

Mentors by Department	PhD Programs	Rotation Students	MSTP Students (and alumni)	Research Description
Biochemistry				
Eckhard Jankowsky, PhD	Biochemistry	Nischay Rege	Sarah Venus, Soon Yi	Single molecule enzymology (RNA helicases) & single molecule studies of ribonucleoprotein machinery (HCV replication and pre-mRNA splicing)
Hung-Ying Kao, PhD	Biochemistry			Mechanisms of the transcriptional control by diverse signaling pathways; molecular basis of human diseases related to transcriptional regulation
Focco van den Akker, PhD	Biochemistry	Nischay Rege		Structural biology; infectious diseases/antibiotic resistance; cardiovascular diseases; small-molecule therapeutics design; cell signaling
Biomedical Engineering				
A. Bolu Ajiwoye, PhD	Biomedical Engineering	Morgan McGrath	Anisha Rastogi	Development and control of brain- computer- interface (BCI) technologies for restoring function to individuals who have experienced severely debilitating injuries to the nervous system, such as spinal cord injury and stroke
Jeffrey Capadona, PhD	Biomedical Engineering		Sydney Song	Developing materials to assimilate within the neural tissue to facilitate molecular level connections with individual neurons
Dominique Durand, PhD	Biomedical Engineering, Neuroscience, Physiology & Biophysics	Max Freeberg, Kabilar Gunalan, Bryan Benson, Sydney Song	(Tom Ladas, Sheela Toprani, Daniel Levanthal, Bill Stacey)	Neural engineering, neural prostheses, magnetic and electric stimulation of the nervous system, electrophysiology of epilepsy, computational neuroscience.
Robert Kirsch, PhD	Biomedical Engineering	Anisha Rastogi		Mechanics and control of human movement
Zheng-Rong Lu, PhD	Biomedical Engineering		Peter Qiao	Drug delivery and molecular imaging; novel targeted imaging agents for molecular imaging; novel MRI contrast agents; image-guided therapy and drug delivery; polymeric drug delivery systems; multi-functional delivery systems for nucleic acids

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Anant Madabhushi, PhD	Biomedical Engineering	Awuri Asuru, Gavin Hanson, Jessica Scarborough		Quantitative image analysis; Multi-modal, multi-scale correlation of massive data sets for disease diagnostics, prognostics, theragnostics: cancer applications.
Cameron McIntyre, PhD	Biomedical Engineering		Kabilar Gunalan (Tom Foutz, Svjetlana Miocinovic)	Deep brain stimulation (DBS) for the treatment of movement disorders and effective application of DBS to new clinical arenas
Andrew Rollins, PhD	Biomedical Engineering			Development and application of advanced optics and photonics technologies for imaging and characterization of biological samples, detection of early disease, and monitoring of therapy in human tissues; and investigating embryonic development
Nicole Seiberlich, PhD	Biomedical Engineering		James Ahad	Advanced signal processing and data acquisition techniques for real-time MRI
Anirban Sen Gupta, PhD	Biomedical Engineering		DaShawn Hickman, Michelle Cruz	Drug delivery and nanomedicine, mechanistic understanding of biological and pathological phenomena at the cellular, sub-cellular and biomolecular levels, creating bioinspired therapeutic and diagnostic technologies
Samuel Senyo, PhD	Biomedical Engineering			Fundamental mechanisms regulating the differential regenerative response to heart damage; comparative studies using mammalian model systems, including human stem cells
Horst von Recum, PhD	Biomedical Engineering	Anna Czapar, Anna Henry, Evelyn Ojo		Novel platforms for the delivery of molecules and cells
David Wilson, PhD	Biomedical Engineering	Christian Anderson, Charlie Wang, Brian Fort	(Roe Lazebnik)	Biomedical image processing; digital processing and quantitative image quality of X-ray fluoroscopy images; interventional MRI
Xin Yu*, ScD	Biomedical Engineering	Christian Anderson	Charlie Wang (Didi Goodnough)	* Not currently accepting MSTP students for rotation or PhD placement

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Cardiovascular Research Institute				
Mukesh Jain, MD	Physiology and Biophysics, Pathology	Anna Henry, Hana Russo, Jennings Luu, Erik Koritzinsky	Nelson Hsieh, David Sweet, Liyan Fan	Transcriptional mechanisms governing cellular differentiation and function
Center for Clinical Investigation				
Satya Sahoo, PhD	Epidemiology & Biostatistics			Biomedical Big data, medical informatics with focus on data integration and scalable computing, data-driven approaches to understand role of brain connectivity in epilepsy seizure networks
James Spilsbury *, PhD, MPH	Epidemiology and Biostatistics, Clinical Translational Science			* Not currently accepting MSTP students for rotation or PhD placement
Center for Global Health & Diseases				
James Kazura, MD	Immunology	Emily Hannon		Immunoregulatory mechanisms of pathogenesis; acquired resistance to infection; malaria
Christopher L King, MD, PhD	Immunology	Gloria Tavera		T cell differentiation, Malaria Schistosomiasis, Filariasis Neonatal immunity, IgE regulation Mechanisms of acquired immunity
Center for Proteomics & Bioinformatics				
Mark Chance, PhD	Genetics, Systems Biology and Bioinformatics, Immunology	Dan Jindal	Danica Wiredja, Awuri Asuru	Systems Biology, Protein Structure/Function, Cancer, Diabetes
Center for RNA Molecular Biology				

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Kristian Baker, PhD	Biochemistry	Joel Sax		Post-transcriptional regulation of gene expression; mRNA turnover; RNA quality control; non-coding RNA function
Jeffery Collier, PhD	Biochemistry	Soon Yi	Gavin Hanson, Otis Pinkard	mRNA decay ensures that previously transcribed messages do not translate indefinitely. mRNA decay is the default state, and is intimately connected to protein synthesis. Stabilization requires the mRNA be maintained in an ideal ribonucleoprotein context (mRNP). The long term focus of my lab is to understand how these principles interconnect and are regulated by the cell.
Donny Licatalosi, PhD	Biochemistry, Systems Biology and Bioinformatics	Susie Suh	Xinrui Zhang	Understanding how different RBPs regulate gene expression during mouse spermatogenesis, using genetic, bioinformatic, biochemical, and high throughput methods
Chemistry				
Blanton Tolbert, PhD	Molecular Virology	Erin Cohn		Understanding the molecular mechanisms RNA viruses use to express their genomes
Cleveland Clinic Biomedical Engineering, Concussion Center				
Jay Alberts, PhD	Biomedical Engineering	Bryan Benson	Morgan McGrath	How the brain controls skilled movements and how changes in brain function affect the movement performance; Parkinson's disease, stroke and concussion; improving movement and cognitive performance; concussion and mild dramatic brain injury
Cleveland Clinic Cancer Biology				
Nima Sharifi, MD	Pharmacology			Metabolic and molecular mechanisms of resistance to hormonal therapy in advanced prostate cancer
Cleveland Clinic Cellular and Molecular Medicine				

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Stanley Hazen, MD, PhD	Cell Biology, Pathology	Awuri Asuru	Marc Ferrell (Arundhait Undurti, Bob Koeth)	Inflammation biology, atherosclerosis, gut flora, asthma, HDL structure/function, internal medicine, preventive cardiology
Justin Lathia, PhD	Cancer Biology			Using in vivo imaging models to interrogate the tumor microenvironment; examining communication mechanisms in cancer stem cells; currently focused on malignant brain tumors
Jonathan Smith, PhD	Pathology			Cell/molecular biology, biochemistry, and genetics/genomics studies of three areas related to cardiovascular disease: atherosclerosis, reverse cholesterol transport, and atrial fibrillation
Cleveland Clinic Genomic Medicine Institute				
Charis Eng, MD, PhD	Genetics, Cancer Biology	Ryan Gimple		Cancer genomic medicine translational research; characterization of disease risks in inherited predisposition to cancer; intracytoplasmic trafficking of PTEN and oxidative stress in cancer
Cleveland Clinic Hematology & Medical Oncology				
Jacob Scott, MD, PhD	Systems Biology and Bioinformatics		Jessica Scarborough	Mathematical models, experimental evolution, and data science studies of the process of the evolution of resistance in cancer and infectious diseases
Cleveland Clinic Immunology				
Robert Fairchild, PhD	Immunology	Alex Tong, Claire Mazahery, Otis Pinkard	(Tarek El Sawy, Chuck Su, Austin Schenk, Josh Rosenblum, David Yao)	T-lymphocyte tolerance, transplantation immunology; T-cell mediated responses in the skin
Xiaoxia Li, PhD	Immunology	Leo Kim, Joseph Rathkey, Susie Suh, Brendan Barton, Muta Abiff, Vanessa Salazar	Willie Miller-Little (Brad Martin, Ling Wu)	Signal transduction in innate and adaptive immunity

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Booki Min, DVM, PhD	Immunology	Ryan Stultz		T cell homeostasis, gd T cells, CD8 T cells, Role of basophils in adaptive immunity
Cleveland Clinic Molecular Genetics and Virology				
Ganes Sen, PhD	Biochemistry, Molecular Virology, Immunology	Nelson Hsieh	(Lenette Lu, Chris Elco)	Molecular Virology, Mechanism of Interferon Action, Recombinant DNA Technology, Genetic Regulation of Hypertension
Cleveland Clinic Pathobiology				
Laura Nagy, PhD	Nutrition, Cell Biology, Molecular Medicine		Jeanette Wat	Innate immune contributions to alcohol and non-alcoholic induced liver injury, mechanisms of hepatocyte cell death, adipose-gut-liver interactions in alcoholic liver disease, genetic contributions to ALD
Cleveland Clinic Radiation Oncology				
Mohamed Abazeed, MD, PhD	Systems Biology & Bioinformatics, Genetics & Genome Sciences			Genomic abnormalities that give rise to therapeutic resistance in cancers; developing personalized therapeutic strategies in a new strategy of biologically-guided treatment
Cleveland Clinic Stem Cell Biology and Regenerative Medicine				
Jennifer Yu, MD, PhD	Cancer Biology			Understanding mechanisms underlying key Glioma stem cell (GSC) tumorigenic properties; uncovering potential therapeutic targets.
Computer Science and Engineering				

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Mehmet Koyutürk, PhD	Systems Biology and Bioinformatics	Danica Wiredja, Stevephen Hung		Bioinformatics and Computational Biology, with emphasis on development of algorithms for data analysis in Systems Biology
Dermatology				
Daniel Popkin, MD, PhD	Pathology			Viral pathogenesis and immunology
Family Medicine & Community Health				
Kurt Stange, MD, PhD	Epidemiology & Biostatistics, Clinical Translational Science		Uriel Kim	The generalist function, primary care practice, practice-based research, cancer prevention and early detection, multimethod research, health promotion, disability prevention, preventive service delivery in primary medical care
General Medical Sciences (Oncology)				
Jill Barnholtz-Sloan, PhD	Epidemiology and Biostatistics		Peter Liao	Cancer genetic/molecular epidemiology, biostatistics, bioinformatics, systems biology, brain tumors
William Schiemann*, PhD	Cancer Biology, Pharmacology	Nathaniel Robinson	Alex Gooding, Nathaniel Robinson	* Not currently accepting MSTP students for rotation or PhD placement
Genetics & Genome Sciences				
Drew Adams, PhD	Genetics & Genome Sciences	Joel Sax, Yi-Fan Chen, Hannah Kondolf	Zita Hubler	High-throughput screening and other chemical biology approaches to identify and optimize new drug candidates in neurodegenerative diseases, cancer, and other diseases
Yan Li, PhD	Genetics & Genome Sciences		Anniya Gu	Functions of non-coding cis-regulatory elements (such as enhancers) in development and complex diseases, especially related to diabetic conditions

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Ann Harris, PhD	Genetics & Genome Sciences	Anniya Gu		Tissue-specific and temporal regulation of gene expression; analysis of cis-regulatory elements and the role of 3D chromatin structure and modifications in regulating transcription; functional genomics of epithelial cells with a focus on cystic fibrosis
Peter Harte, PhD	Genetics & Genome Sciences	Meredith Whitney		Epigenetic regulation of chromatin structure and transcription, histone modifying enzymes, Polycomb silencing, genetic control of lifespan and aging
Thomas LaFramboise, PhD	Genetics	Andrea Cohen, Evelyn Ojo, Danica Wiredja, Kathleen Plona, Andrew Morton		Developing and applying computational tools to identify molecular variants - both inherited and somatic - that contribute to cancer and related diseases in humans
Hua Lou, PhD	Genetics			Alternative RNA processing and its role in cancer development
Peter Scacheri, PhD	Genetics, Cancer Biology	Steve Chirieleison, Stevephen Hung, Ellen Hong	Andrew Morton (Andrea Cohen, James Morrow)	Investigation of the epigenetic code in human health and disease
Ashleigh Schaffer, PhD	Genetics & Genome Sciences	Soon Yi, Erin Cohn		Understanding the unique functions of ubiquitously expressed proteins in human brain development and pediatric neurological disease
Paul Tesar, PhD	Genetics	Sarah Taylor, Kevin Allan	Matt Ellitt, Zach Nevin, Kevin Allan (Tyler Miller)	Stem cell pluripotency and differentiation; developmental neurobiology; developmental genetics
Zhenghe John Wang, PhD	Genetics, Cancer Biology	George Luo		Identifying novel genetic alterations, such as somatic mutations, gene amplifications and deletions, which alter critical gene functions involved in development of colon and gastric cancers

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Anthony Wynshaw-Boris, MD, PhD	Genetics and Genome Sciences	Avery Sears, Michael Babinchak, Zita Hubler, Kathleen Plona		Understanding genetic and biochemical pathways important for the development and function of the mammalian central nervous system, primarily using mouse models of human and mammalian diseases to define pathways disrupted in these diseases
Mechanical & Aerospace Engineering				
Umut Gurkan, PhD	Biomedical Engineering	Will Wolfstange		Micro- and nano-scale technologies, biomanufacturing, cell mechanics, and microfluidics
Medicine				
Isabelle Deschênes, PhD	Biomedical Engineering, Physiology and Biophysics	Liyang Fan		Molecular and electrophysiological studies of the structure-function of the sodium channel; translational research studies of the role of cardiac ion channels in inherited cardiac arrhythmias
Medicine (Cardiovascular Medicine)				
Andrei Maiseyev, PhD	Biomedical Engineering			Our research team develops nanotechnology tools to better understand cardiometabolic diseases such as atherosclerosis, type 2 diabetes, and obesity. We engineer, make, and test new imaging probes, drug delivery vehicles, and sensors that help diagnose and treat these conditions.
Aaron Proweller, MD, PhD	Cell Biology	Alex Gooding, Colin Stomberski		Molecular pathways regulating vascular development and morphogenesis including the role of Notch signaling in patterning, maturation and contractile function of the arterial vasculature
Diana Ramirez-Bergeron, PhD	Genetics, Pathology		Anna Henry	Adaptive responses to changes in oxygen tension and the effect on blood cells and vessels; influence of hypoxic responses on the generation of cardiovascular stem/progenitor cells and their differentiation into various cardiovascular cell lineages; hypoxia and bone marrow stem cell niches

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Medicine (Gastroenterology and Hepatology)				
Fabio Cominelli, MD, PhD	Pathology		Adrian Gomez-Nguyen	Crohn's Disease, General GI, Inflammatory Bowel Disease, Ulcerative Colitis
Medicine (Hematology and Oncology)				
Sanford Markowitz, MD, PhD	Molecular and Microbiology, Genetics, Cancer Biology	Alexandra McMillan, Michal Jandzinski	(Josh Friedman, Ryan Fecteau)	Colon cancer genetics
Shigemi Matsuyama, DVM, PhD	Pharmacology, Cancer Biology	Alex Tong		Cancer Cell Biology, Cell Death Regulation, Cell Penetrating Peptide
Reshmi Parameswaran, PhD	Immunology, Cancer Biology		Yorleny Vicioso	Novel therapeutic approaches for cancer; activating natural killer cells for adoptive therapy of pediatric cancers; developing therapeutic tools combining immunology with glycobiology; exploiting the cancer cell specific immune receptors and glycan expression patterns
Stanton Gerson, MD	Cancer Biology	Kevin Allan	(Lachelle Weeks)	Transgenic mice and carcinogenesis, retroviral gene therapy, DNA repair, hematopoietic stem cells
Medicine (Infectious Diseases)				
Robert A Bonomo, MD	Pharmacology, Molecular and Microbiology, Immunology	Emma Schroder	(Jodi Thomson, Sarah Drawz, Marisa Winkler)	Structure function studies of beta-lactamases; enzymological factors that permit the successful evolution of beta-lactamases in the clinic; development of immunological tools to study beta-lactamase expression in enteric bacilli; application of molecular diagnostics to the rapid diagnosis of infectious diseases; testing and development of novel beta-lactams and beta-lactamase inhibitors

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W Henry Boom, MD	Immunology, Molecular Biology and Microbiology		(Mursalin Anis, Erika Noss)	T cell biology, tuberculosis, immune evasion, pulmonary host defense, antigen processing, anti-microbial immunity, basic and translational TB research
David Canaday, MD	Immunology	Heather Clark, Gloria Tavera		Immunology of infectious diseases; study of HIV-TB interaction; cellular interactions resulting in loss of control of M. tuberculosis; understanding immune defects that develop with aging
Atul Chopra, MD, PhD	Genetics & Genome Sciences	Brendan Boylan, Brian Kim		Energy homeostasis and metabolic disease
Michael Lederman, MD	Molecular and Microbiology, Pathology			Mechanisms of immune deficiency and immune restoration in HIV infection
Carlos Subauste, MD	Immunology			Immunology, cell signaling in host-pathogen interactions, Toxoplasma, HIV, autophagy, selective blockade of CD40 signaling to control disorders such as atherosclerosis and microvascular complications of diabetes
Medicine (Institute for Transformative Molecular Medicine)				
Jonathan Stamler, MD	Biochemistry	Steve Chirieleison, Zack Grimmett	Colin Stomberski	Molecular, cellular and physiological aspects of redox biology; functions of nitric oxide in cellular signaling; roles of dysregulated redox mechanisms in human disease
Molecular Biology and Microbiology				
Susan Brady-Kalnay*, PhD	Molecular and Microbiology, Neurosciences, Cell Biology, Cancer Biology		(Adam Burgoyne, Julia Rosdahl)	* Not currently accepting MSTP students for rotation or PhD placement

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Jonathan Karn, PhD	Molecular Biology and Microbiology			Control of Gene Expression in HIV
Alan Levine, PhD	Molecular Virology; Immunology; Pharmacology; Cell Biology; Cancer Biology	James Ignatz-Hoover, Ryan Stultz	Claire Mazahery (Robin Jump, Brenda Rivera-Reyes, Charlotte Chung, Andrew Schade)	Immune regulation in the mucosa: Role of the mucosal T lymphocyte and epithelial cell in intestine
Liem Nguyen, PhD	Molecular Biology and Microbiology			Host-mycobacterial interactions; virulence factors of Mycobacterium tuberculosis; antibiotic resistance and cell biology of mycobacteria
Arne Rietsch, PhD	Molecular Biology and Microbiology	Josie Trichka	Emma Schroder	Primary virulence factor of P. aeruginosa, a type III secretion system; understanding how this nanomachine works, as well as how the injected effector proteins prevent clearance of the bacterium by the patient's immune system
Jacek Skowronski, MD, PhD	Molecular Biology and Microbiology	Abner Murray		Identifying cellular co-factors of HIV/SIV-encoded proteins and selected cellular proteins that can block HIV replication
Neurological Surgery				
Eli Bar, PhD	Neurosciences, Pathology, Pathology/Cancer, Molecular Biology & Microbiology	Melissa Bonner		Identification and targeting of cancer cell intrinsic signaling nodes in Glioblastoma
Neurosciences				

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Heather Broihier, PhD	Neuroscience		Dan Jindal	Developmental neurobiology; Molecular mechanisms of synaptic development and plasticity
Evan Deneris, PhD	Neuroscience		(Meredith Whitney)	Molecular genetics of the brain serotonergic transmitter system
Polyxeni Philippidou, PhD	Neuroscience		Alicia Vagnozzi	Molecular mechanisms of neural circuit assembly during development, genetic control of phrenic motor neuron identity; synaptic specificity in respiratory circuits; Hox genes
Jerry Silver, PhD	Neuroscience	Paul Cheng, Sydney Song, Elliot Choi	(Teresa Evans, Michael Fitch)	Role of glial cells in development and regeneration of neural circuits, nerve regeneration, glia, axon guidance
Benjamin Strowbridge, PhD	Neuroscience		(Phil Larimer, Robert Hyde, Elisa Chiang, Ramani Balu)	Synaptic Physiology, hippocampus, olfactory bulb, Computational Neuroscience
Wen-Cheng Xiong, MD, PhD	Neuroscience			Molecular mechanisms underlying neural development, neuro-degeneration, and bone homeostasis
Richard Zigmond, PhD	Neuroscience, Pathology	Xinrui Zhang, Willie Miller-Little	Aaron Talsma	Plasticity in the adult nervous system; ways in which the chemistry of the adult nervous system can change, and functional consequences of such changes; alterations that occur in response to neural damage and changes in neural activity
Nutrition				
Danny Manor*, PhD	Nutrition, Pharmacology, Pathology, Cancer Biology	Kirkland Wilson		* Not currently accepting MSTP students for rotation or PhD placement
Ophthalmology & Visual Sciences				
Paul Park, PhD	Pharmacology			Mechanism of action of rhodopsin and other G protein-coupled receptors

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Irina Pikuleva, PhD	Pharmacology	Jennings Luu		Mechanistic studies of the link between disturbed retinal cholesterol homeostasis and vascular retinal abnormalities; pharmacologic stimulation of cholesterol turnover in the brain to enhance memory and cognition and treat early stages of Alzheimer's disease
Orthopedics				
Edward Greenfield*, PhD	Physiology and Biophysics, Pathology, Immunology, Cancer Biology		Brian Fort	* Not currently accepting MSTP students for rotation or PhD placement
Ronald Triolo, PhD	Biomedical Engineering	Bryan Benson, Peter Liao	Max Freeberg	Rehabilitation engineering, neural control of motion, lower-extremity neuroprostheses, orthopaedic biomechanics and prosthetic/orthotic design
Otolaryngology				
Brian McDermott, PhD	Genetics, Neuroscience, Biology	Jiayang Li, Kathleen Plona, Jeanette Wat		Sensory Neurobiology, Hearing and Deafness, Zebrafish Genetics, Mechanotransduction, Synapse development, Translational Neuroscience
Qing Zheng, MD	Genetics			Genes, molecular pathways and drug discovery involved in disease processes in mouse models of human deafness, including Otitis Media (OM) and Usher syndrome
Pathology				
Derek Abbott, MD, PhD	Pathology, Cancer Biology, Immunology	James Ignatz-Hoover, Michelle Cruz, Otis Pinkard, Hannah Kondolf	Steve Chirieleison, Bowen Zhou, Joseph Rathkey	Inflammatory diseases and innate immune signaling pathways

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Stanley Adoro, PhD	Pathology/ Cancer, Immunology			Hematopoiesis, hematopoietic stem cells, acute myeloid leukemia, T-cell homeostasis and autoimmunity
Brian Cobb, PhD	Immunology	Ling Wu, Heather Clark, Claire Mazahery		Antigen processing and presentation of carbohydrate antigens
Clifford Harding, MD, PhD	Immunology	Leo Kim, Claire Mazahery, David Sweet	(Alyssa Johnsen, Michael Drage, Rose Chu-Beck, Steve Pooter, Aaron Tobian, Tom Richardson, Nicole Pecora, Daimon Simmons)	Immunology, major histocompatibility complex (MHC) molecules, antigen processing, function of antigen presenting cells and T cells, Toll-like receptors, vaccine adjuvants, Cell Biology, phagocytosis, endocytosis, subcellular fractionation, Infectious Disease, mycobacteria, tuberculosis
Stanley Huang, PhD	Pathology	Alex Leser		Understanding the interplay between cellular signaling and metabolic regulation that dictates immune cell activation during inflammation
Mark Jackson, PhD	Cancer Biology		Courtney Bartel	Genetic events that contribute to breast hyperplasia
Qingzhong Kong, PhD	Pathology			Prion diseases, functions of cellular prion protein in biology and diseases, muscle stem cells, and gene therapy
M. Edward Medof, MD, PhD	Pathology			
Vincent Monnier, MD	Pathology, Biochemistry			Molecular mechanisms of protein aging, oxidative stress, complications of diabetes and aging, cataractogenesis, microbial enzyme technology

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Parameswaran Ramakrishnan, PhD	Immunology	Brendan Barton, Willie Miller-Little		Diabetes and inflammation-induced cancer; NF-kappaB related signal transduction in the immune system, metabolism and cancer; use of cellular systems, molecular biology and animal models to identify fundamental mechanisms and potential therapeutic targets
Jiri Safar, MD	Pathology			Neurodegenerative diseases caused by protein misfolding; molecular basis of prion diseases; role of small oligomers of misfolded proteins in pathogenesis; translational medicine.
Lewis Shi, MD, PhD	Pathology			Understanding the mechanisms of how immune signaling pathways, metabolic processes, and transcriptional factors impact the maintenance, survival and functions of T cells in anti-tumor immunity
Alan Tartakoff*, PhD	Pathology	Kathleen Plona, Bowen Zhou	(Serendipity Rinonos, Jerold Turner)	* Not currently accepting MSTP students for rotation or PhD placement
David Wald, MD, PhD	Pathology, Cancer Biology, Immunology	Ryan Gimple	Evelyn Ojo, (James Ignatz- Hoover)	Identification and development of novel therapeutic strategies for cancer with a particular focus on Acute myeloid leukemia (AML)
Xinglong Wang, PhD	Pathology			Understanding the mechanism(s) underlying neuronal death in various major neurodegenerative diseases, with a focus on Alzheimer's disease, Frontotemporal dementia and Amyotrophic lateral sclerosis Frontotemporal dementia
T. Sam Xiao, PhD	Pathology			Structural and biochemical studies of important immune receptors; understanding and modulating their functions for diagnostic and therapeutic applications
Lan Zhou, MD, PhD	Cancer Biology	Peter Qiao, Yorlery Vicioso		Notch-dependent regulation of hematopoietic stem cell proliferation, differentiation and niche location; leukemia microenvironment regulation; Notch signaling in solid tumor progression; fucosylated glycans in hematopoiesis and cancer biology.
Xiongwei Zhu, PhD	Pathology	Aaron Talsma, Muta Abiff	Sirui Jiang	Neurodegenerative mechanisms underlying Alzheimer disease and other neurodegenerative diseases
Pediatrics				

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Mitchell Drumm, PhD	Genetics & Genome Sciences		Kathleen Plona	Understanding how variants in the genome influence the course of disease for CF patients and how the CF genome adapts to the disease
Thomas Gerken, PhD	Biochemistry			Protein structure and dynamics; NMR techniques; molecular modeling of glycoproteins and mucins
Alex Huang, MD, PhD	Cancer Biology, Immunology	Ryan Stultz, Derek Wong, Hannah Dada, Ellen Hong	Alex Tong, Bryan Benson, Muta Abiff, (Dixon Dorand)	Tumor Immunology; Intravital two-photon laser scanning microscopy; T cell and chemokine receptor biology; Cellular trafficking, migration and interaction in inflammation, cancer and auto-immunity
John Letterio, MD	Biochemistry	Brendan Barton	George Luo	Discovery of the critical roles of TGF- β in hematopoietic and immune cell function
Pharmacology				
Chris Dealwis, PhD	Pharmacology			Understanding the structural organization requirements by multiple protein assemblies to facilitate biological function
Maria Hatzoglou, PhD	Nutrition, Pharmacology		Syrena Bracey	Arginine metabolism, gene regulation, viral receptors and gene therapy
Yoshikazu Inamishi, PhD	Pharmacology			Localization of proteins and chemical intermediates involved in phototransduction and the visual cycle using modern imaging technique
Ruth Keri, PhD	Pharmacology, Cancer Biology	Hana Russo, Meredith Whitney, Pam Marcott, Syrena Bracey	Bryan Webb, Katrina Piemonte (Jonathan Mosley, Marjorie Montanez-Wiscovich)	Hormonal control of mammary gland development and construction of transgenic mouse models of breast cancer; functional genomics of mammary gland development and cancer.
Jason Mears, PhD	Pharmacology	Sirui Jiang		Molecular machinery associated with mitochondrial division in yeast and mammalian cells; understanding the relationship between mitochondrial dynamics and disease
Marvin Nieman, PhD	Pharmacology, Cell Biology			Anti-platelet therapeutic targets for managing cardiovascular disease

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Phoebe Stewart, PhD	Pharmacology			Applying cryo-EM structural methods to a variety of biological complexes including viruses, viral/host factor complexes involving adenovirus and papillomavirus, and protein-based and polymer based nanoparticles
Derek Taylor, PhD	Pharmacology	Kirkland Wilson, Sirui Jiang, Raza Haider		Structure and molecular mechanisms of macromolecular machines involved in DNA maintenance and RNA maturation and biogenesis
Edward Yu, PhD	Pharmacology			Molecular mechanisms of bacterial efflux transporters that mediate antimicrobial resistance
Physiology & Biophysics				
Walter Boron, MD, PhD	Physiology & Biophysics			Regulation of intracellular pH, gas channels
Matthias Buck, PhD	Physiology & Biophysics			Molecular Biophysics of small GTPase-protein interactions in neuronal, cardiovascular, and cancer cell signaling; molecular biology, NMR and X-ray spectroscopy, and thermodynamic measurements to determine the basic mechanisms by which proteins transmit signals in cells
Sudha Chakrapani, PhD	Physiology & Biophysics			Understanding the role of structure and dynamics in the functioning of ion channels
George Dubyak, PhD	Physiology & Biophysics, Pharmacology, Immunology	Brian Fort	Hana Russo (Phil Verhoef, Andrew Blum, Michael Katsnelson, Michelle Kahlenberg, Ben Humphreys)	Inflammatory and apoptotic signal transduction; Signaling by receptors for extracellular ATP in innate immunity, cardiovascular disease, and cancer
Joseph LaManna*, PhD	Physiology & Biophysics, Neuroscience, Pathology	David Sweet		* Not currently accepting MSTP students for rotation or PhD placement

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Xin Qi, PhD	Physiology & Biophysics	Nicholas Venetos, Lucy Ahn		Mitochondrial dysfunction in disease
Corey Smith, PhD	Physiology & Biophysics			Regulation of the sympatho-adrenal stress response
Julian Stelzer, PhD	Physiology & Biophysics		Jiayang Li	Cellular and molecular mechanisms of cardiac muscle contraction in health and disease
Witold Surewicz, PhD	Physiology & Biophysics, Pathology		Michael Babinchak, Raza Haider	Molecular basis of prion diseases and other disorders of protein misfolding
Population and Quantitative Health Sciences				
William Bush, PhD	Epidemiology & Biostatistics			Genomics research on Alzheimer's disease
Dana Crawford, PhD	Epidemiology & Biostatistics			Applying genetic variation data to large-scale epidemiologic and clinical cohorts to better understand human genotype-phenotype associations, with an emphasis on diverse populations
Darcy Freedman, PhD, MPH	Epidemiology & Biostatistics	Uriel Kim		Implementation and dissemination of community-level public health interventions; Community-engaged applied public health research; Primary prevention of chronic disease; Nutrition, food security and obesity
Jonathan Haines, PhD	Epidemiology & Biostatistics	Zita Hubler, Michael McHenry		Genomic and computational approaches to understand the pathophysiology of human disease

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Sudha Iyengar, PhD	Epidemiology & Biostatistics, Genetics & Genome Sciences, Systems Biology & Bioinformatics	Andrea Cohen, Pam Marcott	(Laura Kopplin)	Genetics of complex diseases in humans (ocular genetics/epidemiology, renal genetics, speech sound disorder/epidemiology, genetic methods)
Chun Li, PhD	Epidemiology & Biostatistics			Statistical genetics; genetic epidemiology; ordinal data analysis.
Nora Nock, PhD	Epidemiology & Biostatistics, Systems Biology & Bioinformatics			Using various "-omics" and neuroimaging approaches to better understand the genetic, environmental, behavioral and neural determinants of obesity and cancer; innovative lifestyle interventions in overweight and obese cancer survivors
Fredrick Schumacher, PhD	Epidemiology & Biostatistics			Deciphering the inherited genetic architecture of complex traits, particularly cancers of the prostate, colon and breast; studies using quantitative and population sciences, particularly molecular and genetic epidemiology, to elucidate the genetic architecture of complex phenotypes
Catherine Stein, PhD	Epidemiology & Biostatistics, Systems Biology & Bioinformatics, Clinical and Translational Science		Michael McHenry	Genetic and environmental susceptibility to tuberculosis and other infectious diseases, and multivariate methods for analyzing complex diseases
Daniel Tisch, PhD, MPH	Epidemiology			Epidemiology of lymphatic filariasis, malaria, and schistosomiasis. Meta-analysis and mathematical modeling of parasite control strategies. Evaluation of integrated parasite control programs.

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Scott Williams, PhD	Epidemiology & Biostatistics, Genetics		Gloria Tavera	Distribution of genetic variation among human populations and the role that differences in patterns of variation play in disparity of disease among populations; diversity among African and African descent populations; multiple diseases that are either more common in these populations, such as hypertension and preterm birth, or less common, such as gastric cancer
Xiaofeng Zhu, PhD	Epidemiology			Genetic mapping studies of hypertension, obesity; development of statistical methods for association studies avoiding the effect of population stratification; admixture mapping; bioinformatics
Radiology				
Agata A Exner, PhD	Biomedical Engineering, Cancer Biology	Michael Glidden	Michaela Cooley (Ravi Patel)	Minimally invasive methods of cancer treatment including: ultrasound-modulated, image-guided drug delivery, thermosensitizers for focused hyperthermia, and vasomodulation for improved local ablation and treatment follow-up
Christopher Flask, PhD	Biomedical Engineering		Christian Anderson	Quantitative MRI Assessments of Cystic Fibrosis, Diabetic Nephropathy, Sickle Cell Disease, Pyelonephritis, Polycystic Kidney Disease, and Non-Alcoholic fatty Liver Disease
Rammelkamp Center for Research, MetroHealth Hospital				
Bingcheng Wang, PhD	Pharmacology, Pathology, Cancer Biology	Courtney Bartel		Molecular mechanisms governing cell migration and proliferation, experimental therapy of cancer metastasis using tumor-targeting peptides