Department of Immunology, received his PhD from the University School of Medical Sciences, Poznan, Poland. He is developing an oligonucleotide approach to target immune cells associated with tumors and attenuate STAT3's activity to suppress tumor growth.



**[Hsun Teresa Ku, PhD](#)** Dr. Ku, Associate Professor at the Department of Translational Research and Cellular Therapeutics Research, received her PhD from Medical University of South Carolina. She is developing cell replacement therapy and identifying small molecules that modulate pancreatic insulin-producing beta cells and their progenitors.



**[Ya-Huei Kuo, PhD](#)** Dr. Kuo, Associate Professor at the Department of Hematologic Malignancies Translational Science, received her PhD from University of Connecticut. Dr. Kuo's research is directed at understanding the molecular mechanisms involved in the development of acute myeloid leukemia to facilitate improved cancer treatments.



**[Larry W. Kwak, MD, PhD](#)** Dr. Kwak, Professor, Department of Hematology and Hematopoietic Cell Transplantation, received his MD and PhD from Northwestern University. His team is studying novel immunotherapies to treat mantle cell lymphoma, a particularly aggressive type of lymphoma with a poor survival record.



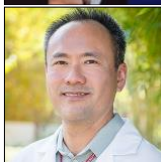
**[Mark LaBarge, PhD](#)** Dr. LaBarge, Professor at the Department of Population Sciences, received his PhD from Stanford University. He specializes in developing human cell systems to dissect the micro-environmental and tissue-level changes in breast that arise with age for understanding why aging is a major risk factor for breast cancer.



**[James Lacey, PhD, MPH](#)** Dr. Lacey, Professor at the Department of Computation and Quantitative Medicine, received his PhD from University of Michigan, Ann Arbor. He is currently focused on developing tools to digitize the California Teachers Study database to make access and analysis more efficient.



**[Keane Lai, MD](#)** Dr. Lai, Assistant Professor at the Department of Pathology, received his MD from University of Pittsburgh. He is defining the role of the Wnt/ $\beta$ -catenin signaling pathway in liver and pancreatic cancers. He is also working toward identifying novel therapeutic targets in this pathway to combat pancreatic cancer.



**[Peter Lee, MD](#)** Dr. Lee, Chair of the Department of Immuno-Oncology, received his MD from UCSD. He utilizes high-dimensional flow cytometry, quantitative spatial image analysis & next-generation genomics to dissect how cancer impacts host immune responses in patients, and to develop treatments to restore their immune function.



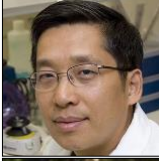
**[Ling Li, PhD](#)** Dr. Li, Associate Professor at the Department of Hematologic Malignancies Translational Science, received his PhD from Zhejiang University. His laboratory focuses on determining the role of SIRT1 and p53 in regulating leukemia stem cell growth, with the ultimate goal of creating novel therapeutics for leukemia.



**[Ren-Jang Lin, PhD](#)** Dr. Lin, Professor at the Department of Molecular & Cellular Biology, received his PhD from Pennsylvania State University. He studies the molecular functions of RNA splicing factors with mutations associated with myelodysplastic syndromes, as well as designing microRNA-specific CRISPR/Cas9 library.



**[Yilun Liu, PhD](#)** Dr. Liu, Professor at the Department of Cancer Genetics & Epigenetics, received her PhD from Yale University. Her team focuses on uncovering the molecular etiologies of developmental abnormalities, premature aging syndromes, malignancies and chemo-resistance by the clinical mutations of the RECQ DNA helicases.



**[Qiang Lu, PhD](#)** Dr. Lu, Professor at the Department of Developmental and Stem Cell Biology, received his PhD from UCSD. He is studying how neural stem cells decide to maintain their stemness or differentiate with the ultimate goal directed at developing treatments for brain cancers.



**[Ke Ma, MD, PhD](#)** Dr. Ma, Associate Professor at the Department of Diabetes Complications & Metabolism, received her PhD from Baylor College of Medicine. She studies the regulatory networks mediating nutrient-sensing functions of circadian clock in tissue crosstalk between fat, muscle and liver in normal and pathological conditions.



**[Ellie Maghami, MD](#)** Dr. Maghami, Professor at the Department of Surgery, received his MD from Washington University at St. Louis. She is a diplomate of the advanced training council in head and neck oncologic surgery and has broad clinical expertise with special interest in thyroid, aerodigestive, and salivary cancers.



**[Linda Malkas, PhD](#)** Dr. Malkas, Professor at the Department of Molecular & Cellular Biology, received her PhD from City University of New York. She is focusing on developing compounds that target the novel cancer-associated protein proliferation cell nuclear antigen (PCNA) to disrupt DNA replication and the ability for cancer cell growth.



**[Edwin Manuel, PhD](#)** Dr. Manuel, Assistant Professor at the Department of Immunology, received his PhD from Harvard University. He studies the escape mechanisms used by tumors to avoid immune recognition. He is also developing shRNA technology to down-regulate enzymes in immune suppression to improve immunotherapy.



**[Guido Marcucci, MD](#)** Dr. Marcucci, Chair and Professor, Department of Hematologic Malignancies Translational Science, received his MD from Catholic University of the Sacred Heart. Dr. Marcucci is intensely interested in the pathogenesis, the maintenance and treatment of both chronic and acute myelogenous leukemia.



**[Jeannine McCune, PharmD](#)** Dr. McCune, Professor at the Department of Population Sciences, received her PharmD from University of North Carolina. She is developing mathematical models to identify anticancer agent plasma exposure effective at treating cancer and modeling drug doses and frequencies to optimize treatment efficacy.



**[Heather McGee, MD, PhD](#)** Dr. McGee, Assistant Professor at the Department of Radiation Oncology, received her MD and PhD from Yale University. Her laboratory focuses on the immune response to radiation in different tumor microenvironments with a goal of translating scientific findings back to the clinic.



**[Kevin Morris, PhD](#)** Dr. Morris, Professor of Center for Gene Therapy, received his PhD from UC Davis. His laboratory focuses on studying the role of noncoding RNAs in the evolution of cellular states as well as utilizing the inherent endogenous noncoding cellular mechanisms to control the expression of genes involved in human diseases.



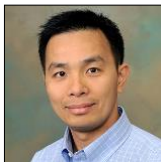
**[Rama Natarajan, PhD](#)** Dr. Natarajan, Professor and Chair of the Department of Diabetes Complications & Metabolism, received her PhD from Indian Institute of Science. She studies the molecular mechanisms involved in the accelerated development of inflammation, vascular and renal complications under diabetic conditions.



**[Susan Neuhausen, PhD](#)** Dr. Neuhausen, Professor at the Department of Population Sciences, received her PhD from University of Minnesota. She is identifying genetic, lifestyle, and environmental factors that cause breast, ovarian and prostate cancers, as well as factors important for disease-free survival in those who develop cancer.



**[Edward Newman, PhD](#)** Dr. Newman, Associate Professor at the Department of Cancer Biology, received his PhD from Yale University. He studies the mechanism by which the inhibition of cytosine methylation in reactivating tumor suppressor gene expression and developing novel DNA methyltransferase inhibitors as effective cancer therapies.



**[Vu Ngo, PhD](#)** Dr. Ngo, Associate Research Professor, Department of Systems Biology, received his PhD from University of California, San Francisco. Dr. Ngo is focused on understanding the genetic and epigenetic mechanisms of cancer mutations resulting in cancers that are more aggressive and resistant to therapy.



**[Joyce Niland, PhD](#)** Dr. Niland, Professor and Chair of the Department of Diabetes and Cancer Discovery Science, received her PhD from USC. She facilitates efficient use of Human Islet Research Network Coordinating Center and the Integrated Islet Distribution Program for studying and treating type 1 diabetes.



**[Javier Gordon Ogembo, PhD](#)** Dr. Ogembo, Assistant Professor at the Department of Immuno-Oncology, received his PhD from Nagoya University. He studies how Epstein-Barr virus and human papillomavirus overcome cellular barriers and escape host immune responses to aid the development of effective vaccines.



**[Sumanta Kumar Pal, MD](#)** Dr. Pal, Clinical Professor at the Department of Medical Oncology and Therapeutic Research, received his MD from Medical Univeristy of South Carolina. He is an international recognized leader in genitourinary cancers. He is the lead investigator on multiple early phase 1 to late stage phase 3 clinical trials.



**[Sunita Patel, PhD](#)** Dr. Patel, Associate Clinical Professor in Population Sciences, received her PhD from Alliant University. She is identifying biological and environmental risk or protective factors for neurocognitive and psychosocial sequelae in cancer patients to improve health disparities among ethnic minority survivors of childhood cancer.



**[Flavia Pichiorri, PhD](#)** Dr. Pichiorri, Associate Professor at the Center for Multiple Myeloma Research, received her PhD from University of Rome. She works with the clinical team to investigate the molecular changes associated with the clinical response of multiple myeloma patients in the investigator initiated phase 1-2 clinical trials.



**[Saul Priceman, PhD](#)** Dr. Priceman, Assistant Professor at the Department of Hematology and Hematopoietic Cell Transplantation, received his PhD from UCLA. His laboratory focuses on developing CAR T therapies for solid tumors and optimizing novel T cell engineering approaches for clinical translation.



**[Christiane Querfeld, MD, PhD](#)** Dr. Querfeld, Chief of Division of Dermatology and Associate Professor at the Department of Surgery, received her MD and PhD from University of Cologne and University of Heidelberg, respectively. Dr. Querfeld's research focuses on understanding the biology of cutaneous lymphomas and developing therapies for this class of cancer.



**[Mustafa Raof, MD](#)** Dr. Raof, Assistant Clinical Professor at the Department of Surgery, received his MD from Aga Khan University, Pakistan. His laboratory focuses on understanding how replication stress influences evolution of resistance to cancer treatment particularly in aggressive gastrointestinal cancers.



**[Dan J. Raz, MD](#)** Dr. Raz, Associate Clinical Professor at the Department of Surgery, specializes in lung cancer surgery. He is targeting specific epigenetic marks to overcome therapy resistance in lung cancer. He uses lung cancer tissue to identify new therapeutics including 3D cell culture, tissue slice culture, and patient derived xenografts.



**[Anne Reb, PhD, NP](#)** Dr. Reb, Assistant Professor at the Department of Population Sciences, received her PhD from the Catholic University of America. She is developing models of care to address areas of symptom management and cancer survivorship with particular emphasis on mind-body interventions.



**[Helena Reijonen, PhD](#)** Dr. Reijonen, Associate Professor at the Department of Diabetes Immunology, received her PhD from University of Oulu and University of Turku. She studies the autoimmunity response that leads to type 1 diabetes and limits the treatment of the disease following pancreatic islet cell transplantation.



**[Arthur Riggs, PhD](#)** Dr. Riggs, Director of the Diabetes and Metabolism Research Institute at City of Hope, received his PhD from California Institute of Technology. Dr. Riggs's laboratory is focused on how gene regulation occurs via chromatin-based mechanisms and how this regulation changes during mammalian development.



**[Russell Rockne, PhD](#)** Dr. Rockne, Assistant Professor at the Department of Computational and Quantitative Medicine, received his PhD from University of Washington. He is using patient-specific mathematical models to quantify and predict disease dynamics and recurrence.



**[Andrei Rodin, PhD](#)** Dr. Rodin, Associate Professor at the Department of Diabetes Complications and Metabolism, received his PhD from UT Health Science Center, Houston. He is developing data analysis methodology and software to analyze large-scale data sets with an emphasis in understanding problems in molecular evolution.



**[Bart Roep, MD, PhD](#)** Dr. Roep, Chair of the Department of Diabetes Immunology, received his PhD from Leiden University. He is identifying the cause of immune response to insulin-producing beta cells and developing new strategy to modulate and desensitize immune response to beta cells for the cure of type 1 diabetes.



**[Steven Rosen, MD](#)** Dr. Rosen, Provost and Director of Beckman Research, received his MD from Northwestern University. His team is developing novel therapies for hematologic malignancy by targeting ATP synthase, dihydroorotate dehydrogenase, MAPK, CD84 (SLAMF5) and de-ubiquitinase.



**[John Rossi, PhD](#)** Dr. Rossi, Chair of the Department of Molecular & Cellular Biology, received his PhD from University of Connecticut. His laboratory focuses on developing RNA aptamers and cell internalizing delivery vehicle for the treatments of HIV infection and cancers.



[Ravi Salgia, MD, PhD](#) Dr. Salgia, Professor and Chair of the Department of Medical Oncology and Therapeutics Research, Received his MD and PhD from Loyola University School of Medicine. He is identifying novel biomarkers for non-small cell lung cancer and developing targeted therapies related to lung cancer.



[Dustin Schones, PhD](#) Dr. Schones, Associate Professor at the Department of Diabetes Complications and Metabolism, received his PhD from Stony Brook University NY. His team is using combined computational and experimental approaches to study the interaction of genetic and epigenetic variations in cancer, diabetes and obesity.



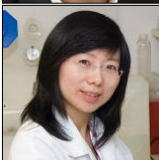
[Mina Sedrak, MD](#) Dr. Sedrak, Assistant Professor at the Department of Medical Oncology and Therapeutics Research, received his MD from Rush Medical College. Dr. Sedrak is focused on examining barriers to clinical trial participation for older adults with cancer as a way to improve evidence based cancer therapy for this population.



[Victoria Seewaldt, MD](#) Dr. Seewaldt, Professor and Chair of the Department of Population Sciences, received her MD from UC Davis. She studies signaling networks that promote breast cancer initiation with the goal of integrating novel functional imaging strategies with risk-marker to provide early detection of interval cancers.



[Binghui Shen, PhD](#) Dr. Shen, Chair of the Department of Cancer Genetics and Epigenetics, received his PhD from Kansas State University. His team focuses on understanding the molecular functions of nucleases in DNA replication and repair, as well as identifying histone modifiers and their contribution to cancer.



[Yanhong Shi, PhD](#) Dr. Shi, Professor at the Department of Developmental & Stem Cell Biology, received her PhD from Northwestern University. She focuses on characterizing the role of the nuclear receptor TLX signaling in neural stem cell self-renewal and differentiation for developing new treatment against neurological disorders.



[Hung-Ping \(Ben\) Shih, PhD](#) Dr. Shih, Assistant Professor at the Department of Translational Research & Cellular Therapeutic, received his PhD from Oregon State University. He studies the molecular control of organ morphogenesis & the interplay between morphogenesis and cell-fate decisions during pancreatic development.



[John Shively, PhD](#) Dr. Shively, Professor at the Department of Molecular Imaging and Therapy, received his PhD from University of Illinois at Urbana-Champaign. One of the major focuses of Dr. Shively's laboratory is to explore the potential of using anti-carcinoembryonic antigen antibodies to image tumor targets *in vivo*.



[Sarah Shuck, PhD](#) Dr. Shuck, Assistant Professor at the Department of Diabetes and Cancer Metabolism, received her PhD from Indiana University School of Medicine. Her team focuses on analyzing components that are produced at the very earliest stages of type 1 diabetes and diabetic kidney diseases for functional screening.



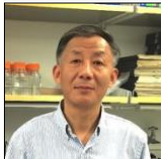
[Christopher Sistrunk, PhD](#) Dr. Sistrunk, Assistant Professor at the Department of Population Sciences, received his PhD from North Carolina State University. He utilizes molecular pathology techniques to elicit specific biochemical profiles that can identify tumorigenesis at early time point than our current standard of care diagnosis tools.



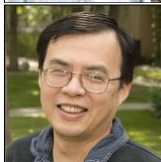
**[Jeremy Stark, PhD](#)** Dr. Stark, Professor at the Department of Cancer Genetics and Epigenetics, received his PhD from University of Washington. He studies the factors that limit chromosomal rearrangements during DNA break repair to maintain genome stability, and to develop therapeutic targets for tumor radiosensitization.



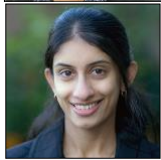
**[Virginia Sun, PhD, RN](#)** Dr. Sun, Associate Professor at the Department of Population Sciences, received her PhD from UCLA. Her research includes diet modification for bowel dysfunction in rectal cancer survivors and remote perioperative telemonitoring of patient-reported outcomes and patient-generated health data.



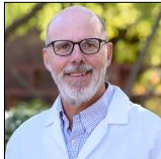
**[Zijie \(ZJ\) Sun, MD, PhD](#)** Dr. Sun, Professor at the Department of Cancer Biology, focuses his research on transcriptional control and cell signaling in development and tumorigenesis, especially using “cutting-edge” experimental approaches to uncover genomic and epigenetic alternations during the course of these biologic events.



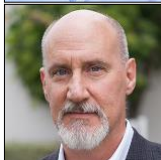
**[Zuoming Sun, PhD](#)** Dr. Sun, Professor at the Department of Molecular Imaging & Therapy, received his PhD from Duke University. His research team focuses on understanding the mechanisms responsible for the regulation of T cell activation so as to develop effective and safe treatments for immune disorders.



**[Srividya Swaminathan, PhD](#)** Dr. Swaminathan, Assistant Professor at the Department of Systems Biology, received her PhD from USC. Her lab focuses on identifying non-cytotoxic and targeted immunotherapies for treating oncogene addicted B and T cell malignancies driven by genomic rearrangements.



**[Timothy Synold, PharmD](#)** Dr. Synold, Professor of Cancer Biology and the Director of Analytic Pharmacology Core, received his PharmD from UCSF. His team is responsible for the design and conduct of preclinical phase 1 and 2 pharmacokinetic investigations of anti-cancer agents in collaboration with City of Hope investigators.



**[John Termini, PhD](#)** Dr. Termini, Professor at the Department of Molecular Medicine, received his PhD from Columbia University. He utilizes synthetic DNA chemistry and analytical methodologies to define how specific DNA base damage accumulates under physiological conditions to promote mutagenesis and cancer.



**[Debbie Thurmond, PhD](#)** Dr. Thurmond, Professor and Chair of the Department of Molecular and Cellular Endocrinology, received her PhD from University of Iowa. She is defining the cellular and molecular mechanisms involved with diabetes development and identifying therapies to reverse the progression of the disease.



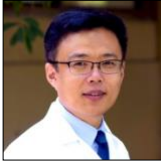
**[Lindsey Treviño, PhD](#)** Dr. Treviño, Assistant Professor at the Department of Population Sciences, received her PhD from Cornell University. She studies the molecular basis by which exposure to endocrine disrupting chemicals affects the epigenetic machinery leading to a variety of metabolic disorders.



**[Nagarajan Vaidehi, PhD](#)** Dr. Vaidehi, Professor and Chair of the Department of Computational and Quantitative Medicine, received her PhD from Indian Institute of Technology. She is developing computational methods to study the structure and dynamics of membrane proteins and protein-protein interactions for drug discovery.



**[Rupangi Vasavada, PhD](#)** Dr. Vasavada, Associate Professor at the Department of Translational Research and Cellular Therapeutics, received her PhD from University of Pennsylvania. She studies how biological peptides may enhance the preservation and regeneration of functional beta cells as a treatment for diabetes.



**[Edward Wenge Wang, MD, PhD](#)** Dr. Wang, Assistant Professor at the Department of Medical Oncology and Therapeutics Research, received his MD and PhD from Harbin Medical University. He is focusing on the development of new death receptor agonists and rescue of p53 from negative regulators for cancer treatment.



**[Leo Wang, MD, PhD](#)** Dr. Wang, Assistant Professor at the Department of Immunology, received his MD and PhD from the University of Chicago. Dr. Wang's lab uses molecular and cellular techniques to identify non-genetic determinants leading to functional differences in blood cells at different stages of development.



**[Lili Wang, MD, PhD](#)** Dr. Wang, Associate Professor at the Department of Systems Biology, received her MD from China Medical University and her PhD from Tokai University. Dr. Wang's research involves understanding how somatic mutations contribute to the development of chronic lymphocytic leukemia.



**[Qiong \(Annabel\) Wang PhD](#)** Dr. Wang, Assistant Professor at the Department of Molecular and Cellular Endocrinology, received her PhD from Chinese Academy of Sciences. She is defining the mechanisms of adipose tissue remodeling in mammary glands to prevent metabolic disorders and breast cancer.



**[Sophia Wang, PhD](#)** Dr. Wang, Professor at the Department of Computation and Quantitative Medicine, received her PhD from Johns Hopkins University. Her research is focused on the etiology of hematopoietic malignancies and the role that immune genes, which play a role in inflammation, impact lymphoma etiology and survival.



**[Xiuli Wang, PhD](#)** Dr. Wang, Research Professor at the Department of Hematology and Hematopoietic Cell Transplantation, received her PhD from University of Oslo. Her work focuses on pre-clinical and translational research on CAR T cell therapy for hematological malignancy and HIV.



**[Susanne Warner, MD](#)** Dr. Warner, Assistant Professor at the Department of Surgery, received her MD from Texas A&M College of Medicine. She researches translational applications for oncolytic viral therapy. Her clinical interests include advancing robotic liver and pancreas surgery and optimizing the perioperative patient experience.



**[John Williams, PhD](#)** Dr. Williams, Professor at the Department of Molecular Medicine, received his PhD from Columbia University. His group utilizes X-ray crystallography and biophysical methods to design, quantify and optimize novel therapeutics, including monoclonal antibodies and STAT3 inhibitor, for cancer treatment.



**[Terence Williams, MD, PhD](#)** Dr. Williams, Professor and Chair of the Department of Radiation Oncology, received his MD and PhD from Albert Einstein College of Medicine. He specializes in thoracic and gastrointestinal cancers, with an emphasis on nonsmall cell lung, pancreatic and hepatobiliary malignancies.



**[F. Lennie Wong, PhD](#)** Dr. Wong, Associate Professor at the Departments of Population Sciences and Computational and Quantitative Medicine, Division of Biostatistics, received her PhD from UCLA. She uses computer modeling to address the long-term health issues that childhood cancer survivors may face.



**[Anna Wu, PhD](#)** Dr. Wu, Professor and Chair of the Department of Molecular Imaging and Therapy, received her PhD from Yale University. Dr. Wu's research team focuses on engineering antibodies specific to tumor antigens for developing novel imaging technology to aid in the in vivo detection of tumors.



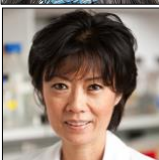
**[Yanzhong Yang, MD, PhD](#)** Dr. Yang, Associate Professor at the Department of Cancer Genetics & Epigenetics, received his PhD from Fudan University. Research in his laboratory aims to identify altered epigenetic pathways that lead to tumorigenesis and to develop novel strategies to target these pathways for cancer therapy.



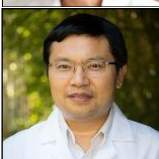
**[Jiing-Kuan Yee, PhD](#)** Dr. Yee, Professor at the Department of Diabetes Complications & Metabolism, received his PhD from University of Texas - Dallas. He is developing novel human pluripotent stem cell differentiation protocol to produce functional beta islet cells in clinical relevant quality and quantity for the treatment of diabetes.



**[Lisa Yee, MD](#)** Dr. Yee, Professor and Vice Chair of Research of the Department of Surgery, received her MD from Yale University. Her research is focused on breast cancer prevention and symptom intervention, with emphasis on dietary and nutraceutical interventions.



**[Hua Yu, PhD](#)** Dr. Yu, Professor of the Department of Immuno-Oncology, received her PhD from Columbia University. Dr. Yu's research team examines the role of STAT3 in mediating the tumor microenvironment. The eventual goal is to devise therapies to target STAT3 leading to tumor death.



**[Jianhua Yu, PhD](#)** Dr. Yu, Professor at the Department of Hematology & Hematopoietic Cell Transplantation, received his PhD from Purdue University. He is engineering CAR Natural Killer cells, CAR-T cells, oncolytic virus and bispecific antibodies, natural product-based strategies and hematopoietic cell transplantation for cancer therapy.



**[Yuan Yuan, MD, PhD](#)** Dr. Yuan, Associate Professor at the Department of Medical Oncology and Therapeutics Research, received her MD and PhD from Xuzhou Medical College and UC Riverside, respectively. She is involved in clinical trials to test novel therapeutics for metastatic triple negative breast cancer she is developing.



**[John Zaia, MD](#)** Dr. Zaia, Director of Center for Gene Therapy, received his MD from Harvard Medical School. His team collaborates with City of Hope investigators to test various approaches, including genome editing of the CCR5 gene important for HIV infection, in providing resistance to HIV infection and slowing the progression of AIDS.



**[Defu Zeng, MD](#)** Dr. Zeng, Professor of Diabetes Immunology, received his PhD from Fujian Medical University. His laboratory focuses on understanding the pathogenesis of graft-versus-host disease, which is a major obstacle in allogeneic hematopoietic cell transplantation for the treatment of hematological malignancies.

## PATH TO PHD IN TRANSLATIONAL MEDICINE

### [LEARN MORE](#)

The strategic goals of the City of Hope support education as one of the major efforts of the institution. Areas of translational and precision medicine are critical for development of treatment strategies, drug development, and disease prevention. The PhD in Translational Medicine program permits students graduated from Master of Science in Translational Medicine who have discovered that they are interested in furthering their career in research and developing research at the level of a PhD to continue at the Irell & Manella Graduate School of Biological Sciences.

To be eligible for engagement in the PhD in Translational Medicine, students must have demonstrated the foundational experience for success in study at the PhD level. Validation of requisite skills and ability are satisfied with:

- successful completion of the Master of Science in Translational Medicine program by the start date of enrollment as a PhD student to the Irell & Manella Graduate School of Biological Sciences;
- a cumulative GPA of 3.4 from the Master of Science in Translational Medicine program; and
- a letter of support from the MSTM thesis mentor and/or future PhD thesis mentor by the beginning spring semester of the Master of Science in Translational Medicine program.

*PhD in Translational Medicine is accredited by the accredited agency WASC Senior College and University*

## MSTM ADMISSION & REQUIREMENTS

**APPLY NOW**

**Priority Deadline:** December 15

**Regular Deadline:** Rolling admission. We review an application as the application becomes complete. Typical time to reach a decision on a complete application is 1-2 weeks.

### **Application Requirements:**

#### **1. The online application includes:**

- Personal statement (describe how the MSTM program will enhance your future career options and increase your skill set for a career in the biomedical research or life sciences industry)
- Curriculum Vitae
- Educational Background
- Recommender's contact information

#### **2. Transcripts from every institution of higher education you have attended**

Unofficial copies can be used for admissions purposes; official transcripts will be required before matriculation.

#### **3. Letter of recommendation**

#### **4. Standardized tests**

- ONE of the following tests: Graduate Record Examination (GRE), Medical College Admission Test (MCAT), Graduate Management Admission Test (GMAT) or United States Medical Licensing Examination (USMLE)
- Test of English as a Foreign Language (TOEFL) scores are required for all foreign students and must be sent by the Educational Testing Service. Only foreign students who have completed a four-year bachelor's degree in the United States are eligible to petition to waive this requirement.

#### **5. Nonrefundable \$75 application fee**

For information on tuition and financial aid for the MSTM program, [click here](#).

[Check out our website](#)