UNIVERSITY of MARYLAND
SCHOOL OF MEDICINE

FRCT Mentors and Research Descriptions

Mentors with an * by their name have updated their information for the 2024-2025 school year.

Name (Department)	E-mail	Research Description
*Cheer, Joseph F (Anatomy & Neurobiology)	jcheer@som.umaryland.edu	That person would work with a transgenic animal model of Huntington's disease using advanced neuroscience techniques, such as ensemble electrophysiology, voltammetry and optogenetics.
*Lindberg, Iris (Anatomy & Neurobiology)	ilindberg@som.umaryland.edu	The deposition of aggregated proteins is common in neurodegenerative diseases such as Alzheimer's disease, Parkinson's disease, and ALS. Natural protein chaperones are present in neurons; these can effectively block pathogenic aggregation and restore normal protein function. We investigate chaperone-protein interactions in various models which include test tubes, cell lines, and/or rodent models, and are looking for students to carry out viral transductions, fibrillation assays, proteostatic and/or confocal analysis of cell lines and brain sections for this work. Please see TheLindberglab.com website for more information, as well as two 2022 publications (one of which shows proSAAS-mediated rescue of nigral neurons in a Parkinson's rat model).
Lobo, Mary Kay (Anatomy & Neurobiology)	mklobo@som.umaryland.edu	My research focuses on the neural circuits and molecular mechanisms underlying psychiatric diseases, including addiction and depression. We use rodent models and cell-type selective tools to manipulate activity and profile transcriptomics in the selective neural circuits that mediate behavioral responses to drugs of abuse and the depression-like behaviors exhibited after chronic social stress.
*Monteiro, Mervyn J. (Anatomy & Neurobiology)	monteiro@umaryland.edu	We have generated mouse models of ALS/FTD and are currently developing newer models for Alzheimer's disease. We utilize the mouse models to decipher the pathomechanisms involved in disease and for preclinical drug testing
*Puche, Adam C (Anatomy & Neurobiology)	apuche@som.umaryland.edu	1. Neurobiology of Olfaction, 2) Trauma surgical education and performance
*Anders, Megan G. (Anesthesiology)	manders@som.umaryland.edu	I am an anesthesiologist and critical care physician. I direct the Perioperative and Critical Care Data Warehouse in the Department of Anesthesiology. This warehouse contains thousands of clinical records, including high-resolution intraoperative vital sign data, and are used for retrospective clinical and outcomes research as well as quality improvement and health services research. Some questions can be answered entirely using the Data Warehouse, and others require additional data collection. Our team also studies validity and constructs useful for research with large clinical datasets.
*Birukov, Konstantin (Anesthesiology)	kbirukov@som.umaryland.edu	The project will evaluate a prognostic validity of circulating histones as prognostic biomarkers of severity in trauma patients. The study will utilize a novel device for semi-automatic detection of histones in the blood of admitted trauma patients and compare results with tests conducted using conventional detection by ELISA. The results of histone levels will be compared with patient outcomes.
Chao, Wei (Anesthesiology)	wchao@som.umaryland.edu	We are investigating the molecular pathogenesis of traumatic injury, sepsis, coagulopathy, and cardiac/lung/brain inflammation and injury. In particular we are interested in the role of innate immune-mediated inflammation in these diseases.
Chow, Jonathan H. (Anesthesiology)	JChow@som.umaryland.edu	

Name (Department)	E-mail	Research Description
Grewal, Ashanpreet (Anesthesiology)	agrewal@som.umaryland.edu	
*Henderson, Reney A (Anesthesiology)	rhenderson@som.umaryland.edu	We will be looking at different coagulation profiles in regards to cardiac surgery and how to best achieve hemostasis. We will also look at the impact of anemia on cardiac surgery and AKI risk
*Hu, Peter F (Anesthesiology)	phu@som.umaryland.edu	Utilizing real-time patient field and admission vital signs data to predict lifesaving interventions such as emergency blood transfusion, intubation, and emergency surgery. Developing realtime advanced machine learning algorithms to predict near and long term trauma patient outcomes. In hospital and mobile telemedicine applications for rapid assessment of trauma patient status for triage and treatment.
*Kodali, Bhavani (Anesthesiology)	bkodali@som.umaryland.edu	Division Chief of Obstetric Anesthesiology
*Kristian, Tibor (Anesthesiology)	tkris001@umaryland.edu	Our research is focused on mechanisms leading to brain damage due to acute and chronic neurodegenerative disorders. We study processes leading to mitochondrial dysfunction in the brain after ischemic insult. Main focus of our research is on the nicotinamide dinucleotide (NAD) catabolism and its cellular and mitochondrial metabolism. To determine the role of different mitochondrial proteins in mechanisms leading to cells death we generate transgenic animals where proteins of interest are expressed and targeted to mitochondria or knockdown in cell-type specific manner.
*Lipinski, Marta (Anesthesiology)	mlipinski@som.umaryland.edu	My lab investigates the mechanisms of neurodegeneration and neuroinflammation following traumatic brain injury (TBI) using mice as a model. We are interested in both acute and chronic TBI mechanisms as well as mechanisms linking history of TBI to development of neurodegenerative diseases later in life. In particular, we are focusing on the contribution of the autophagy-lysosomal pathway to neurodegeneration and neuroinflammation and the connection between perturbation of lipid metabolism, lysosomal function and inflammation after TBI.
Mondal, Samhati (Anesthesiology)	smondal@som.umaryland.edu	
*Polster, Brian M. (Anesthesiology)	bpolster@som.umaryland.edu	My laboratory studies basic subcellular mechanisms that govern aberrant neuroinflammation and cell death in neurodegenerative disorders, with a focus on mitochondrial signaling, bioenergetics, and oxidative stress. Current goals are to elucidate roles for mitochondrial structural and functional remodeling in inflammatory microglial activation and to improve our understanding of how pro-inflammatory microglia and reactive astrocytes exacerbate neuronal injury. Approaches include cell-based proteomics, respirometry, biochemistry, fluorescence microscopy, and in vivo disease modeling of traumatic brain injury. Multiple preclinical mitochondria-targeted drugs are being explored for their ability to resolve deleterious inflammatory responses.
*Stoica, Bogdan (Anesthesiology)	bstoica@som.umaryland.edu	Mechanisms of neuronal cell death and microglia activation after TBI
*Williams, Brittney (Anesthesiology)	brittney.williams@som.umaryland.edu	My research interests have focused on studying the link between systemic inflammation and altered coagulation and management of perioperative coagulopathy. Coagulopathy is commonly described as impaired endogenous clotting ability with loss of localization and risk of intravascular thrombosis and bleeding, and greatly affects mortality in critically ill patients. Inflammatory driven coagulation has a unique pathogenesis separate from what is described

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		with major trauma and hemorrhage, and my research has mainly focused on characterizing and describing intravascular coagulation dysfunction in the setting of systemic inflammation. Recently, we discovered that specific innate immune receptors known as Toll-like receptors impact the development of sepsis-induced coagulopathy. My current focus is to better describe this pathology by studying the role of innate immune signaling in platelet activation and aggregation, development of coagulopathy, and potential role of DAMP signaling via microRNA/extracellular vesicles.
*Wu, Junfang (Anesthesiology)	junfang.wu@som.umaryland.edu	The focus of research in Dr. Wu's lab is to understand the cellular and molecular mechanisms of neurological dysfunction following spinal cord injury (SCI) and traumatic brain injury (TBI), with the ultimate goal of developing potentially therapeutic strategies. In particular, We are interested in pathological mechanisms including disruption of autophagy and lysosomal pathway, astrocytic TrkB.T1, microglial Hv1 channel, NOX2, extracellular vesicles (EVs), and their contribution to neuroinflammation and neurodegeneration in both acute CNS trauma and aging conditions including chronic SCI/TBI and Alzheimer's disease and related dementia (AD/ADRD). The research tools used in my lab include rodent models of SCI and TBI, animal behavior testing (for motor function, pain, cognition, depression, olfaction), characterization of extracellular vesicles using Nanoparticle Tracking Analysis and ExoViewTM, advanced flow cytometry technology, quantitative image analysis, stereological cellular assessments, in vivo administration of therapeutics, as well as primary neuronal and glial culture.
*Drohat, Alex (Biochemistry & Molecular Biology)	adrohat@som.umaryland.edu	Potential projects would focus on studies of the mechanism of DNA repair enzymes and possibly studies of how the enzyme activity can be regulated with small molecules.
*Du, Shaojun (Jim) (Biochemistry & Molecular Biology)	sdu@som.umaryland.edu	The fundamental question that drives the research in my lab is: "How a single cell, the fertilized egg, develops into an animal with thousands of distinct type of cells - muscle cells, neurons, epidermal cells, blood cells, and so on?" We are particularly interested in the molecular and cellular mechanisms that control the differentiation of skeletal and cardiac muscle cells during embryogenesis. Specifically, we use zebrafish as a model system to uncover novel genetic pathways and gene function involved in muscle development, growth and repair.
Karbowski, Mariusz (Biochemistry & Molecular Biology)	mkarbowski@som.umaryland.edu	The Karbowski laboratory studies mechanisms controlling mitochondrial function, with a focus on the ubiquitin-proteasome system. How these are controlled in healthy cells and the degree to which these mechanisms contribute to disease development is a major focus of our research. Other areas include control of mitochondrial fission and fusion and mitochondria-specific autophagy. We are also interested in the metabolic remodeling of cancer cells. New research focuses on the cancer cell adaptation to different energy substrate availability and bioenergetic activity of the mitochondria.
*Lin, Jiayuh (Biochemistry & Molecular Biology)	JLin@som.umaryland.edu	Our lab is working on IL-6, CDK4/6, and PARP pathways in cancer. We are developing novel drug candidates and drug combination to target these pathways for potential therapeutic approach in cancer.
Neuwald, Andrew F. (Biochemistry & Molecular Biology)	aneuwald@som.umaryland.edu	Predicting sequence/structural determinants of protein function

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*Ray, Krishanu (Biochemistry & Molecular Biology)	kray@som.umaryland.edu	Single molecule studies of the HIV-1 envelope and SARS-CoV-2 Spike protein. Research in this area is focused on the biophysical properties of HIV-1 and SARS-CoV-2 Spike proteins. Fluorescence correlation spectroscopy (FCS) and single molecule detection (SMD) are used as novel tools to probe the nature of HIV-1 envelope interactions with cell surface receptors and/or anti-envelope antibodies at the molecular level to understand the initial step of HIV infection. Current research also includes the study involving interaction between SARS-CoV-2 virions and receptors and/or antibodies. A quantitative, intrinsic, label-free, and minimally invasive method based on two-photon fluorescence lifetime (FLT) imaging microscopy (2p-FLIM) has been developed in the lab towards imaging NADH metabolism of virally and bacterially infected cells and tissue sections.
Thompson, Richard B (Biochemistry & Molecular Biology)	richard.thompson@som.umaryland.edu	The major thrust of our lab for some years has been the study of metal ion biology and creating tools for that purpose. Most of the tools are fluorescence-based optical biosensors used for studying zinc and copper ions in cells, tissues, and natural environments like the ocean. Presently we are engaged in developing new sensors to study zinc in the retina, where it may play a role in the development of age-related macular degeneration (AMD), the most common cause of blindness in the elderly in the US. The biosensor technology is reviewed in Hurst, et al., Biochim Biophys Acta 1804, 393-403 (2010); doi:10.1016/j.bbapap.2009.09.031 . Recently, we unexpectedly discovered the presence of spheres of hydroxyapatite (bone mineral) in the retina, which seem to nucleate the growth of deposits that lead to AMD (Thompson, et al., Proc Nat'l Acad. Sci 112, 1565-1570 (2015); doi 10.1073/pnas.1413347112). Experiments are underway to test this hypothesis.
Weber, David (Biochemistry & Molecular Biology)	dweber@som.umaryland.edu	Structure/function and inhibition of proteins and/or enzymes involved in disease. Such work on many different drug targets are available to mentees interested in working in my research group or in the Center for Biomolecular Therapeutics.
*Wilson, Gerald (Biochemistry & Molecular Biology)	gwilson@som.umaryland.edu	Our key research interests are the cellular mechanisms that regulate the production of many important gene products, including oncoproteins, inflammatory mediators, and lipoprotein receptors. In particular, we focus on protein factors that regulate cytoplasmic mRNA turnover rates, and the signaling systems that may transiently modulate the activity of these factors. Experimental approaches vary from cell and molecular biology (cultured cell systems, transfection, RNA interference) to biochemical (gel mobility shift, protein-protein and protein-RNA cross-linking) and biophysical systems (fluorescence anisotropy, resonance energy transfer). Some current foci of interest include: • Trans-acting factors that regulate decay of oncoprotein and inflammatory mediator mRNAs • The role of post-transcriptional gene regulatory circuits in tumor development • mRNA stability as a novel mechanism to enhance hepatic LDL receptor expression
*Zhou, Qun (Biochemistry & Molecular Biology)	qzhou@som.umaryland.edu	MicroRNA, long-non coding RNA, breast cancer stem cells, metastasis and cancer immunotherapy
Hornyak, Thomas J. (Dermatology)	thornyak@som.umaryland.edu	Melanocyte stem cell biology in murine systems, melanoma signaling and epigenetics.

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Cao, Qi (Diagnostic Radiology & Nuclear Medicine)	QiCao@som.umaryland.edu	My research projects are 1. Preclinical non-invasive imaging diagnosis of early stage alcoholic liver fibrosis; 2. preclinical non-invasive imaging diagnosis of fat liver; and preclinical non-invasive imaging diagnosis of early stage alcoholic liver disease-caused neurological dysfunction. Methods: PET/CT, MRS, molecular biology, biochemical assays, anatomic histology, immunohistochemistry, and animal models.
Chang, Linda (Diagnostic Radiology & Nuclear Medicine)	lchang@som.umaryland.edu	Dr. Chang has multiple clinical and translational neuroimaging research projects, as well as existing datasets, that are suitable for medical student participations. She has ongoing projects in patients with HIV infection and is developing new projects to evaluate residual or persistent neuroinflammation in convalescent COVID-19 patients. She also has a large longitudinal study to evaluate adolescent brain cognitive development (ABCD). Lastly, she collaborates with others to conduct translational studies that use MR-guided focused ultrasound to enhance drug delivery to the brain.
*Chen, Rong (Diagnostic Radiology & Nuclear Medicine)	rchen@som.umaryland.edu rchen@som.umaryland.edu	Dr. Chen's research focuses on leveraging machine learning, deep learning, neuroimaging and computational modeling to understand the relationship between brain and behavior. His group developed machine learning algorithms for high-dimensional data analysis, multimodal data fusion, and dynamic brain network modeling. These algorithms have been used to study Alzheimer's disease, Parkinson's disease, autism, schizophrenia, sickle cell disease, and addiction.
Dreizin, David (Diagnostic Radiology & Nuclear Medicine)	ddreizin@umm.edu	Several mentored research opportunities are currently available in the ER/Trauma section of the department of radiology. Applicants should have a strong interest in either radiology or trauma surgery. Hypothesis driven retrospective clinical research projects on a wide range of trauma-related imaging topics are available. Responsibilities for a chosen project will include data collection and basic statistical analysis. The student will also learn important aspects of CT interpretation and image post-processing in the trauma setting. Past projects have led to primary authorship or co-authorship in major journals in the field and presentations at national meetings. Highly motivated students can obtain funding for summer stipends by applying for Radiological Society of North America (RSNA) medical student research grants.
Fleiter, Thorsten (Diagnostic Radiology & Nuclear Medicine)	tfleiter@umm.edu	1) Artificial intelligence enabled detection of lung modules in trauma patients using multi-energy CT 2) CT contrast lung transit time as indicator for shock status of trauma patients.
Frenkel, Victor (Diagnostic Radiology & Nuclear Medicine)	vfrenkel@som.umaryland.edu	Dr. Frenkel is the Director of Translational Focused Ultrasound. He has several ongoing projects that involve the use of focused ultrasound to transiently open the blood brain barrier in order to markedly enhance the delivery of therapeutic agents or cells to the brain. His current projects include improved antiretroviral medication delivery to HIV-infected humanized mice, as well as enhanced delivery of immunomodulatory drugs to treat Parkinson's disease. He also works closely with oncology to conduct research to demonstrate improved delivery of chemotherapeutic agents to head and neck tumors.
Hossian, Rydhwana (Diagnostic Radiology & Nuclear Medicine)	rydhwana.h@gmail.com	Several projects are available in the cardiothoracic section in the department of radiology. We have a wide range of projects including hypothesis driven retrospective studies as well as smaller review studies. Depending on the interest of the student projects can be tailored to appropriate level of participation. In the last 3 years at least 7 medical students have done projects that have either resulted in an abstract in a meeting and/or publication in top peer reviewed journals.

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Jeudy, Jean (Diagnostic Radiology & Nuclear Medicine)	JJEUDY@som.umaryland.edu	Several projects are available in the cardiothoracic section in the department of radiology. We have a wide range of projects including hypothesis driven retrospective studies as well as smaller review studies. Artificial intelligence studies are also possible.
White, Charles (Diagnostic Radiology & Nuclear Medicine)	cwhite@umm.edu	Section chair of cardiothoracic division with 29+ years of extensive research and publications. Depending on the students level of prior research experience and motivation they may participate in hypothesis driven research project which starting with IRB preparation to publication or smaller review studies.
*Gingold, Daniel B. (Emergency Medicine)	DGingold@som.umaryland.edu	Research interests include Mobile Integrated Health and Community Paramedicine, health policy, health services research, public health, social medicine
*Grasso, Michael A. (Emergency Medicine)	mgrasso@som.umaryland.edu	I am developing new approaches to knowledge representation and reasoning, which are optimized for very large clinical repositories and leverage advanced analytics. This work may lead to new methods for disease prediction, surveillance, treatment, and prevention. We are conducting research in resource utilization and recidivism in emergency medicine, medication prescribing patterns, and consumer health information.
Jasani, Gregory (Emergency Medicine)	gjasani@som.umaryland.edu	
Marcozzi, David E (Emergency Medicine)	dmarcozzi@em.umaryland.edu	Looking at health policy and reform issues, population health, emergency medicine and emergency preparedness.
*Salerno, Alexis (Emergency Medicine)	alexis.salerno@som.umaryland.edu	I perform research in the emergency department on the use of point-of-care application in the care of patients.
Sethuraman, Kinjal (Emergency Medicine)	ksethuraman@umm.edu	We conduct research related to Hyperbaric Medicine. Recent projects: study of carbon monoxide toxicity, gene expression after HBO exposure. Upcoming project: quality of life study (SF-36) of patients with delayed effects of radiation.
*Sward, Douglas G. (Emergency Medicine)	dsward@em.umaryland.edu	Interested in mentoring and facilitating student research efforts in wilderness, dive medicine, and hyperbaric medicine. This includes assisting in finding field research opportunities in North America.
Teague, Heidi (Emergency Medicine)	HTeague@som.umaryland.edu	
Teeter, William (Emergency Medicine)	william.teeter@som.umaryland.edu	
*Thom, Stephen (Emergency Medicine)	sthom@som.umaryland.edu	1. Study of inflammatory responses related to formation of extracellular vesicles 2. Study of role for circulating microparticles in pathophysiology of decompression sickness. 3. Study of role for circulating microparticles and neutrophil activation in carbon-monoxide mediated neuropathology
Tran, Quincy (Emergency Medicine)	qtran@umm.edu	Critically ill patients who first present to a nearby hospital will often need to transfer to a tertiary care center for higher level of care. Our researches investigate factors to improve the process of care for these critically ill patients from the Emergency Department to arrival at University of Maryland. We perform clinical researches including enrolling patients, retrospective chart reviews and meta-analysis.
*Witting, Michael (Emergency Medicine)	mwitting@em.umaryland.edu	Research has been in a variety of topics related to clinical emergency medicine, including bedside diagnosis, gastrointestinal bleeding, and difficult intravenous access.

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*Adebamowo, Clement A (Epidemiology & Public Health)	cadebamowo@som.umaryland.edu	1. The epidemiology, genomics (GWAS), epigenomics, microbiomics and metabolomics of HPV infection and cervical carcinogenesis 2. The epidemiology and genomics risk of incident and prevalent molecular subtypes of breast cancer in African women 3. Validation of new diagnostics for characterization of molecular subtypes of breast cancer 4. Improvement of informed consent for genomics and cognitively impaired research in Africa
*Adebamowo, Sally (Epidemiology & Public Health)	sadebamowo@som.umaryland.edu	Genomics, Genetic Epidemiology, Polygenic Risk Scores, Nutritional Epidemiology, Cardiovascular Epidemiology, Cancer Epidemiology, Clinical Trials
*Baghdadi, Jonathan D. (Epidemiology & Public Health)	jbaghdadi@som.umaryland.edu	The research program will consist of secondary analyses of existing clinical data in a large administrative database. We are open to broad interests, but work has already been done to curate cohorts of patients with suspected sepsis and patients who underwent evaluation for respiratory infection
Goodman, Katherine (Epidemiology & Public Health)	kgoodman@som.umaryland.edu	My research interests include Gram-negative antimicrobial resistance in inpatient settings, the development of evidence-based healthcare epidemiology and antimicrobial stewardship policies, and applying machine learning and other prediction model approaches to healthcare epidemiology questions using 'Big Data.' An increasing component of my work encompasses use of large claims databases and the application of novel machine learning and informatics techniques, primarily natural language processing, to electronic health record data. An ideal mentee would have an interest in large data and have some prior programming experience or familiarity with programming and working with data (e.g., in SAS, R, Stata, and/or Python). Motivated students would have the potential for publications resulting from this research. There would be high flexibility and hybrid remote/in-person work would be fine.
*Gruber-Baldini, Ann L. (Epidemiology & Public Health)	abaldin@epi.umaryland.edu	I have three research areas: 1) Patient reported outcomes and the impact of cognitive functioning: this study will validate the PROMIS Profile measures in older adults and to identify the threshold where cognitive impairment invalidates these responses. This is a mixed-methods study including qualitative and quantitative approaches. 2) Hip fracture and dementia: I have existing longitudinal datasets on hip fracture and cognitive recovery; any interested student must have experience with data analyses. 3) HIV and aging. I have been collaborating with clinicians at the Midtown THRIVE center on research with persons aging with HIV (aged 50 and older). I have a pilot study on a behavioral intervention to decrease loneliness and increase meaningful activities, and also to address physical activity and nutrition concerns.
*Harris, Anthony D. (Epidemiology & Public Health)	aharris@som.umaryland.edu	Dr. Harris's research interests include the epidemiology and transmission of multidrug-resistant organisms, antimicrobial resistance and infection prevention. Dr. Harris has a particular interest in epidemiologic methods and risk adjustment methodology for healthcare associated infections. Overview: Infectious disease research focused on infection control and medical informatics

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*Leekha, Surbhi (Epidemiology & Public Health)	sleekha@epi.umaryland.edu	Clinical research in hospital based infection prevention and antibiotic stewardship ranging from primary data collection via chart review or patient interactions, to analysis of already collected data. *Able to mentor projects beyond the summer.
Memiah, Peter (Epidemiology & Public Health)	pmemiah@ihv.umaryland.edu	Ongoing Projects on HIV and Non-Communicable diseases (specifically diabetes and CVD risk); A focus on Adolescent HIV; Vulnerability to risk; Comorbidities; Continuous Quality Improvement for Health Care impact studies. These scholarly project will be in the review of data; manuscript development; systematic and literature reviews- and products will be credited (ICJME criteria).
Orwig, Denise L. (Epidemiology & Public Health)	dorwig@som.umaryland.edu	1. Osteoporosis and disparities in treatment 2. Maximizing functional recovery after acute events like hip fracture 3. predictors of poor outcomes after hip fracture and disparities 4. Sarcopenia 5. Social isolation
*Stafford, Kristen A. (Epidemiology & Public Health)	kstafford@ihv.umaryland.edu	My research focuses on HIV and Aging in low- and middle-income settings and identifying models of care to improve patient outcomes and quality of life
Zhang, Yuji (Epidemiology & Public Health)	yuzhang@som.umaryland.edu	Dr. Yuji Zhang's research focuses on developing translational biostatistics and informatics approaches to reveal novel human disease mechanisms. She has solid interdisciplinary trainings in bioinformatics and Computer Engineering. Dr. Zhang has over 20 years of research experience in integrative analysis of multi-source high-dimensional biological data for novel association discovery between different biological entities under different biological states. She has extensive collaborative research experience in medical informatics, ontology, software engineering, biomedical and basic science fields. Her current research mission is to leverage the gap between the analytical needs of arising from multi-source biological "big" data in biomedical research and advanced informatics approaches. As the lead of the bioinformatics core at University of Maryland Greenebaum Comprehensive Cancer Center and University of Maryland School of Medicine, Dr. Zhang has been serving as co-principal investigator/co-investigator leading the bioinformatics and statistical analyses in numerous federal funded research projects. She has over 60 peer-reviewed publications involving analysis of various types of omics data such as DNA/mRNA/miRNA sequencing and methylation sequencing. She has also been organizing/co-organizing several international workshops in the informatics field since 2012.
*Khanna, Niharika (Family & Community Medicine)	nkhanna@som.umaryland.edu	I am the Principal Investigator of the Maryland Rural Healthcare Infrastructure Initiative; and the Director of the Maryland Tobacco Control Resource Center. I work on developing a rural community based workforce, and tobacco cessation using e-referrals to the Maryland Quitline, COVID and Tobacco, Electronic cigarettes/vaping associated with EVALI, COVID-19 vaccination in the community, Long COVID, and using the Area Deprivation Index to identify COVID hotspots
*Ntiri, Shana O. (Family & Community Medicine)	sntiri@som.umaryland.edu	Cancer screening disparities
Rose, Vivienne (Family & Community Medicine)	vrose@som.umaryland.edu	I am the director of the Medical weight management Program at UMB and provide clinical services to the overweight/obese population. Have mentored residents in research topics surrounding obesity and its comorbidities. program has accumulated data on various aspects of obesity and relevant metrics.

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*Li, Yuxing (IBBR)	yuxingli@umd.edu	This study proposes to gain basic insight of the primate B cell response to the HIV-1 envelope glycoproteins (Env) during both natural infection and following vaccination, to perform high-resolution comparison of the rare but potent and broadly neutralizing Env-specific antibody responses elicited during natural infection to the more limited responses following vaccination, and to develop new vaccine concepts and vaccination regimens derived from the comparative studies. We will perform multicolor Env epitope-specific B cell sorting and RT-PCR strategy to exploit the memory B cell compartment of HIV-infected individuals and Env-inoculated non-human primates (NHPs). We will perform memory B cell FACS sorting, and clonal analysis of Env-specific B cells. The outcomes of this study will contribute to the development of a broadly effective HIV-1 vaccine as well as increase understanding of host/pathogen interactions.
*Nelson, Daniel (IBBR)	nelsond@umd.edu	My laboratory studies Gram-positive bacterial pathogenesis, bacteriophage-host interactions, and development of bacteriophage-derived proteins that can be exploited as novel antimicrobial agents. The largest part of my research is currently centered on proteins that are part of the bacteriophage lytic system. These proteins, known as endolysins, have the ability to rapidly degrade the cell wall of a host species. As such, they represent an antimicrobial approach that is parallel to antibiotics. We have gained extensive experience in biochemical and biophysical protein characterizations of these enzymes, performed detailed structure/function studies, and are now bioengineering a new generation of endolysins for evaluation in animal models of infection. Current projects are aimed at enzymes active against methicillin-resistant Staphylococcus aureus (MRSA).
*Pierce, Brian (IBBR)	pierce@umd.edu	My laboratory's research focuses on computational structural biology, specifically modeling and design of immune recognition, including T cell receptors, antibodies, and vaccines. We utilize and develop advanced computational methods, including protein-protein docking and protein interface design, as well as data mining of characterized antibody-antigen and TCR-pMHC complexes available in the Protein Data Bank. Areas of particular interest are the design of high affinity biotherapeutics and broadly neutralizing vaccines that prevent viral escape.
*Xiao, Shunyuan (IBBR)	xiao@umd.edu	Our lab studies host-pathogen interaction with a focus on the host (plant)-fungal interface. We are interested in understanding cell autonomous membrane repair in plants and immunity against poorly-adapted pathogens.
*McCann, Robert S. (Medicine)	rmccann@som.umaryland.edu	Dr. McCann is a medical entomologist with extensive experience conducting research on malaria vectors and parasite transmission using a combination of field, laboratory, and computational approaches. His research focuses on the processes that drive spatial and temporal patterns of malaria with the goal of improving intervention effectiveness. Current projects include assessing factors that determine human-to-mosquito transmission of malaria parasites; and characterizing the spatial population structure of malaria vector species.
Outeda Garcia, Patricia (Medicine)	pgarcia@som.umaryland.edu	Autosomal dominant polycystic kidney disease is an important cause of end-stage renal disease, for which there is no proven therapy. Mutations in PKD1 and PKD2 (the genes encoding polycystin-1 and polycystin-2) are the cause of this disease. The disease begins in utero and is slowly progressive. We know that inactivation of Pkd1 in mice before postnatal day 13 results in severely cystic kidneys within 3 weeks, whereas inactivation at day 14 and later results in cysts only after 5 months. This critical developmental switch has not been defined and/or characterized for Pkd2 inactivation. Our hypothesis is that the developmental switch in Pkd2 is similar to the one observed and described for Pkd1. To test our hypothesis we will inactivate Pkd2 expression in mice at different time points, from postnatal day P12 to postnatal day P15 and we will evaluate cyst development and cyst progression by immunohistochemistry and H&E staining. We will perform immunofluorescence at different time points and using different nephron segment

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		markers to evaluate the origin of cysts. We will also test if proliferation of renal epithelial cells is a major driver of cystogenesis after Pkd2 inactivation. We will perform RT-PCR and western blot targeting specific genes involved in cyst development and cyst progression at different time points.
*Finn, Aloke V (Medicine/Cardiology)	afinn@medicine.umaryland.edu	I have an active research program examining the mechanisms of vascular disease including genetics and pathologic analysis as well as using other techniques such as single cell RNA seq etc. We have a large biobank of tissues that sources as source material for many of our studies.
Fisher, Steven A (Medicine/Cardiology)	Sfisher1@medicine.umaryland.edu	Gene therapies targeting vascular smooth muscle as novel therapies for hypertension and heart failure.
Williams, Charles (Medicine/Cardiology)	charles.williams@som.umaryland.edu	
*Ying, Zhekang (Medicine/Cardiology)	zying@medicine.umaryland.edu	My study is currently focused on the transgenerational adverse health effects following exposure to PM2.5 (particulate matter with a diameter less than 2.5u).
*Beitelshees, Amber L (Medicine/EDN)	abeitels@medicine.umaryland.edu	My research program is focused on pharmacogenomics and precision medicine. Our current studies are evaluating variability in response to diabetes and cardiovascular disease treatments and the implementation of genomic medicine.
Davis, Stephen N. (Medicine/EDN)	sdavis@som.umaryland.edu	Dr. Davis's major research interests include studying neural control of metabolism, exercise physiology and metabolic regulation of in-vivo vascular biology in obese, diabetic and healthy individuals. Using state-of-the-art integrated in-vivo clinical physiologic approaches (glucose clamps, pancreatic clamps, isotopic tracer methodologies), Dr. Davis and his group have been able to identify the deficient autonomic nervous system, neuroendocrine and metabolic homeostatic mechanisms responsible for increased hypoglycemia during rest and exercise in intensively treated Type 1 and Type 2 DM individuals. More recently, Dr. Davis's studies have demonstrated novel treatment strategies to restore the deficient autonomic nervous system responses during hypoglycemia and exercise. Additionally, glucose and pancreatic clamp studies have been extensively used to investigate the independent effects of insulin action and glucose on endothelial function, inflammation, and atherothrombotic balance.
Joy, Nino G. (Medicine/EDN)	njoy@medicine.umaryland.edu	
McCoy, Rozalina (Medicine/EDN)	rozalina.mccoy@som.umaryland.edu	
Mitchell, Braxton D. (Medicine/EDN)	bmitchel@som.umaryland.edu	I am a population scientist with two primary research programs: (1) using large databases to unravel the genetics of ischemic stroke; and (2) identifying and characterizing the genetic determinants of health and disease in the Amish community.
*Munir, Kashif (Medicine/EDN)	kmunir@medicine.umaryland.edu	clinical diabetes and thyroid research
*Pollin, Toni I. (Medicine/EDN)	tpollin@medicine.umaryland.edu	My research program consists of (1) understanding the function of APOC3 through the study of Old Order Amish individuals with a founder mutation conferring deficiency, (2) methods for improving the rate of identification, molecular diagnosis, and individualized therapy for individuals with monogenic diabetes both as a goal and gateway

Name (Department)	E-mail	Research Description
		to precision medicine in diabetes and beyond, (4) monogenic diabetes variant curation, (5) genetics of rare and atypical diabetes, and (5) Patient-ENgaged Genomic UNderstanding and Interpretation (PENGUIN)
Siamashvili, Maka S. (Medicine/EDN)	msiamashvili@som.umaryland.edu	I work in a diabetes lab and investigate mechanisms that defend against hypoglycemia (low blood sugar). Some of the projects I have been working on are: (1) How different levels of hypoglycemia affect the blood vessels; (2) How the selective serotonin re-uptake inhibitor, fluoxetine (Prozac), an antidepressant often used to treat depression, affects body's ability to defend itself from hypoglycemia that can occur during or after exercise; (3) How alprazolam (Xanax), an anti-anxiety drug, affects specialized molecules in the brain called GABA (A) receptors that alter the body's ability to defend itself from hypoglycemia.
*Patel, Mihir (Medicine/General Internal Medicine)	mihir.patel@som.umaryland.edu	Obesity medicine and plant-based eating.
Silva, Kathryn N. (Medicine/General Internal Medicine)	knovello@medicine.umaryland.edu	
Blumenthal, Jacob B (Medicine/Gerontology)	jblument@grecc.umaryland.edu	http://medschool.umaryland.edu/facultyresearchprofile/viewprofile.aspx?id=6949
*Ryan, Alice (Medicine/Gerontology)	aryan@som.umaryland.edu	The main focus of Dr. Ryan's research is the study of the role of obesity, diabetes, muscle atrophy, stroke, and HIV and the mechanisms underlying their clinical, metabolic, and functional abnormalities. Dr. Ryan conducts exercise and weight loss clinical trials and launches novel investigations into underlying mechanisms by which aerobic and resistive exercise training improve muscle and adipose tissue metabolism and function to improve cardiovascular health and reduce disability in aging.
*Goldberg, Eric M. (Medicine/GI)	egoldber@som.umaryland.edu	1. Varying case reports and chapter writing 2. Color blindness and the impact on endoscopy interpretation
*von Rosenvinge, Erik (Medicine/GI)	evonrose@som.umaryland.edu	My research interests include C. difficile infection, the GI microbiome, and colorectal cancer screening.
*Xie, Guofeng (Medicine/GI)	gxie@som.umaryland.edu	Clinical research on esophageal dysmotility.
Baer, Maria R (Medicine/Hem-Onc)	mbaer@umm.edu	Laboratory research on drug resistance in leukemia cells
Emadi, Ashkan (Medicine/Hem-Onc)	aemadi@umm.edu	http://medschool.umaryland.edu/FACULTYRESEARCHPROFILE/viewprofile.aspx?id=25036
Hardy, Nancy (Medicine/Hem-Onc)	nhardy1@umm.edu	As Associate Director of the UMGCCC Transplant & Cellular Therapy Program and Director of the UMGCCC Cellular Therapy Laboratories, my research is on determinants of clinical outcomes following hematopoietic stem cell transplantation and cellular therapies for cancer. I am the UMGCCC Principal Investigator for the international CIBMTR protocol studying transplant/cell therapy outcomes. My other clinical and translational research focuses on prevention and treatment of relapse after transplant and cellular therapy, toxicities of cellular therapy and transplantation, including immune-mediated toxicities, and infections in the immunocompromised host, including COVID-19. Potential opportunities include collaborating with our translational research program and/or collaborators

Name (Department)	E-mail	Research Description
		at the National Institutes of Health. Please contact Athena Baxivanos, Administrative Assistant (abaxivanos@umm.edu)
Rapoport, Aaron P (Medicine/Hem-Onc)	arapoport@umm.edu	http://medschool.umaryland.edu/facultyresearchprofile/viewprofile.aspx?id=5296
Rosenblatt, Paula (Medicine/Hem-Onc)	prosenblatt@umm.edu	
Tkaczuk, Katherine (Medicine/Hem-Onc)	ktkaczuk@umm.edu	I am interested in clinical drug development in breast cancer and solid tumor malignancies. This research focus includes clinical exposure to breast cancer patients with stage 0-4 disease in our multidisciplinary breast cancer clinics of UMGCC. 1. Create and analyze Breast Cancer Database in Redcap, the analysis would require collaborations with UMGCCC medical oncologists and statisticians, the specific BC outcome analyses will be defined together with the student. The medical student would be responsible for data collection and analysis. 2. We are also interested in prognostic and predictive markers of response to anticancer therapies, we have been involved and continue research with the glycoprotein 88; (GP-88), and we also have a protocol (Phase 1A/1B study) with a novel humanized monoclonal antibody to GP-88 for breast cancer and lung cancer patients.
*Alexander, Carla (Medicine/ID)	calexand@som.umaryland.edu	Educational intervention for medical residents
*Doub, James B (Medicine/ID)	jdoub@ihv.umaryland.edu	I conduct translational research evaluating surgical infections. Two research projects include the use of bacteriophage therapy and the use of novel diagnostics for ventriculitis. However, there are many more projects that are ongoing.
*Gallo, Robert C. (Medicine/ID)	ngrannell@ihv.umaryland.edu or elissa.miller@ihv.umaryland.edu	Several research opportunities relating to cancer research including viruses involved in the origin of cancers, some other viruses, basic immunology, protein biochemistry structural biology and stem cell biology are available in the Institute of Human Virology (IHV) under the direction of Dr. Gallo or other faculty members in IHV or in the Division of Infectious Diseases in the Department of Medicine.
*Heredia, Alonso (Medicine/ID)	aheredia@ihv.umaryland.edu	Thanks to combination antiretroviral therapy (cART) patients with HIV are living longer, but increasingly often they necessitate treatment for comorbidities such as cancer. Currently, lung cancer is the leading cause of cancer death in patients with HIV. In the project entitled, “Impact of concomitant chemotherapy on HIV resistance to cART and reservoir size”, funded by NCI, Dr. Alonso Heredia’s laboratory is investigating drug interactions between chemotherapeutic drugs and antiretrovirals with the goal of improving treatments in the growing population of HIV-infected patients with cancer. Another area of active investigation in Dr Heredia’s lab is HIV latency. In collaboration with Dr Fabio Romerio, Basic Science Division of the IHV, Dr Heredia is a Co-Investigator in the NIAID funded project “Sustained HIV remission via sequence-specific epigenetic silencing of latent proviruses”. In this project, Dr Heredia is assessing the impact of HIV antisense transcript expression on silencing of HIV proviruses both in tissue culture and in humanized mice. In a

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		related project, Dr Heredia, in collaboration with Dr Tae-Wook Chun, from NIAID, is investigating suppression of HIV reactivation in cells from cART-treated patients using various combinations of antibodies. Yet another area of research in Dr Heredia's laboratory is the development of effective antibodies against HIV. In collaboration with Dr Sajadi, Clinical Division of the IHV, he is a Co-Investigator in the project "Development of a new family of potent and broad neutralizing antibodies", funded by the Bill and Melinda Gates Foundation. Dr Heredia' role in the project is to evaluate the anti-HIV activity of anti-HIV Clade C/Pan-neutralizing monoclonal antibodies in humanized mice. In another similar project, "Bridging Antibody Fc-mediated Antiviral Functions Across Humans and Non-human Primates", funded by NIAID, he is collaborating with Drs. DeVico and Lewis, from the Vaccine Division of the IHV. His role in this project in to evaluate novel anti-HIV antibodies in humanized mouse models to identify potential protective antibodies for a vaccine in humans. Also in collaboration with Dr Olga Latinovic, from the Basic Science Division of the IHV, he is investigating approaches to enhance the anti-HIV activity of entry inhibitors.
Husson, Jennifer (Medicine/ID)	jhusson@ihv.umaryland.edu	
*Kattakuzhy, Sarah (Medicine/ID)	skattakuzhy@ihv.umaryland.edu	Our research program conducts clinical investigations in the overlap of substance use and infectious disease. We have two community-based locations where we complete our clinical research, one based in Washington DC, and one based in Baltimore. Our research is focused on implementation science to improve the care continuum for marginalized populations with substance use disorders and their infections complications. This includes improving PrEP uptake in individuals with drug use, especially LGBTQIA subpopulations, and finding novel approaches to methamphetamine use disorder to reduce HIV risk. We also do work in substance use disorder education and training. There is the potential to do longitudinal research work beginning before the summer for those interested.
*Kottilil, Shyamasundaran (Medicine/ID)	skottilil@ihv.umaryland.edu	Translational research on HIV and hepatitis infections using novel viral and immune therapeutics aimed at achieving functional cure. Clinical research utilizes novel trial designs that are investigator initiated to use antiviral and immune check point inhibitors to prime protective host responses leading to functional cure. Bench research utilizes samples collected from clinical trials to determine impact of specific viral and immune targets on immune recovery in patients with chronic viral infections.
*Riedel, David (Medicine/ID)	driedel@ihv.umaryland.edu	My research interests are primarily related to HIV and cancer, especially around disparities in treatment and outcomes for people with HIV and cancer compared to people without HIV and cancer. I also work with our international program in Rwanda, Kenya, Zambia and other countries on HIV programming, care and treatment, and drug resistance. http://ciheb.org/
Rosenthal, Elana (Medicine/ID)	erosenthal@ihv.umaryland.edu	Our research program conducts clinical investigations in the overlap of opioid use disorder (OUD) and infectious disease. We have two community-based locations where we complete our clinical research, one based in Washington DC, and one based in Baltimore. Our research spans implementation based improvements to colocate Hepatitis C and OUD care, and extends to evaluation of novel therapeutics for the treatment of OUD.

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*Ryscavage, Patrick (Medicine/ID)	pryscavage@ihv.umaryland.edu	1) Emerging clinical diseases among adults with perinatally acquired HIV. 2) Outcomes associated with healthcare transition from pediatric to adult HIV. 3) HIV care engagement outcomes among people living with HIV who are hospitalized. 4) HIV resistance patterns among patients living with perinatally acquired HIV.
*Sajadi, Mohammad M. (Medicine/ID)	msajadi@ihv.umaryland.edu	My lab is involved with humoral immunity and antibodies in the setting of various infections, including HIV-1 and SARS-CoV-2. We are interested in broadly neutralizing antibodies, and how the human body responds to HIV-1 gp120. The research is translational, and typically bench-based. We have several current grants related to the above.
Schmalzle, Sarah (Medicine/ID)	sschmalzle@ihv.umaryland.edu	
Schrank, Gregory M. (Medicine/ID)	gschrank@som.umaryland.edu	One of my research areas of interest is to better understand how clinicians approach fevers and suspected episodes of sepsis among hospitalized patients, particularly in the intensive care unit. The microbiologic testing performed during these episodes of fever and suspected sepsis have broad implications for both the patient and the hospital: the costs and labor associated with the testing, potential unnecessary antimicrobial exposure when false positive results occur, and the diagnosis of hospital acquired infections that are now directly linked to hospital performance metrics and reimbursement. I am currently leading a pilot quality improvement initiative to encourage clinicians to perform more appropriate testing, based on the pre-test probability of an infection being present, rather than a reflexive "pan-culture" approach. I plan to investigate the effects of this pilot program as a research project. This research will be used to evaluate the impact of this pilot on the rates of diagnostic testing, sepsis-related outcomes, and antimicrobial exposure. There is also the potential to develop novel methods of outcome measurement for interventions related to diagnostic stewardship, which then could be used by future investigators in this field of study. There is a role for a student to participate in this research through review of clinical charts and determination of patient outcomes.
Sundberg, Eric J. (Medicine/ID)	esundberg@som.umaryland.edu	My research program is focused on molecular recognition in infectious disease. My laboratory investigates protein-protein interactions involved in pathogenesis, host-pathogen interactions, immune evasion and immune responses associated with numerous bacterial (e.g., Clostridium difficile, Helicobacter pylori, Staphylococcus aureus, Streptococcus pyogenes) and viral (e.g., HIV, SARS) infections. Using X-ray crystallography and molecular interaction analysis, we seek to define molecular mechanisms of pathogenesis and host innate and adaptive immune responses to infection. Once defined, we use directed evolution protein engineering methods to develop novel protein-based therapeutics to infectious diseases. Finally, we use the resulting affinity-matured protein complexes as model systems to define universal rules governing protein-protein interactions.
*Qian, Feng (Medicine/Nephrology)	fqian@medicine.umaryland.edu	Research in my laboratory examines the molecular mechanisms of processing and trafficking of PKD proteins (polycystin-1, polycystin-2, and polyductin) and their signaling pathways that regulate kidney development, ion channel function and metabolism. We seek to elucidate PKD signaling pathways that are altered when the respective PKD genes are mutated, using a combination of biochemical, biophysical, cell biological methods and animal models. We focus on role of the cis-autoproteolytic cleavage of polycystin-1 at the GPS domain for its biological function including ion channel activity. This fundamental property of polycystin-1 is absolutely essential for proper structure and function of kidney and liver. Pkd1 knock-in mouse with defective cleavage at GPS develops severe cystic dilation at the distal portion of the nephron at the postnatal period.

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Seliger, Stephen L (Medicine/Nephrology)	sseliger@medicine.umaryland.edu	I am Co-Director of the Maryland Polycystic Kidney Disease Research Resource Center Clinical and Translational Core (PI: Terry Watnick). We have a large prospective observational cohort study to characterize the range of renal and cardiovascular phenotypes of adults with Polycystic Kidney Disease (PKD), and a linked biorepository for the identification of novel biomarkers which predict PKD complications and disease progression.
*Watnick, Terry J (Medicine/Nephrology)	twatnick@medicine.umaryland.edu	Research in my laboratory focuses on understanding the biology of cystic kidney diseases.
*Cloeren, Marianne (Medicine/Occupational & Environmental Medicine)	mcloeren@som.umaryland.edu	Many research opportunities, and anticipated for coming years, related to the Workplace PROSPER (Partnering to Reduce Opioid Stigma and Promote Employment in Recovery), an interprofessional project that also involves students from School of Law, School of Nursing, School of Social Work and School of Pharmacy. Research on impact of medical training on health professional behavior, for example, effectiveness of online training in motivational interviewing to combat COVID-19 vaccine hesitancy. Research projects stemming from ongoing medical screening of a large (28,000) cohort of former construction workers with exposures from work at Department of Energy sites.
Hines, Stella (Medicine/Pulmonary)	shines@medicine.umaryland.edu	
Levine, Andrea (Medicine/Pulmonary)	andrea.levine@som.umaryland.edu	I do research in Acute Respiratory Distress Syndrome (ARDS) both in the acute phase and in the convalescent phase. I explore different phenotypes of ARDS and how these phenotypes predict recovery. I also see patients in my clinic who have survived ARDS (including patients who had COVID-19 ARDS) and other critical illness and study the impact that critical illness has had on their neurological, cognitive, psychological, and physical function.
*Reed, Robert (Medicine/Pulmonary)	rreed@som.umaryland.edu	https://www.medschool.umaryland.edu/profiles/Reed-Robert/
Mikdashi, Jamal A (Medicine/Rheumatology)	jmikdash@umaryland.edu	this is a clinical study of lupus focusing on neuropsychiatric syndromes using imaging studies and neuropsychological battery testing. student will shadow at clinic, accumulate clinical and imaging data and do psychological battery. Analysis and outcome will be a pilot study
*Carbonetti, Nicholas (Microbiology & Immunology)	ncarbone@umaryland.edu	We are studying pertussis (whooping cough), a respiratory infection caused by the bacterial pathogen Bordetella pertussis, using mouse models of infection and cell biology approaches. We are interested in age-dependent host responses to pertussis infection that lead to disease in infants and adults, including the role of interferons and other immune and inflammatory factors. We are also identifying host-targeted therapeutic approaches to reduce pertussis disease pathology, including manipulation of interferon and other pathways.
*Coughlan, Lynda (Microbiology & Immunology)	lcoughlan@som.umaryland.edu	My research is focused largely on the development of a universal influenza virus vaccine, and vaccines for other respiratory viruses including RSV and SARS-CoV-2. We focus on pre-clinical mouse work, using techniques in immunology, virology and vaccinology. We also have strengths in recombinant protein expression for serology (influenza, RSV and SARS-CoV-2). We hope to strengthen collaborative interactions with the CVD to facilitate the use of our tools for serological studies. Therefore, projects with a dual focus on basic laboratory research combined with clinical applications may also be available.

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*Feldman, Ricardo A. (Microbiology & Immunology)	rfeldman@umaryland.edu	Our laboratory models lipid storage and neurodegenerative disorders including Parkinson's disease using patient-derived induced pluripotent stem cells (iPSC). iPSC are differentiated to the affected cell types and 3-dimentional organoids that mimic brain and other tissues for phenotypic characterization, drug discovery, and regenerative medicine. A description of our research program can be found at: http://medschool.umaryland.edu/FACULTYRESEARCHPROFILE/viewprofile.aspx?id=276 A list of our publications can be found at: https://www.ncbi.nlm.nih.gov/myncbi/ricardo.feldman.1/bibliography/public/
*Jackson, William (Microbiology & Immunology)	wjackson@som.umaryland.edu	Our laboratory works on the basic cell biology of virus infection. Using model viruses, we analyze membrane rearrangements mediated by autophagy, and their role in producing infectious viruses.
Luetkens, Tim (Microbiology & Immunology)	tluetkens@som.umaryland.edu	
*Ma, Bing (Microbiology & Immunology)	bma@som.umaryland.edu	My main research interest is to understand a newborn gut environment to promote health, with a special focus on preterm infants. The research approach of my lab is at the forefront of the application of the state-of-the-art 'omics' technologies to advance our understanding of host-associated microbial ecosystem. The research goal is to translate the mechanistic knowledge into actionable prevention, diagnosis and therapeutics. I am also committed to building a strong mentoring aptitude under the overarching principle of face-to-face knowledge sharing to guide students from diverse backgrounds, as computational biology by nature is multidisciplinary that combines both "web" and "dry" lab.
*Singh, Nevil (Microbiology & Immunology)	nsingh@som.umaryland.edu	We are a basic science laboratory using mouse model systems to examine the fundamental mechanisms regulating T cell memory, Vaccine efficacy, Tumor immunity and Immunological tolerance . We primarily use transgenic and knockout mice, cell culture systems, Flow-Cytometry, retroviral gene manipulation as well as a variety of standard molecular/biochemical methods. See http://nevillab.org for more details about the lab. We would be a good match for students interested in unraveling biochemical and molecular puzzles in cell biology - and in learning Immunology along the way
*Benavides, David R. (Neurology)	dbenavides@som.umaryland.edu	We investigate the interaction between nervous and immune systems, with particular interest in neurological diseases like multiple sclerosis and autoimmune encephalitis. Model systems include neuronal culture, acute brain slices, and rodent animal models of neurological diseases. Techniques include molecular biology, tissue culture, biochemistry, animal behavior, and animal surgical techniques.
*Braun, Robynne (Neurology)	robynne.braun@umm.edu robynne.braun@umm.edu	Survivors of stroke, head trauma and other types of brain injury often need neurorehabilitation to improve physical function, enhance independence, and preserve autonomy and quality of life. Our research aims to improve understanding of how the brain recovers after injury, both spontaneously and in response to neurorehabilitation interventions. We use this knowledge to develop new treatments, especially for patients with persistent impairments affecting the arm and hand. Because functional recovery involves the interplay of multiple biological, behavioral and social/environmental factors, our research brings together team members with expertise in multiple domains. The PI Dr. Braun's work places emphasis on the use of objective, quantitative measures of motor system recovery including kinematics and electrodiagnostic methods (EMG and TMS). She also collaborates with the Institute for Genome Sciences on research to discover genetic variants associated with stroke risk and stroke recovery. More recently her Brain Rehab and Recovery Lab has also been funded to new research using RNA sequencing to investigate recovery-

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		related blood biomarkers in stroke. This constellation of research methodologies permits the alignment of biological and behavioral data to support tailored rehabilitation based on each patient's unique biological timeline of recovery
Chen, Stephanie (Neurology)	stephanie.chen@som.umaryland.edu	
*Ciryam, Prajwal (Neurology)	pciryam@som.umaryland.edu	The Ciryam Lab studies how the immune system responds to acute brain injuries, including traumatic brain injury and intracranial hemorrhage, using cutting edge techniques applied to both human samples and animal models. Summer projects could include 1) helping to build, process, and analyze the cohort of CSF samples from patients or 2) using advanced cellular/molecular techniques to study choroid plexus in mouse models. Students will also have the opportunity to round with Dr. Ciryam in the neurocritical care unit to obtain more exposure to patients experiencing acute neurological injury.
Crino, Peter (Neurology)	pcrino@som.umaryland.edu	My lab focuses on malformations of brain development that are associated with epilepsy, autism, and intellectual disability. We use a variety of molecular and cell biology techniques including gene sequencing to detect somatic mutations, immunohistochemistry, and mRNA expression profiling to examine both human brain tissue as well as mouse brain tissue. We use in utero electroporation to introduce gene constructs into fetal mouse brains, and use neuronal cell culture to model these disorders
Hafer-Macko, Charlene E (Neurology)	cmacko@grecc.umaryland.edu	My research interests include task-oriented exercise and rehabilitation robotics for adults after stroke, with neuromuscular disorders, and aging with increased risk of falls. Research also users novel monitors to track mobility activities at home and to improve balance and level of activity with home exercise training.
Harrison, Daniel (Neurology)	dharrison@som.umaryland.edu	My lab utilizes novel neuroimaging methods to visualize aspects of multiple sclerosis not well imaged by standard techniques. We have a large project funded by two NIH grants in which annual 7 Tesla MRIs of the brain, along with OCT and clinical data, are obtained in MS patients. A student could get involved in brain image analysis for this project. We also have smaller projects involving novel retinal imaging techniques and deep learning algorithms for image analysis and outcome prediction.
*Kittner, Steven (Neurology)	skittner@umaryland.edu	My research focus is in stroke epidemiology and genetics. A summer student would have the opportunity to learn SAS and analyze data on risk factors for stroke in young adults. Depending on the background of the student, there could be an opportunity to participate in a genetic epidemiological project. The resources of an extended research group with complementary expertise would be available to the summer student. There will also be an opportunity for shadowing in the outpatient and inpatient setting. It is expected that a summer student would commit to submitting the results of the work for publication, which means committing to continuing the project after the summer. Stroke in young adults, Genetics of ischemic stroke
Morris, Nicholas (Neurology)	nicholas.morris@som.umaryland.edu	Patients with subarachnoid hemorrhage experience significant headache related pain. The foundation for analgesia in these patients has traditionally been opiates. Emerging data from other disease processes suggests that opiates are ineffective and that hospital use may have important long-term consequences regarding opiate abuse and opiate

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		related deaths. Data are lacking in neurocritical care in this regard. The purpose of this study would be to assess the long-term use of opiates following subarachnoid hemorrhage. Secondary studies would include assessing effectiveness of non-opiate analgesics in this population. The student could help develop a protocol for analgesia in patients with subarachnoid hemorrhage with the goal of minimizing both pain and opiate use.
*Motta, Melissa (Neurology)	mmotta@umm.edu	1) Implementation and evaluation of evidence-based patient and family engagement strategies. 2) Prospective multicenter registry to better understand the process of care and outcomes associated with cardiac arrest. 3) A systematic narrative review of post-ICU clinics and their impact on outcomes. 4) Develop and evaluate educational programs, curriculum, or tools for Neurology.
Parikh, Gunjan Y. (Neurology)	gparikh@som.umaryland.edu	Neuroimaging applications in critically ill brain-injured patients including aneurysmal subarachnoid hemorrhage, intracerebral hemorrhage, traumatic brain injury, etc. There are novel MRI applications in patients in critically-ill non-brain injured patients as well (patients on ECMO; patients with sepsis, etc).
Pham, Lily (Neurology)	lpham@som.umaryland.edu	
Phipps, Michael S (Neurology)	mphipps@som.umaryland.edu	Research into the quality of care and outcomes for patients with ischemic stroke and TIA, and interventions to improve quality of care and outcomes, especially using informatics and other technology.
Podell, Jamie (Neurology)	jpodell@som.umaryland.edu	
*Rus, Horea (Neurology)	hrus@umaryland.edu	Our research focuses on understanding the role of oligodendrocyte cell death in the development of the Multiple Sclerosis (MS). We have shown that activation of complement and assembly of the terminal complement proteins (the so called membrane attack complex) traditionally thought to contribute only to the destructive processes in MS may also prevent oligodendrocyte cell death, promote their survival, and promote remyelination. We recently discovered a new protein called Response Gene to Complement (RGC)-32 which is involved in activation of cell cycle in oligodendrocytes and in gliosis. We are now searching for ways to find if targeting of this protein might represent a potential treatment for MS.
*Jia, Xiaofeng (Neurosurgery)	XJia@som.umaryland.edu	1. Brain Recovery after Cardiac Arrest with stem cell therapy and Therapeutic Hypothermia We will develop and optimize a novel glycan-based intervention via metabolic glycoengineering to promote neural stem cell interaction in vitro, and to improve neurological outcome after cardiac arrest. It will track the fate of transplanted neural stem cell and explore related mechanisms with improved cell survival. We will also focus on the development of novel translational tools for uncovering mechanisms of brain injury after cardiac arrest, monitoring and tracking the neurological injuries, and guiding treatments like therapeutic hypothermia. 2. Peripheral Nerve Injury with stem cell therapy and exosome therapy The current research will enhance adipose stem cell adhesion and differentiation in vitro via stem cell surface modification, and improve nerve regeneration after critical-sized nerve repair with sugar analog treated adipose stem cells. Our lab will also investigate the effect of NCSC derived exosome therapy in peripheral nerve crush injury and nerve defect repair animal models. We will also investigate the effect of stem cell derived exosome therapy in

Name (Department)	E-mail	Research Description
		peripheral nerve crush injury and nerve defect repair animal models to Improve Recovery after Peripheral Nerve Injury.
Ksendzovsky, Alexander (Neurosurgery)	aksendzovsky@som.umaryland.edu	Our lab is interested in combining electrophysiology and molecular techniques to study the fundamental role metabolism plays in regulating neuronal activation and epilepsy. To do this, we leverage access to human intracranial recordings during epilepsy monitoring to identify, segregate and analyze epileptic and normal brain tissue. These findings are translated into in vitro and in vivo models which we use to explore mechanisms underlying the metabolic control of neuronal activity and epilepsy.
Sansur, Charles (Neurosurgery)	csansur@som.umaryland.edu	
*Winkles, Jeffrey A. (Neurosurgery)	jwinkles@som.umaryland.edu	I am part of a research team that includes two faculty members in the Department of Neurosurgery: Graeme Woodworth, MD and Anthony Kim, PhD. Our work is focused on developing nanoparticle-mediated drug delivery strategies for brain cancer, breast cancer, and brain metastases treatment. This includes the use of focused ultrasound to open the blood brain barrier so therapeutic agents can act on those brain cancer cells that cannot be removed by surgery. We are also studying brain cancer initiation and progression using mouse and rat models. For more information please visit our lab website at ttrg-umm.org.
Crimmins, Sarah D. (OB-GYN)	scrimmins@som.umaryland.edu	I am a clinical researcher with a interest in ultrasound in pregnancy research, diabetes, and the delivery of prenatal care. I am currently working on studies evaluating the group versus traditional care and mobile management platforms in order to increase compliance with monitoring in pregnancy.
Dick-Biascoechea, Madeline (OB-GYN)	mdick@som.umaryland.edu	
*Lee, Jessica (OB-GYN)	jklee@som.umaryland.edu	I do research involving abortion and contraception but am interested in helping students who are interested in any project involving reproductive health.
*Mark, Katrina S (OB-GYN)	kmark@fpi.umaryland.edu	Substance use in pregnancy
Roque, Dana M. (OB-GYN)	droque@som.umaryland.edu	My research focuses upon advancing the understanding of gynecologic tumor biology through - elucidation of chemoresistance mechanisms, including the role of class III beta-tubulin and cytoskeletal prosurvival/metastatic pathways - development of novel chemotherapeutic agents - modulation of inflammatory pathways to augment chemotherapeutic efficacy The ultimate goal of such inquiries is to improve outcomes for patients diagnosed with gynecologic malignancy.
Townsel, Courtney (OB-GYN)	ctownsel@som.umaryland edu	
Turan, Mehmet O. (OB-GYN)	oturan@som.umaryland.edu	Clinical Research (Fetal therapy, fetal growth restriction, hypertensive disorders of the pregnancy, preterm delivery, placenta accreta spectrum, complex obstetric surgery)

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*Turan, Shifa (OB-GYN)	sturan@fpi.umaryland.edu	1) Environmental causes of the Congenital heart defects, 2) First trimester fetal anatomy, 3) the effect of Cannabis on the first trimester anatomy and heart
Yang, Peixin (OB-GYN)	pyang@fpi.umaryland.edu	
*Alexander, Janet L. (Ophthalmology & Visual Sciences)	jalexander@som.umaryland.edu	My clinical research program focuses on imaging tools to enhance patient outcomes. I specialize in pediatric ophthalmology and my primary goals are to understand why infants develop glaucoma after cataract surgery, and how retinal blood flow can predict retinal detachment risk in premature infants. My research also closely examines social determinants of health and how these influence the above mentioned outcomes. I also have an interest in contributing to the future workforce of physician scientists through my mentorship and helping medical students understand their role in the scientific process, skills that I hope broadly apply in any chosen future career.
Bernstein, Steven L. (Ophthalmology & Visual Sciences)	sbernstein@som.umaryland.edu	We are currently evaluating the mechanisms of neuroprotection and stress reduction from intrinsic optic nerve neural progenitor cells, and the effect of their age-dependent loss on the development of glaucoma and severity of optic nerve disease, and the mechanisms of this neuronal support
Levin, Roni (Ophthalmology & Visual Sciences)	rlevin@som.umaryland.edu	My research involves improving parental education of children with ophthalmic conditions and understanding psychosocial factors on pediatric eye disease including ocular trauma.
Munir, Wuqaas (Ophthalmology & Visual Sciences)	wmunir@som.umaryland.edu	
*Saeedi, Osamah J (Ophthalmology & Visual Sciences)	osaeedi@som.umaryland.edu	The focus of my research is on ocular imaging and using imaging biomarkers for ocular and systemic disease. I have multiple ongoing research projects for which I could mentor a student. I have mentored numerous students in the past several years, many of which have gotten their own grants from external organizations, presented their work at international conferences, and authored peer -reviewed manuscripts. Glaucoma is the leading cause of irreversible blindness worldwide and the focus of my research. 1) Ocular blood flow in glaucoma patients - This project focuses on determining blood flow in the optic nerve head at the capillary blood flow level in glaucoma patients and controls using novel techniques in ocular angiography. 2) Adaptive Optics Transcellular Imaging - Adaptive Optics is a new technology that allows for the visualization of individual cells in the layers of the retina. This project focuses on imaging interpretation of cellular level data from both glaucoma patients and controls. 3) OCT Angiography - OCT Angiography is a new technique that allows for the real-time and rapid acquisition of microvascular maps of the retina. This work involves interpretation of OCT Angiography images in controls, patients with glaucoma, and patients with systemic and psychiatric disease. 4) Prevalence of glaucoma in patients with severe mental illness: This project involves a chart review of patients with comorbid glaucoma and severe mental illness.
*Scarcelli, Giuliano (Ophthalmology & Visual Sciences)	scarc@umd.edu	Our lab has developed a novel imaging modality (Brillouin microscopy) that maps the elastic modulus of biological tissue. We are now exploring its applications in Ophthalmology. Proper visual function is strongly dependent on the mechanical balance between corneal strength and intraocular pressure. Loss of corneal strength can drive corneal ectasia and is a major risk factor for refractive surgery. Regaining corneal strength via crosslinking is the most promising pathway to counter these ocular problems. Traditional ophthalmic imaging tools have no way of probing corneal biomechanics. Based on Brillouin imaging, we develop optical probes that can measure changes in tissue

Name (Department)	E-mail	Research Description
		elasticity by progression of disease, or in response to treatment and drugs. Using our novel imaging devices both ex vivo and in vivo in the clinic, we are now developing biomechanics-based metrics to improve diagnosis and prognosis of keratoconus, to screen at-risk subjects for post-LASIK ectasia, and to monitor the effects of corneal collagen crosslinking. In turn, these studies are uncovering interesting ways of controlling visual function by manipulating corneal biomechanics
Sunshine, Sarah (Ophthalmology & Visual Sciences)	ssunshine@som.umaryland.edu	
*Mostoufi, Behzad (Oral & Maxillofacial Surgery)	bmostoufi@umaryland.edu	I'm always interested in new ideas and to work on research projects with residents and students. Sample of topics that we have worked on: Oral mycosis fungoides; Central xanthoma of the mandible (very rare!); Role of pre-surgical INR in dental patients with liver diseases; Use of Dynamic 3D navigation system in maxillofacial surgery. We also wrote a paper on COVID-19 when it all started! I look forward to working with you on your next research project. E-mail is the best way to contact me.
Warburton, Gary (Oral & Maxillofacial Surgery)	gwarburton@umaryland.edu	Clinical and translational
*Abzug, Joshua M. (Orthopaedics)	jabzug@umoa.umm.edu	My team and I focus on pediatric orthopaedic conditions and trying to improve the lives of children. We conduct numerous projects simultaneously, quite often dealing with fractures, but lots of other topics as well. Our goal is to have a student complete their data collection over the summer and be prepared to write a manuscript for presentation/publication.
Gilotra, Mohit (Orthopaedics)	mgilotra@umoa.umm.edu	I conduct basic science, translational and clinical research as a clinician-surgeon-scientist for the Orthopaedics department. My interests are in shoulder and elbow surgery. Current summary: Basic Science 1. Animal models of rotator cuff tear. 2. Implant related infection... Translational 3. Sling compliance after surgery 4. Preventing surgical site infection... Clinical 5. Treatments of massive cuff tear 6. Optimizing tension for reverse shoulder replacement
Henn, R. Frank (Orthopaedics)	fhenn@som.umaryland.edu	Clinical outcomes research (Sports Medicine, Maryland Orthopaedic Registry, knee surgery, shoulder surgery)
Jauregui, Julio (Orthopaedics)	JJauregui@som.umaryland.edu	
Leong, Natalie (Orthopaedics)	nleong@som.umaryland.edu	Research in orthopaedic tissue engineering/regenerative medicine, focusing on determining the role of perivascular stem cells in ligament and tendon healing. Previous laboratory experience preferred
*Ludwig, Steven (Orthopaedics)	sludwig@som.umaryland.edu	Spine surgery research.
Manson, Theodore (Orthopaedics)	tmanson@umoa.umm.edu	We have a summer research program in between the first and second year of medical school for 5-6 students on a competitive application basis. The program consists of 30 hours of clinical research on your own structured and mentored project and 10 hours clinical work per week. The clinical portion involves scrubbing ortho trauma cases at shock trauma. Research projects are designed to complete during the summer and produce an abstract for submission to the Orthopaedic Trauma Association Annual Meeting.
Meredith, Sean (Orthopaedics)	smeredith@som.umaryland.edu	

Name (Department)	E-mail	Research Description
Nandi, Sumon (Orthopaedics)	sumon.nandi@som.umaryland.edu	Research Topics: 1) Is there any difference in rates of bacterial colonization between commonly utilized intraoperative surgical draping practices? 2) Is there a difference between oral and IV antibiotics in the treatment of infection after total joint replacement? 3) Is glycated albumin a better predictor of postoperative adverse events than hemoglobin A1c?
*O'Hara, Nathan (Orthopaedics)	nohara@som.umaryland.edu	Our research program focuses on improving patient outcomes after orthopaedic trauma.
*O'Toole, Robert (Orthopaedics)	rotoole@som.umaryland.edu	Summer program is full time - 30 hours of clinical research on a structured and mentored project, 10 hours clinical. Clinical portion involves scrubbing ortho trauma cases at the Shock Trauma Center. Research projects are designed to complete during the summer and produce abstract submission at a national conference and publication. Topics typically involve high energy orthopaedic trauma and work involves hypothesis driven projects that require radiographic, cadaveric, or clinical records review work. The summer program is lead by Gerard Slobogean MD, Nathan O'Hara PhD, and Robert O'Toole MD. Positions are typically very competitive and the interviews usually occur in January or earlier for summer positions
Pensy, Raymond A (Orthopaedics)	rpensy@umoa.umm.edu	In the division of orthopaedic traumatology, I have mentored approx. 1-2 students / year for the last 2 years
Stains, Joseph P. (Orthopaedics)	jstains@som.umaryland.edu	My lab examines the molecular and cellular underpinnings of diseases of the musculoskeletal system. Specifically, we use molecular, cell and animal models to examine physiologic and pathologic regulation of bone mass and bone quality. In addition, we examine methods to slow down the progression of osteoarthritis and the production of catabolic factors by the cells on the joint, including articular chondrocytes, synovial fibroblasts and osteoblasts. Common techniques involve cell culture, gene expression studies, cell transfection and transduction, western blotting, histology, micro computed tomography and x-ray examination of skeletal structure.
*Ahmed, Zubair (OTO-HNS)	zmahmed@som.umaryland.edu	Dr. Ahmed long-term goal is to understand how the retinal and inner ear sensory epithelia develop and function. His lab study inherited human disorders of retina and inner ear, like Usher syndrome (USH) and Oculocutaneous Albinism (OCA) to improve our understanding of these organs at the molecular level, to study the pathophysiology of these disorders in animal models for the purpose of developing new strategies to prevent and treat these neurosensory disorders. For these studies, families segregating inherited USH and OCA are being collected. Mutant mouse and zebrafish models have been developed and his lab evaluates them to understand the function of new proteins. Finally, several therapeutic reagents (e.g. Adeno associated virus, read-through compounds, CRISPR/Cas9) are being developed and evaluated in these animal models to rescue hearing and/or vision function.
*Gaykalova, Daria (OTO-HNS)	dgaykalova@som.umaryland.edu	As a cancer biologist with a background in pharmacology, the ultimate goal of Dr. Gaykalova is to develop novel cancer therapies, particularly for tumor types that lack effective disease-specific treatment options, such as head and neck squamous cell carcinoma (HNSCC). She heads the translational laboratory, which defines the functional role of epigenetics in the regulation of expression of canonical and alternatively spliced transcripts. Her team had recently characterized the landscape of the cancer-specific alternative splicing events (ASE) in HNSCC and defined their potential role in cancer formation. Moreover, the preliminary data in her group suggest that chromatin, and in particular enhancers, have a regulatory role in the expression of cancer-specific ASE isoforms. Dr. Gaykalova supposes that both of these processes (splicing and chromatin remodeling) can be therapeutically controlled. Such a potential

Name (Department)	E-mail	Research Description
		therapeutic strategy can form the basis for developing effective disease-specific therapeutics for this disease *Welcomes student who comes during the semester
*Guardiani, Elizabeth A. (OTO-HNS)	eguardiani@som.umaryland.edu	Clinical research with a focus on patient outcomes.
Hatten, Kyle (OTO-HNS)	khatten@som.umaryland.edu	
Hebert, Andrea (OTO-HNS)	ahebert@som.umaryland.edu	
Hertzano, Ronna P. (OTO-HNS)	rhertzano@smail.umaryland.edu	Hearing loss is the most common congenital sensory disorder, whereas acquired hearing loss afflicts over 50% of the population over the age of 70. In most cases of hearing loss, the final common pathway converges on the loss of the sensory cells of the ear, named hair cells. Hair cells do not regenerate in mature mammalian inner ears, and therefore their loss leads to a permanent sensory deficit. Dr. Hertzano's team targets genetic and acquired hearing loss taking cell type-specific genomics approaches. The team works to study the molecular pathways that lead to the differentiation of the hair cells of the mammalian inner ear as well as pathways that are activated or repressed following noise exposure. These molecular pathways are then validated using animal models that range from wild type to genetically engineered mice and zebrafish, using histologic, functional, and in-vivo gene delivery approaches. The team has been the first to identify and characterize the role of several transcription factors with critical roles in the development of the mammalian inner ear, including but not limited to Zeb1, Rfx1, Rfx3 and most recently Ikzf2. Finally, the team is leads the development of tools for visualization, analysis and sharing of multi-omic data, and in particular the gEAR - gene Expression Analysis Resource (UMgEAR.org).
Justicz, Natalie (OTO-HNS)	njusticz@som.umaryland.edu	
*Riazuddin, Saima (OTO-HNS)	sriazuddin@smail.umaryland.edu	My lab is interested in understanding the genetic and molecular basis of ear and brain disorders. Our ultimate goal is to develop new treatments for patients with either hearing loss or intellectual disability. The immediate objectives are to identify proteins essential for inner ear or brain structure and function and to understand the function of these proteins. We use a broad range of techniques from human genetics to transcriptome profiling, chromatin IP to functional neurophysiological and molecular studies in vivo and in vitro, using tissue culture, mouse models and zebrafish. The students will characterize genes that underlie intellectual disability and other brain or ear disorders and study the function of those genes using mouse or zebrafish models. The projects will include training in neuroscience, gene expression analysis, cell biology, confocal microscopy and gene delivery amongst other techniques.
Teplitzky, Taylor (OTO-HNS)	taylor.teplitzky@som.umaryland.edu	This summer, I will work with the student on a project evaluating the use of near infrared spectroscopy (NIRS) as a hearing screen in children requiring auditory brain stem response (ABR) testing. The hypothesis is that the NIRS technology can detect signals at the auditory cortex, providing information regarding a child's hearing. The student will work with me to perform the study, as well as be involved in writing the manuscript.
*Ames, Heather M. (Pathology)	hames@som.umaryland.edu	My current focus is the development of the field of neuropathology in America and how the abilities to accurately diagnose neurologic diseases has changed over time with improved technology. I have several projects that involve

Name (Department)	E-mail	Research Description
		reviewing neuropathology reports from autopsies performed on patients that died as psychiatric inpatients from approximately 1880 to 1940. My areas of interest include traumatic brain injury, neurosyphillis, neurodegenerative diseases, psychosurgery, and brain tumors
Bannister, Roger A. (Pathology)	rbannister@som.umaryland.edu	We currently have two major projects in the laboratory: 1) understanding how altered plasma membrane excitability contributes to muscle atrophy and the loss of motor units in aging and neuromuscular disease (e.g., amyotrophic lateral sclerosis; ALS), and 2) using heterologous systems and zebrafish models to study CACNA1A mutations that result in molecular, synaptic and behavioral defects and to screen for effective drug therapies to combat these and other CaV2.1 channelopathies.
Christenson, Robert (Pathology)	rchristenson@umm.edu	
Johnson, J. Kristie (Pathology)	jkjohnson@som.umaryland.edu	Dr. Johnson's research focuses on the detection, transmission, and control of antimicrobial resistant organisms concentrating on methicillin resistant Staphylococcus aureus (MRSA) and resistant Gram-negative bacteria to include multi-drug resistant Enterobacteriaceae (KPC, ESBLs, and plasmid mediated AmpC), Acinetobacter baumannii, and Pseudomonas aeruginosa.
Kallen, Michael (Pathology)	mkallen@som.umaryland.edu	
*Zhao, Richard Y. (Pathology)	rzhao@som.umaryland.edu	Dr. Richard Zhao's basic science research interest is in the areas of HIV/AIDS, Zika virus and anticancer therapies. Specifically, his laboratory conducts research to study virus-host interactions, cell cycle regulation and high throughput drug screening, testing and development. Dr. Zhao uses a unique approach in his research by combining the tools of molecular biology, fission yeast (Schizosaccharomyces pombe) genetics, mammalian biology and virology into a single theme. Such a distinctive combination of tools often give rise to unique perspectives of scientific findings that are otherwise difficult to obtain based solely on a single approach or organism. Dr. Zhao's clinical science research expertise is in the areas of gene-based diagnostics, translational genomics and individualized molecular testing for precision medicine. see my lab website: www.zhaolab.us
Zou, Ying (Pathology)	yzou@som.umaryland.edu	Our laboratory offers cytogenetic diagnosis for both constitutional and acquired chromosome abnormalities. Our research has focused on the detection and characterization of subtle chromosome abnormalities in hematological malignancies such as mechanisms of telomere biology in cancers.
*Aktay, Atiye (Pediatrics)	AAktay@som.umaryland.edu	Biosimilar infusion experience in pediatric IBD patients: adverse reactions and drug levels Looking in the rise of Cannabinoid hyperemesis syndrome since legalization
*Badawi, Deborah G. (Pediatrics)	dbadawi@som.umaryland.edu	1. Evaluate the best way to identify and address both ACEs and family/individual strengths in our subspecialty population. 2. Improving access to developmental-behavioral services for historically marginalized populations 3. Developing screen for resilience factors to accompany ACES screen

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Berry, Andrea A. (Pediatrics)	aberry@som.umaryland.edu	Dr. Berry studies the humoral immune response to malaria following natural infection and malaria vaccination. She uses protein and peptide microarrays to simultaneously profile the antibody reactivity to hundreds to thousands of malaria proteins and peptides. Her goal is to identify signatures of antibody responses that are associated with protection from malaria illness in order to inform the design of next generation malaria vaccines.
*Campbell, James (Pediatrics)	jcampbel@medicine.umaryland.edu	I will help the student formulate a question that fits well within our existing program of testing vaccines. The draft plan is to evaluate how well informed healthy volunteers are after signing a research consent document.
*Carter, Rebecca (Pediatrics)	rebecca.carter@som.umaryland.edu	Opportunities for development of research projects related to study of Adverse Childhood Experiences or Social Justice curriculum development, or with development of pediatric community outreach and engagement.
*Chaves, Alicia (Pediatrics)	achaves@peds.umaryland.edu	Quality improvement in pediatric cardiology and echocardiography. Healthcare disparities in pediatric cardiology.
*Civin, Curt I (Pediatrics)	ccivin@som.umaryland.edu	Next-generation 2-Carbon-linked artemisinin dimers for acute myeloid leukemia (AML) Treatment: After our screens of a repurposing drug library detected the antileukemic activity of the natural product artemisinin and especially its semi-synthetic derivatives (collectively referred to here as ARTs), we extended prior observations that ARTs induce apoptotic cell death in human leukemia cell lines, primary acute leukemia samples, and leukemia xenograft models. AMLs harboring MLL-rearrangements (MLLr) were the most sensitive leukemias tested. Structure/function analyses revealed ART-derived dimer trioxane diphenylphosphate 838 analog (ART838) as a potent next generation ART analog with prolonged in vivo half-life. In addition to toxic standard AML drugs, inhibitors of fms-like tyrosine kinase 3 (FLT3) and B-cell lymphoma 2 (BCL2) synergized strongly with ARTs. A 3-drug "SAV" regimen (kinase inhibitor sorafenib + ART838 + BCL2 inhibitor venetoclax) killed multiple leukemia cell lines and patient cells, sparing normal CD34+ hematopoietic progenitor cells (The dose-limiting toxicity of clinical ARTs is neutropenia). Tolerable clinically and hematologically, SAV induced deep responses with potential cures in 2 ped MLLr AML cell line xenograft models and inhibited growth of 2 non-MLLr AML primagrafts. Synergy of the SAV drugs may involve combined targeting of induced myeloid leukemia cell differentiation protein (MCL1) levels plus BCL2. We are now conducting preclinical studies to develop patented ART analogs, involving a virtual startup company (Geminus Therapeutics LLC) and startup grants. However, despite a 2015 Nobel Prize for the development of ARTs for malaria, the mechanism of action (MOA) of ARTs is not well elucidated. Multiple studies including our own indicate that ARTs' endoperoxide pharmacophores, essential for antimalarial and antineoplastic activity, are protected until Fe2+ or especially iron-bound proteins like heme open them, to generate reactive oxygen species (ROS). Then, highly reactive free radicals bind promiscuously to hundreds of cellular molecules, rather than selectively to a single target, potentially causing a variety of cellular damage that could promote death in a given cellular context. To reveal more of the cryptic MOA of ARTs in AML, we extended findings from a study in acute lymphoid leukemia (ALL) by showing that treatment of human AML cells with ART838 results in decreased levels of MCL1 protein and increased mRNA/protein levels of CCATT/enhancer-binding protein homologous protein (CHOP). CHOP is a key component of the cellular integrated stress response (ISR), a set of cellular pathways including the unfolded protein response (UPR). Multiple global gene expression analyses have implicated ISR/UPR pathway genes as among the most highly upregulated in ART-treated cells, including colon cancer and ped Burkitt lymphoma cells. We recently identified 6 ISR-related molecules whose RNA expression levels were highly increased by ART838 treatment of 3 of 3 tested ped MLLr

Name (Department)	E-mail	Research Description
		AML cell lines, as well as several other genes overexpressed at the protein level and/or activated by phosphorylation. In current work, we are rigorously probing involvement of highly upregulated ISR molecules in the MOA of ARTs by determining if each is genetically necessary/sufficient for ART838-mediated death of MLLr AML cells. In addition, with the genomics core of SOM's Institute for Genomic Sciences, we are profiling MLLr AML cell transcriptomes by RNA sequencing to globally identify additional cellular molecules/pathways upregulated by ART838 in MLLr (and potentially other) AMLs. FRCT Students will be offered the opportunity to help knock out and/or overexpress a gene in AML cells, using Nobel Prize-winning CRISPR/Cas9 technology, and to learn if this gene participates in the mechanism of ART838-mediated leukemia cell death.
*Dante, Siddhartha (Pediatrics)	sdante@som.umaryland.edu	I conduct retrospective chart review, large registry/database projects, and QA/QI projects that focus on care utilization, outcomes, and efficiencies in care. Additionally, I am a collaborator within a global health project. Summer research project ideas include description of pediatric asthma management given wide variance in practice, review of diabetic ketoacidosis management, community engagement for pediatric diabetes education, school outreach for cardiac event.
Doctor, Allan (Pediatrics)	adoctor@som.umaryland.edu	There is opportunity to participate in projects exploring (a) physiologic metrics that report anemia intolerance in critically ill children, to inform transfusion decision making and (b) pharmacologic means to improve role of (normal and diseased) RBCs in oxygen delivery.
Foster, Cortney (Pediatrics)	cfoster@som.umaryland.edu	I do research on PICU outcomes and database research as well as firearm injury in pediatrics.
*Grant, Matthew (Pediatrics)	matthew.grant@som.umaryland.edu	My clinical work is in the department of pediatrics - working with adolescents and young adults, many of whom identify as LGBTQ+ and many of whom are affected by the HIV epidemic. I am an HIV specialist caring for those living with HIV or at elevated risk of acquiring HIV and I run a specialized clinic to monitor infants 0-12mo exposed to HIV in utero. I also have an interest in adolescent sexual and reproductive health, working with youth seeking STI testing, contraception and general well being. Potential research projects may include patient surveys, retrospective chart reviews, comparative studies in both adolescent population or infant population.
*Greene, Carol (Pediatrics)	cgreene@peds.umaryland.edu	http://medschool.umaryland.edu/facultyresearchprofile/viewprofile.aspx?id=8178
Holloway, Adrian (Pediatrics)	aholloway@som.umaryland.edu	
*Hong, Jennifer (Pediatrics)	jennifer.hong@som.umaryland.edu	I have a clinical interest in treatment outcomes in pediatric patients with eosinophilic esophagitis. I also have research interest in general gastroenterology topics including endoscopy and clinical quality improvements. I am also open to assisting in development of original research ideas
*Hughes-Driscoll, Colleen (Pediatrics)	cdriscoll@som.umaryland.edu	I am the Director for Quality Improvement for the Neonatal Intensive Care Unit. I oversee quality improvement and patient safety efforts within the division of Neonatology. There are many ongoing hypothesis-driven quality improvement projects ongoing in the NICU. Medical student involvement in these projects involve background literature review, hypothesis development, data collection, learning data analysis, and manuscript preparation.

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*Hussey-Gardner, Brenda (Pediatrics)	bhussey@som.umaryland.edu	Ongoing research includes (1) implementation and evaluation of an early language and reading program for parents of infants in the NICU, and (2) exploration of early intervention services in Maryland for infants born weighing 1200-1500 grams.
Kader, Howard A. (Pediatrics)	hkader@peds.umaryland.edu	Several possible retrospective studies in IBD, Eosinophilic Esophagitis and Celiac Disease.
Kotloff, Karen (Pediatrics)	kkotloff@som.umaryland.edu	
*Macatangay, Regina (Pediatrics)	rmacatangay@som.umaryland.edu	I conduct clinical research in pediatric hematology (sickle cell) and oncology (Pharmacology) and medical education research within the School of Medicine. Research is longitudinal over 2-3 years (not a summer project) Must be up to date with UMB required CITI training
McKenna, Mary C. (Pediatrics)	mmckenna@som.umaryland.edu	
Medina de Jesus, Alexandre E. (Pediatrics)	amedina@peds.umaryland.edu	I study the effects of external insults on brain development, While most of our projects are done in animal models we have projects that will be done in the pediatric population (In collaboration with Dr. Dina Metwally and Dr. Rao Gulapalli. Some projects available: 1- To test whether babies that were born premature (<1500g) will have poor performance in behavioral tests that assess visual-tactile integration when tested at term-equivalent and compared to controls 2- To test whether caffeine can ameliorate neuronal plasticity deficits in a mouse model of FASD.
*Mezghanni, Rosangela (Pediatrics)	rmezghan@medicine.umaryland.edu	Our research focuses on translational research, emphasizing the evaluation of the early cellular controllers driving sustained immune responses critical for effective vaccination. We conduct comprehensive analyses of both conventional and innate-like T-cell responses, examining their activation, expansion, and epigenetic modifications in response to pathogens and vaccines. The selected fellow will be able to specialize in human host immune responses, Mucosal Immunology, and tissue bioengineering. We seek an individual with genuine curiosity and a strong interest in exploring infectious diseases. Past team members, including a medical student and a neonatologist fellow, found our work profoundly engaging.
Reyes, Charina C. (Pediatrics)	creyes@som.umaryland.edu	Our Division of Developmental and Behavioral Pediatrics is interested in assessing the association of Adverse Childhood Experiences (ACEs) and social determinants of health with various developmental disabilities and behavioral conditions.
*Tepper, Vicki (Pediatrics)	vtepper@som.umaryland.edu	Understanding chronic illness and its impact on the cognitive, emotional, and social functioning of children and youth and their families is the hallmark of my work as a pediatric psychologist. My current work focuses on the transition of adolescents living with a chronic illness from pediatric to adult medical care.

Name (Department)	E-mail	Research Description
*Teshome, Getachew (Pediatrics)	gteshome@peds.umaryland.edu	I welcome students who are interested in Pediatric Emergency Medicine to meet with me to discuss their research project ideas.
Travassos, Mark A. (Pediatrics)	mtravass@som.umaryland.edu	Dr. Travassos is a pediatric infectious diseases specialist and member of the Center for Vaccine Development and Global Health's Malaria Research Group. He co-leads the Immunoepidemiology and Pathogenesis Unit within the Malaria Research Program. His research focuses on malaria pathogenesis and epidemiology, with a focus on cerebral malaria and other forms of severe malaria. Dr. Travassos is particularly interested in malaria parasite variant surface antigens and their contribution to the development of cerebral malaria. He employs novel immune techniques such as microarray analysis to probe the human response to P. falciparum malaria. Dr. Travassos currently studies cerebral malaria in Mali, and this project focuses on novel genomic and proteomic approaches with the use of a new animal model to measure the association between particular variant surface antigens and the development of cerebral malaria and also protective natural immunity. His research also includes work in Ethiopia assessing vaccine coverage through the use of serosurveys.
*Watkins, Runa (Pediatrics)	rwatkins@peds.umaryland.edu	I conduct clinical research with my division in the fields of Celiac Disease and Inflammatory Bowel Disease. Our research coordinator has helped us develop patient registries for both diseases to allow us to continuously and prospectively obtain data, that can help us perform chart reviews.
*Mathur, Brian N. (Pharmacology)	bmathur@som.umaryland.edu	Among people ages 15 to 49, alcohol misuse is the leading risk factor for premature death and disability. To address this, we use cutting-edge neuroscience techniques in mouse models to understand how we exert -or fail to exert (eg. following ethanol exposure) - cognitive control over our actions. In doing so, our work focuses on discovering novel treatment strategies for alcohol use disorder. Our laboratory is committed to a diverse and inclusive research environment that fosters open dialogue, minds, and ideas.
*McCarthy, Margaret M (Pharmacology)	mmccarth@umaryland.edu	Our laboratory focuses on the neuroimmune system in normal and disrupted brain development with an emphasis on the biological origins of sex differences in neurological and neuropsychiatric disorders. We also study the impact of cannabis exposure on the developing brain. We use the laboratory rat as our model and employ a combination of behavioral, cellular and molecular approaches with an emphasis on cutting edge transcriptomics and neuroimaging.
*Mong, Jessica A. (Pharmacology)	jmong@som.umaryland.edu	I am a Professor in the Department of Pharmacology. I run an active research program centered around biological sex differences in and steroid actions on brain function with the overarching theme of contributing to the betterment of women's health. My work has demonstrated that sleep patterns in females are more sensitive to fluctuations in sex steroids compared to males and that this sex difference in sensitivity is the result of sexually differentiated neural patterns in the sleep circuitry. Currently, we are investigating in brain regions involved in sleep transcriptomic changes induced by estrogens as well estrogen induced changes in the sleep circuitry.
*Poulopoulos, Alexandros (Pharmacology)	apoulopoulos@som.umaryland.edu	We study the formation and development of neural circuitry in the rodent forebrain, and associated circuit pathologies, including epilepsy, autism, and schizophrenia. We develop novel synthetic biology tools for precision genome engineering in vivo.
*Qiu, Yun (Pharmacology)	yqiu@som.umaryland.edu	My research is focused on molecular mechanisms underlying therapeutic resistance in prostate cancer. We are studying the roles of the androgen receptor and its functional partners (including transcription regulators, protein kinases and ubiquitin E3 ligases) in prostate cancer progression and drug resistance. We are also testing new therapeutic agents for prostate cancer in preclinical models.

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Claeys, Kimberly (Pharmacy Practice and Science)	kclaeys@rx.umaryland.edu	I am an Pharmacy Faculty with an appointment to complete antimicrobial stewardship at UMMC and a PhD in Epidemiology focused on diagnostic stewardship for infectious diseases. I conduct independent clinical research in healthcare associated infections, often in collaboration with faculty from the ID Epidemiology Department at the School of Medicine.
*Heil, Emily (Pharmacy Practice and Science)	eheil@rx.umaryland.edu	I serve as the pharmacy director for antimicrobial stewardship at UMMC, so the majority of my research involves evaluation of antimicrobial prescribing practices at the University and associated outcomes of interventions targeting antibiotic prescribing. In general my research interests include individualization of antimicrobial dosing, particularly in critically ill patients, antibiotic allergies, gram-negative resistance, and antimicrobial stewardship. Examples of past research can be found at:https://www.ncbi.nlm.nih.gov/pubmed?term=heil%2C%20emily%5BAuthor%5D
*Dennis, Elizabeth A. (Physical Therapy & Rehabilitation Science)	Elizabeth.Dennis@som.umaryland.edu	The bulk of my research focuses on identifying factors that impact dietary quality and implementing lifestyle interventions to reduce chronic disease outcomes among high-risk populations. My AHA Career Development Award is focused on evaluating current teacher workplace health behaviors, such as diet, physical activity and work-related stress, and how changes to the school environment may positively impact these behaviors. My work with the Baltimore VA focuses on dietary quality among older adults with dysmobility.
Westlake, Kelly P. (Physical Therapy & Rehabilitation Science)	kwestlake@som.umaryland.edu	There are two primary avenues of research. The first involves investigations relating to multifactorial treatment of protective balance responses in older adults and individuals with Parkinson's Disease. The second involves studies of motor learning and motor learning consolidation.
*Fang, Shengyun (Physiology)	sfang@umaryland.edu	Our lab focuses on develop new drugs to treat proteostasis-related diseases in collaboration with the National Center for Advancing Translational Sciences (NCATS)/NIH. In our research, we use a variety of technologies, such as biochemical and cell biology methods, high throughput drug screening, structure-based virtual screening, medicinal chemistry, drug target identification, proteomics, and transcriptomics. We currently have four research projects. All of these projects are moving along nicely, and prospective students will be able to select any aspect of one of them to be their thesis project. 1) Optimization of a first-in-class ER-phagy activator for the treatment of alpha-1-antitrypsin deficiency-associated liver disease in a mouse disease model. 2) Test the therapeutic efficacy of an RNF5 activity enhancer in mouse models for obesity and obesity-related diseases. 3) Develop the second generation of small molecule UBA1 activity enhancers as anti-aging agent and for the treatment of aging-related diseases. We are nearing completion of a paper detailing our discovery of the first UBA1 activity enhancer. 4) Characterization of the first UBA1-E2-E3 ubiquitin ligase complex in ER protein quality control.
Meredith, Andrea (Physiology)	ameredith@som.umaryland.edu	In the Meredith Lab, our goal is to understand how ion channels regulate excitability in the brain. We recently defined a rare new neurological disorder, 'KCNMA1-linked channelopathy,' associated with dysfunction of the BK potassium channel (KCNMA1), epilepsy and paroxysmal dyskinesia in children. Current projects include preparing

Name (Department)	E-mail	Research Description
		clinical case reports and interfacing with rare disease database websites to collect genotype-phenotype information from patients. Our goal is to collate a comprehensive disease description from the small number of de novo variants known and to identify the mechanistic basis for the disease. Techniques used in the lab include DNA sequence analysis and database mining, patient survey and assessments, electrophysiology, molecular biology, CRISPR-based transgenics and gene editing, and in vivo telemetry (EEGs). The lab would be most appropriate for students interested in neurological disorders and rare diseases. For more info: meredithlab.org
Rizzo, Megan (Physiology)	mrizzo@som.umaryland.edu	Cardiovascular diseases, such as hypertension, are known to be associated with excessive vasoconstriction. This project will utilize in vivo imaging of novel fluorescence biosensor mice that express reporters in vascular smooth muscle to investigate the cellular origins of hypertension and metabolic diseases.
*Trudeau, Matt C. (Physiology)	mtrudeau@som.umaryland.edu	My lab studies the molecular mechanisms underlying the function of Kv11 (hERG) potassium channels. We also examine the defects in inherited mutations in Kv11 channels that are associated with Long QT syndrome, a type of cardiac arrhythmia. We use molecular biology, protein chemistry, electrophysiology, advanced fluorescence imaging and analysis, stem cell-derived cardiomyocytes and CRISPR/Cas9 gene editing.
Vogel, Bruce E. (Physiology)	bvogel@umaryland.edu	We use C. elegans in tandem with human retinal tissue to dissect the mechanism of sensory neuron dysfunction and death in a novel model of age-related macular degeneration.
Woodward, Owen M (Physiology)	owoodward@som.umaryland.edu	We are interested in the regulation of transporters and ion channels of the kidney and how their dysregulation leads to human disease. Our group currently has two primary projects. The first focuses on a suite of uric acid transporters of the proximal tubule that are responsible for maintaining uric acid excretion. We use a combination of powerful human genetic approaches, molecular / structural biology, and animal physiology to understand how the uric acid "transportome" is regulated and dysregulated in individuals with hyperuricemia or other metabolic diseases. Our second focus is our study of renal cystogenesis and cyst expansion that occurs in patients with Polycystic Kidney Disease (PKD) using novel kidney organoid techniques. As part of the Maryland PKD Center we hope to gain a better understanding of how renal cysts develop and potential therapeutic strategies. More info: https://www.medschool.umaryland.edu/profiles/Woodward-Owen/
*Bennett, Melanie (Psychiatry)	Mbennett@som.umaryland.edu	I conduct practice-based research to test and implement services that improve health, enhance social/community functioning, and support mental health recovery for individuals living with serious mental illness (SMI). My current projects focus on interventions for reducing drinking, tobacco cessation, and cannabis use in samples of people with disorders with psychosis.
*Buchanan, Robert W. (Psychiatry)	RBuchanan@som.umaryland.edu	My major research interests include the neurobehavioral and neuroanatomical investigation of the pathophysiology of schizophrenia and, the investigation of novel pharmacological approaches for the treatment of people with schizophrenia.
Edwards, Sarah M. (Psychiatry)	sedwards@som.umaryland.edu	I have several research projects: 1) Delirium in the PICU (implementing standardized screening, assessment, and treatment; looking at patient outcome measures, delirium rates, amounts and types of psychopharmacologic agents used) 2. School Transition Program in Child Psychiatry (this is a population health effort in the hospital for children transition from acute care psych programs; measure patient outcomes such as 30-day readmission rates, patient

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		satisfaction, parent stress, ER usage) 3. Healthy Steps Program (integrative program in family medicine that supports family and children ages 0-3 years; measure parent stress, ER usage, parent-child attachment, etc)
*Gold, James M. (Psychiatry)	jgold@som.umaryland.edu	I do research on cognitive and motivational abnormalities in schizophrenia. these are long term projects where it would be difficult for a student to participate meaningfully in a short period of time. I could work with a student on a program of directed reading or literature review.
*Gould, Todd D (Psychiatry)	gouldlab@me.com	Our laboratory uses preclinical/basic science approaches including genetic, behavioral, pharmacological, electrophysiological, and photometric a to investigate the pathophysiology of mood disorders, as well as novel antidepressant mechanisms of action. The research has a particular focus on the development of improved animal models for applications to psychiatry, the functional consequences of mood disorder susceptibility genes, and collaborative translational studies with clinically focused research groups. We aim to further understand the underlying causes of mood disorders, and to assess the feasibility of novel treatment strategies. We anticipate that an improved understanding of the underlying biology of mood disorders may lead to earlier interventions and new treatments that will benefit those suffering from these diseases.
Kelly, Deanna L. (Psychiatry)	dlkelly@som.umaryland.edu	I direct the Treatment Research Program at the MPRC. We have numerous clinical trials for inpatients and outpatients with severe mental illness with a focus on schizophrenia. We have interest in clozapine, women's mental health, gluten free diets and inflammation. We are located in Catonsville, MD on the grounds of Spring Grove Hospital Center
Kochunov, Peter (Psychiatry)	pkochunov@som.umaryland.edu	My research direction is quantitative MRI imagining and genetic research in mental health and neurological illness.
*Lucksted, Alicia A (Psychiatry)	aluckste@psych.umaryland.edu	Mental Health services research, serious mental illness & recovery, client experiences of mental health services, stigma regarding mental illness, qualitative and mixed methods. I work in applied research toward improving public mental health services and interventions for people with "serious mental illness," with an emphasis of people's experiences of services. This includes a focus on reducing the harm of internalized and anticipated stigma, mostly regarding mental illness stigmatization, but also regarding HIV, substance use, methadone treatment, carceral involvement, and oppressed social identities.
*Marks, Madeline (Psychiatry)	mmarks@som.umaryland.edu	We know that people leave STC with a chance at life they would not have if they were treated anywhere else. We don't know the psychological impact of sustaining and treating that trauma on each of those 7,000 people, including our providers. Imagine if we could understand the factors that play a role in the development of mental health problems. Imagine if we could provide a screening measure to identify and predict people likely to develop a mental health problem. Imagine if we could provide treatment to these individuals while they are in the hospital, thus setting them up for success when they leave the hospital. My program of research focuses on understanding the psychological impact of surviving trauma so we may improve access to psychological recovery.

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Reeves, Gloria (Psychiatry)	Greeves@som.umaryland.edu	My research is in the field of child psychiatry. Current research topics include obesity-related health issues in youth with behavioral health disorders, artificial intelligence strategies to improve child/family behavioral health services, child psychopharmacology treatment safety issues, youth/young adults at clinical high risk for psychosis.
*Robinson, Charles (Psychiatry)	crobinso@som.umaryland.edu	I have no current research in the area but am available to mentor in LGBTQ+-focused research.
Roche, Daniel J. (Psychiatry)	droche@som.umaryland.edu	Dr. Roche has expertise in characterizing the neurobiological and behavioral mechanisms underlying the etiology, maintenance, and treatment of addiction. The majority of his work has focused on validating and utilizing human laboratory models of addiction in order to develop new medications for substance use disorders, particularly alcohol- and tobacco-use disorder. Dr. Roche is currently funded by NIAAA to study the role of neuroinflammation in alcoholism and explore whether the neuroimmune system is a viable treatment target for the disorder.
Weintraub, Eric (Psychiatry)	eweintra@som.umaryland.edu	It would involve opioid use disorders. There are two potential projects. One working with patients presenting to the ED with depression, opioid use disorder and suicidal ideation. Another would be working with patients who present to the ED and are inducted on buprenorphine, and the 3rd opportunity would be evaluating the effectiveness of telemedicine in expanding access to buprenorphine in rural areas.
*Balcer-Kubiczek, Elizabeth (Radiation Oncology)	ekubiczek@som.umaryland.edu	I will assist a student in preparing a grant application in NIH format, as required, on the topic of student's choosing. I have served on numerous study sections for NIH and other federal agencies and my experience could benefit medical students.
Becker, Stewart J. (Radiation Oncology)	stewartbecker@umm.edu	Current project involves evaluating the treatment planning process for breast radiosurgery using the GammaPod. Students will try to determine the relationship between tumor location in the breast and regions of high dose and how optimization parameters affect the plan quality.
*Carrier, France (Radiation Oncology)	fcarrier@som.umaryland.edu	We are conducting basic and translational cancer research. Project 1 involves developing new anticancer drugs for adult and pediatric cancers by targeting a RNA binding protein regulating protein translation in cancers. Project 2 involves studying the effect of different radiation modalities (conventional, proton, electron, FLASH) on normal and cancer stem cells. Cellular and Molecular Biology techniques are used to assess the cells sensitivity to these anticancer therapies with the goal of translating these findings into the clinic.
*Hankey, Kim G. (Radiation Oncology)	khankey@som.umaryland.edu	Expanding UMB/UMMC Cellular Immunotherapy program to manufacture new investigational products in support of early phase clinical trials for relapsed/refractory leukemias and other cancers. Research, develop, validate manufacturing techniques for a variety of cell-based therapeutics such as genetically modified immune effector cells, islet cells, mesenchymal stem cells, dendritic cells, and NK cells.
Mishra, Mark (Radiation Oncology)	mmishra@umm.edu	
Mohindra, Pranshu (Radiation Oncology)	pmohindra@som.umaryland.edu	My research efforts include evaluating treatment outcomes through institutional and population-based databases, development of early phase clinical trials evaluating both radiation sensitizers and radiation toxicity mitigators or evaluation of modern radiation techniques including proton beam therapy. I have active involvement in multi-disciplinary collaborative research endeavors including prospective clinical protocols with special emphasis on early phase clinical trials evaluating both radiation sensitizers and radiation toxicity mitigators or evaluation of modern radiation techniques. I have mentored medical students and residents on research projects that have led to national awards: Applied Radiation Oncology Clinical Case Contest Winner (Stephanie Rice, MS-4, Univ. Wisconsin, 2014),

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		Medical Student Award for 2017 Alpha Omega Alpha Carolyn Kuckein Fellowship Competition (Jiun Yiing Hu, MS-1, UMSOM, 2017) and Radiation Oncology Institute Excellence Award for a research manuscript (Melissa Vyfhuis, Chief Resident Radiation Oncology, UMSOM, 2017).
*Molitoris, Jason (Radiation Oncology)	jmolitoris@umm.edu	We have multiple clinical research opportunities within the department. I have ongoing research in brain tumors, prostate cancer and esophageal cancer. The department of Radiation Oncology funds summer students for research annually.
*Nichols, Elizabeth (Radiation Oncology)	enichols1@umm.edu	We have a variety of retrospective research projects available.
Rana, Zaker (Radiation Oncology)	zaker.rana@umm.edu	We have an active research summer program with didactics through our department. We also pair medical students with residents and attendings. I primarily treat thoracic and hematologic (lymphoma) malignancies.
*Ren, Lei (Radiation Oncology)	lren@som.umaryland.edu	AI for radiomics based outcome prediction or AI for clinical decision making. Use AI to improve the efficiency and efficacy of the clinical workflow.
*Shukla, Hem (Radiation Oncology)	Hdshukla@som.umaryland.edu	We work on identification of therapeutic targets for treating lung and pancreatic cancer. We have preclinical model of pancreatic cancer and we treat tumor bearing animals with drug which inhibits glucose metabolism. We also work on Organoid model of pancreatic cancer and we grow the tumor organoids from pancreatic tumor tissues. Then treat them under in vitro conditions. We are also working on biomarker identification and characterization for lung cancer which could be used for monitoring chemotherapy and radiation therapy treatment response
Vyfhuis, Melissa (Radiation Oncology)	mvyfhuis@umm.edu	Cancer Equity/Disparities research
*Lowe, Tao (School of Dentistry)	tlowe@umaryland.edu	The research in Dr. Lowe's Lab is focused on innovative drug and gene delivery, bionanotechnology, regenerative medicine, precision medicine, neural engineering, stem cell engineering, immunoengineering, and biosensoring. The ultimate goal is to develop novel biomaterials that can provide exquisitely sensitive, selective, non-toxic, biodegradable and responsive platforms to target therapeutic agents to the sites of oral, maxillofacial, ocular, central nervous, otic, musculoskeletal, cancerous, and systemic lesions.
*Wilken, Nicholas (School of Dentistry)	nwilken1@umaryland.edu	My research focus pertains to Oral and Maxillofacial surgery. Potential topics include projects that pertain to facial trauma, benign lesions of the jaws, and orthognathic surgery.
*Colloca, Luana (School of Nursing)	colloca@umaryland.edu	Read the full project descriptions **<<here>>**. Project Titles: • Genetic predictors of pain modulation • Pain perception in the brain • Exercise for chronic orofacial pain • Vasopressin and pain perception in the brain • Observation and pain reduction
*Mansour, Daniel (School of Pharmacy)	dmansour@rx.umaryland.edu	Polypharmacy in Older Adults, Deprescribing in Older Adults, Fall Prevention in Older Adults, Palliative Care in Older Adults
Oglesby-Sherrouse, Amanda G (School of Pharmacy)	aoglesby@rx.umaryland.edu	Pseudomonas aeruginosa is a Gram-negative bacterial pathogen that infects individuals with particular underlying conditions, including persons with cystic fibrosis. P. aeruginosa is becoming increasingly resistant to even the most

Name (Department)	E-mail	Research Description
		contemporary antibiotics, necessitating the development of novel therapeutics. P. aeruginosa requires iron for growth and pathogenesis, presenting iron uptake and regulatory pathways as attractive targets for new antimicrobial therapies. Our lab investigates the effects of iron regulation on multiple virulence-associated traits of P. aeruginosa, including antibiotic resistance, biofilm formation, and quorum sensing. To this end, our lab utilizes a variety of molecular biology, genetic, and basic bacteriology techniques to dissect the roles of iron regulation in growth and virulence of this important human pathogen.
*Banerjee, Anirban (Surgery)	anirban.banerjee@som.umaryland.edu	Cancer is an ever-evolving disease which is what makes it dreadful. Thus, it is important to discover new modalities and treatment options, often as a combinatorial treatment approach to gain better therapeutic outcome. Our lab is focused on T cell immunotherapy and targeted cell-based therapy involving modulation of T cells (to fight tumor cells). Specifically, we do cancer immunotherapy in context of how Natural killer cells and T cells from the body's immune system can be modulated to make them potent at cancer-killing and achieve highest level of tumor control by non-invasive methods. We provide great platform for students to understand and perform translational research involving invitro systems and small animal models (tumor-mice models). Students with interest in cancer treatment and immunology are encouraged to apply. For more research details please email: Anirban.banerjee@som.umaryland.edu
*Bromberg, Jonathan S. (Surgery)	jbromberg@som.umaryland.edu	Research projects in translational and basic research in transplantation. For translational research, students will be exposed to the elements of instituting and conducting clinical and translational research. They will engage in abstracting data for specific biomarkers from patient EHR, analyzing the data, and writing a report on their findings. For basic research, students will be exposed to basic cellular and molecular immunology of the regulatory, suppressive T cells and how they help prevent graft rejection. They will be assigned a specific project and assays to generate data intended for publication in abstracts and manuscripts from the lab.
Buchanan, Laura S (Surgery)	laurasbuchanan@gmail.com	My current research focuses on surgical education and geriatric patients after trauma or acute surgical illness.
*Chiu, William C. (Surgery)	wchiu@umm.edu	I am only able to mentor a student for a retrospective clinical research project.
Deatrick, K. Barry (Surgery)	DParsell@som.umaryland.edu	Extracorporeal life support and extracorporeal circulation. The ECLS program at the University of Maryland is one of the largest and most successful in the nation. We are interested clinically in the evaluation and development of new techniques in extracorporeal life support. In the laboratory we are investigating strategies to minimize the side effects of prolonged circulation, and in applying these to organ preservation. This includes active collaboration with the stem cell research of Dr. Sunjay Kaushal, in developing new treatments for congenital heart disease.
Desikan, Sarasijhaa (Surgery)	sdesikan@som.umaryland.edu	
Feather, Cristina (Surgery)	cristinafeather@umm.edu	
Forbess, Joseph (Surgery)	DParsell@som.umaryland.edu	We are studying the ability of a pedicled greater omental flap to halo the heart heal and "regenerate" after various injuries.
Ghneim, Mira (Surgery)	mira.ghneim@som.umaryland.edu	Clinical and Patient Reported Outcomes in Older Adults. Over the last couple of years, I have worked with several 3rd and 4th year medical students on both institutional studies and multicenter trials. The 3rd medical student who

Name (Department)	E-mail	Research Description
		assisted in the most recent multicenter trial was included as an author in the manuscript that was published in JAMA-Surgery. The 4th year medical student that assisted with data collection in 2 of the EAST MCT will be included as an author in the upcoming publications. I am happy to mentor any medical students with a vested interest in research or have developed their own idea/questions that they would like to further investigate in the field of trauma and emergency general surgery.
Grant, Michael (Surgery)	michael.grant@umm.edu	
Grazioli, Alison (Surgery)	agrazioli@som.umaryland.edu	
*Gupta, Shailvi (Surgery)	shailvi.gupta@som.umaryland.edu	Below is a brief description of research and small bio (not sure if necessary!). Shailvi Gupta, MD MPH FACS, is an Associate Professor of Surgery at the University of Maryland School of Medicine, Shock Trauma Center's Program in Trauma. Her secondary appointment is with the Department of Epidemiology and Public Health. Dr. Gupta is an acute care surgeon practicing trauma surgery, surgical critical care and emergency general surgery. She is double boarded in General Surgery and Surgical Critical Care. She is the Course Director for the Global Health elective at the School of Medicine, teaches the Global Public Health Emergencies course within the MPH Program, and is core faculty for the interdisciplinary Climate Change, Health and Society course. Dr. Gupta's global health endeavors focus on improving surgical capacity and trauma education in low resource settings. She has a particular interest in humanitarian aid and the decolonization of global health. Research endeavors would be focused on these areas.
*Hanna, Nader N (Surgery)	nhanna@som.umaryland.edu	The research project is a clinical research that will involve collecting clinical and pathological data for patients undergoing major surgery for gastrointestinal cancers and identifying factors associated with short and long term outcomes, including associated morbidity and mortality, readmission rates, survival outcomes, and prognostic factors.
*Hu, Yinin (Surgery)	yinin.hu@som.umaryland.edu	I do comparative-effectiveness research and treatment value research, focusing on patient preferences. My disease focus is in endocrine surgical disease. I also translate these methods into cost-effectiveness modeling projects with a focus on surgical management of solid organ malignancy.
Jaladanki, Rao N. (Surgery)	rjaladanki@som.umaryland.edu	My research is involving on the gastrointestinal physiology with special emphasis on mucosal injury/healing mechanisms. Please see my lab expertise in the following link: http://medschool.umaryland.edu/facultyresearchprofile/viewprofile.aspx?id=5172
Kligman, Mark (Surgery)	mkligman@som.umaryland.edu	Evaluation of bariatric surgical outcomes using large clinical databases. Specific question can be tailored to the interest of the student.
*Kozar, Rosemary (Surgery)	rkozar@som.umaryland.edu	I do both basic science and clinical research. My lab is interested in endothelial dysfunction following hemorrhagic shock and sepsis. We do both in-vitro and in-vivo studies.

Name (Department)	E-mail	Research Description
		Clinically, I'm involved in a wide array of projects related to trauma and critical care
Lal, Brajesh (Surgery)	blal@som.umaryland.edu	
*Maluf, Daniel (Surgery)	dmaluf@som.umaryland.edu	Dr. Daniel G. Maluf, Professor of Surgery and Director of the Transplantation Program at the University of Maryland Medical System, has over two decades of experience as a transplant surgeon-scientist. His work focuses on enhancing organ utilization and advancing living donation, particularly in liver transplantation. At the University of Maryland, Dr. Maluf oversees clinical operations, drives cutting-edge research funded by NIH grants and pharmaceutical trials, and focuses on identifying molecular markers associated with marginal organs to refine donor selection and optimize organ use. Additionally, Dr. Maluf has contributed to over 150 publications, several book chapters and has presented his findings at numerous prestigious national and international conferences. His establishment of a biobank for liver and kidney donor and recipient samples further enriches his research capabilities and supports ongoing investigations. Dr. Maluf's extensive background in transplant surgeries, recipient management, and immunology, coupled with his leadership experience, positions him well to contribute effectively as a co-principal investigator for proposed research initiatives. His passion for advancing the field of transplant medicine is evident in his enthusiasm for progress in the field. Dr. Maluf is currently serving as the co-chair elect of the Executive Business Committee of the International Liver Transplant Society.
*Meier, Raphael (Surgery)	rmeier@som.umaryland.edu	My research is focused on translational approaches to develop new therapeutic strategies relevant to patients with end-stage organ failure. One of our projects is to develop Mesenchymal Stem Cell transplantation as a therapeutic modality to deliver anti-inflammatory cytokines to treat liver fibrosis and nonalcoholic steatohepatitis. Another project focuses on the development of new strategies to improve outcomes after Islet Transplantation for the treatment of type I diabetes. Our group also has interest in developing new strategies to condition organs for pig-to-human xenotransplantation. 1. Project on mesenchymal stem cell (MSC) transplantation as a therapeutic modality to deliver anti-inflammatory cytokines to treat liver diseases. The student will familiarize with microsurgery to induce liver fibrosis (bile duct ligation) and perform MSC microencapsulation and transplantation in mice. 2. Project on pancreatic islet isolation and transplantation. The student will be working with the islet transplant team in the clean room to isolate islets from human pancreases. The goal is to gain knowledge in standard testing for beta cell survival and function, and transplantation in in vivo models of diabetes. 3. Project on kidney and pancreas transplantation outcomes. The student will be working with the SRTR data (US transplant outcome registry) and familiarized with a statistical program (SPSS) in order to report on kidney and pancreas transplant outcomes and be part of a publication on that topic. 4. Project on liver transplantation outcomes. The student will be working with the SRTR data (US transplant outcome registry) and familiarized with a statistical program (SPSS) in order to report on liver transplant outcomes and be part of a publication on that topic.

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		5. Project on liver xenotransplantation. The student will work with the abdominal xenotransplant team on the development of ex vivo perfusion of genetically modified pig livers to treat patients with fulminant liver failure. 6. Project on kidney xenotransplantation. The student will work with the abdominal xenotransplant team to develop a genetically modified pig kidney xenotransplant model in non-human primates to treat end-stage renal disease
*Mohiuddin, Muhammad M. (Surgery)	mmohiuddin@som.umaryland.edu	Available projects in the Cardiac Xenotransplantation Laboratory: • Pre-clinical Cardiac Xenotransplantation in non-human primate from genetically engineered pigs • Establish a life supporting Cardiac Xenotransplantation model in non-human primate • Optimization of immunosuppression regimen for Cardiac Xenotransplantation • To investigate the mechanism of xenograft rejection in Cardiac Xenotransplantation • To investigate coagulation dysfunction in Cardiac Xenotransplantation • To investigate the role of B cells and regulatory T cells in Cardiac Xenotransplantation • Immunotherapy of regulatory T cells in Cardiac Xenotransplantation • Inducing immune tolerance in Cardiac Xenotransplantation
Murthi, Sarah B. (Surgery)	smurthi@umm.edu	1. Echo measures in shock, 2. Point-of-care ultrasound training
*Nagarsheth, Khanjan H (Surgery)	knagarsheth@som.umaryland.edu	I have a clinical research interest in all aspects of vascular surgery. I place a particular emphasis on outcomes and database research as well as clinical case series and the development of novel techniques to treat peripheral arterial disease and venous compression syndromes. Additionally, I design and run a number of prospective randomized clinical trials which students can get exposure to and learn how to design studies.
*Niederhaus, Silke V. (Surgery)	sniederhaus@som.umaryland.edu	Retrospective, clinical chart review research in transplant patients. Study design from idea through design through implementation.
Olson Jr., John A. (Surgery)	jaolson@som.umaryland.edu	Basic, translational, and clinical research in the area of neuroendocrine tumors, specifically parathyroid gland.
*Powers, Benjamin (Surgery)	benjamin.powers@som.umaryland.edu	My research focuses on health services and cancer care delivery. Specifically, my research agenda is to improve treatment quality for gastrointestinal cancer patients. The goal of my research is to identify and ameliorate gastrointestinal cancer treatment inequities, particularly for vulnerable and disadvantaged patients and also improve other aspects of treatment quality such as efficacy, timeliness, and patient-centeredness. This pursuit has led me to focus on the role of neighborhood- level socioeconomic deprivation using the Area Deprivation Index (ADI), which incorporates poverty, education, housing and employment indicators, predicts disparity-related health outcomes, and is used by CMS for one of its national disparities programs
Rasko, Yvonne (Surgery)	yrasko@som.umaryland.edu	The Stueber Scholars Program gives students the opportunity to engage with research in plastic surgery. Students work directly with the PI and research fellow on larger group projects and an individual project. In addition, students also participate in the Educational Program for Clinical Research which is led by the research fellow focusing on data analysis, statistics/research principles and manuscript writing. Our ongoing projects include evaluation of reconstruction algorithms for abdominal wall, perineal, and breast reconstruction, as well as outcomes measures to optimize reconstruction results.
Sarkar, Rajabrata (Surgery)	rsarkar@som.umaryland.edu	

Name (Department)	E-mail	Research Description
*Siddiqui, Mohummad Minhaj (Surgery)	msiddiqui@som.umaryland.edu	Basic Science Investigation of the metabolic changes that occur in prostate and bladder cancer as it transitions from non-aggressive to aggressive forms. The work is highly translational focused not only on understanding the basic mechanism, but designing studies to examine these changes in human tissue as well as designing trials to correlate metabolic imaging with prostate cancer diagnosis. Clinical Largest ongoing project is in the use of MRI to improve the diagnosis of prostate cancer (see PMID 25626035) but prior projects have included large database studies using SEER and NCDB to retrospective studies looking at urologic cancer outcomes.
Taylor, Bradley S (Surgery)	btaylor@som.umaryland.edu	Potential for clinical research with a very high volume adult cardiac surgery.
Toursavadkohi, Shahab (Surgery)	stoursavadkohi@som.umaryland.edu	The vascular surgery clinical team has meetings every Monday in our conference room at 5 pm. We currently have over 20 active clinical research projects on different stages including retrospective and prospective studies. Several MS3-MS4, residents and our 6 fellows are participating in our meetings and I am looking forward to see MS1 in our team. We have an active clinical research program located in vascular center (10th floor main building) ran and supervised by the faculties, fellows and general surgery residents.
*Wang, Jian-Ying (Surgery)	jywang@som.umaryland.edu	Dr. Jian-Ying Wang's research is to investigate the roles and mechanisms of RNA-binding proteins (RBPs) and noncoding RNAs (ncRNA), including microRNAs, circular RNAs, and long ncRNAs, in gut mucosal regeneration, protection, and diseases. His laboratory is particularly interested in the regulation of mRNA turnover and translation during gut mucosal renewal, injury/repair, and epithelial barrier function. Dr. Wang's research program studies stress-related processes regulated by RBPs and ncRNAs, the post-translational events that affect target gene expression, and the interplay between RBPs and ncRNAs in the gut epithelium. Dr. Wang's group employs approaches that examine specific mRNAs as well as approaches focused on large-scale RNA analyses (microarray, RIP and ribosome profiling). His group has extensively used gain-of-function transgenic and tissue-specific knockout approaches to generate various genetically modified animal models. The comprehensive approach and experience have provided him with an appreciation for the need to study mucosal tissue and cells directly, and to move back and forth from human disease to model systems and to validate key findings in the human context. The overarching goal of his research program is to elucidate the post-transcriptional processes that govern gut mucosal integrity and homeostasis under physiological and various pathological conditions. Dr. Wang's research projects are directly relevant to surgical patients with massive mucosal injury, delayed healing, maladaptation, barrier dysfunction, systemic inflammation, and sepsis. His research program has been continuously funded by multiple NIH-R01 grants, VA-MERIT Review awards, and VA Career Scientist Award for over twenty years. In addition, Dr. Wang is a successful mentor for training young scientists and junior faculty. Over the past eight years, seven trainees under his mentorship have received NIH grants (K01, R21, R01), VA Career development Awards, and VA MERIT-Review Awards.
Wu, Zhongjun J (Surgery)	zwu@som.umaryland.edu	1) bioengineering design, modeling and characterization of artificial organs for heart/lung diseases; 2) large animal models for cardiovascular disease and evaluation of blood-contacting artificial organs; and 3) bioengineering and

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		biologic characterization of heart disease and response to therapies with use of medical devices and cellular transplantation.