

Medical Student Biomedical Research Faculty Mentor List 2002-2003

(Sorted by Department)

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Name	Department	Research Type	Phone	Email Address (@umich.edu)	Description of Research
Thomas R. Gest, Ph.D.	Anatomical Sciences	Basic Science	764-4389	gest	1). Incorporation of the Visible Human dataset into the medical gross anatomy course web site. 2) Linking the NLM library of QTVR movies of anatomical objects to the Visible Human dataset and didactic materials from the U Mich Anatomy web site. 3) Development of a digital video library of surgical procedures relevant to the M1 gross anatomy course.
Lucy Waskell, M.D., Ph.D.	Anesthesiology	Basic Science	769-7100 ext 5858	waskell	Studies how drugs, including anesthetics, are metabolized by cytochrome P450. Use of purified native and mutant cytochromes P450 to understand the molecular determinates of drug bioegradation. Also, determining the molecular basis of the interaction between cytochrome P450 and its microsomal redox partners, cytochrome P450 reductase and cytochrome b ₅
Renny Franceschi, Ph.D.	Biological Chemistry	Basic Science	763-7381	rennyf	My laboratory studies transcriptional control mechanisms in osteoblasts, the bone-forming cells. Our specific interests are related to understanding the control of tissue-specific gene expression in bone by specific transcription factors and elucidting how these factors are regulated by extracellular matrix signals, hormones mechanical loading. We also are working on strategies for bone regeneration that involve gene therapy. For more info, please refer to: http://www.biochem.med.umich.edu/biochem/fac_frames/franceschi.html
Kun-Liang Guan, Ph.D.	Biological Chemistry	Basic Science	763-3030	kunliang	TSC1 and TSC2 are tumor suppressor genes mutated in tuberous sclerosis disease and play important roles in regulation of cell growth and cell size. We want to understand the molecular mechanisms of TSC1/TSC2 in cellular regulation and how these two proteins are regulated by multiple signal transduction pathways.
Bruce Palfey, Ph.D.	Biological Chemistry	Basic Science	615-2452	brupalf	We are studying the reaction mechanisms of the dihydroorotate dehydrogenases (DHODs), flavin-containing enzymes involved in pyrimidine biosynthesis. DHODs are inviting targets for the design of drugs that may be useful in treating arthritis, African sleeping sickness, etc. We are also studying the chemical mechanism of the synthesis of dihydrouridine in tRNA.

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Sara Warber, M.D.	CAM Research Center	Basic Science	998-7715	swarber	Complementary and Alternative Medicine research using clinical trials, laboratory studies, survey research and qualitative interviews.
James D. Engel, Ph.D.	Cell & Developmental Biology	Basic Science	615-7509	engel	1. BAC transgenic complementation of gene knockouts 2. Chromatics immuno precipitation of silenced genes 3. Biochemical and Z-hybrid identification of novel co-repressors 4. Genetics analysis of small Maf congenic mice
Michael Hortsch, Ph.D.	Cell & Developmental Biology	Basic Science	647-2720	hortsch	Genetic experiments investigating the role of neural cell adhesion molecules and signal transduction pathways in the development of the nervous system of wild type and transgenic Drosophila melanogaster strains. Functional analysis of neural human disease genes in an invertebrate in vivo system.
Kristen Verhey, Ph.D.	Cell & Developmental Biology	Basic Science	615-7787	kjverhey	The motor protein kinesin carries molecular cargoes along microtubule tracks in cells. In nerve cells, kinesin is responsible for the anterograde (to the nerve terminal) transport of signal transduction modules including APP and the ApoER2 receptor. Projects available to study the function and regulation of kinesin and its cargoes in neuronal cell lines.
Gary J. Fisher, Ph.D.	Dermatology	Clinical	763-1469	gjfisher	Various research projects investigating molecular basis of various skin diseases and natural/chronological aging of the human skin. Directed experiments could include the following techniques: 1) enzyme assays 2) Western analyses, 3) RNA isolation, 4) Northern blot and RT-PCR analyses, 5) Plasmid preparation and DNA isolation, 6) cell culture, and 7) immunohistology.
Sewon Kang, M.D.	Dermatology	Clinical	936-4192	swkang	Elucidating the molecular effects of ultraviolet irradiation on human skin in vivo and applying it to treat appropriate skin disorders

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Taihao Quan, M.D., Ph.D.	Dermatology	Basic Science	615-2403	thquan	The overall objective of our study is to understand the molecular mechanism of human skin photo aging induced by ultraviolet (UV) from the sun and/or human skin natural aging. The project is to investigate how TGF- β /CTGF signaling pathway contributes to the skin photoaging and aging. Students will contact basic molecular biology experiments, such as tissue culture, Real-time PCR and Western analysis. Students will work closely with postdoctoral fellows and may develop his/her own individual research project overtime. In addition, students will attend weekly group meetings, research seminars.
Yiru Xu, Ph.D.	Dermatology	Basic Science	763-3775	xuyiru	The long-term objective of our study is to understand the molecular mechanism of how ultraviolet (UV) light from the sun damages human skin, namely by causing skin cancer and skin photoaging. Our current project is to investigate how UV activates epidermal growth factor receptor (EGFR) that plays a central role in UV induced signal transduction in human skin. We hypothesize that UV activation of EGFR is due to oxidative inhibition of protein tyrosine phosphatases (PTPs). The project will focus on the identification and characterization of PTPs which are important in regulating EGFR function in human keratinocytes.
Samuel A. McLean, Ph.D.	Emergency Medicine	Basic Science	615-2765	samclean	Predictors of development of chronic pain syndromes and post traumatic stress disorder after acute traumatic injury.
Susan Stern, M.D.	Emergency Medicine	Clinical	765-2765	suestern	Our laboratory is investigating the resuscitation of combined traumatic brain injury and hemorrhagic shock. Currently, we are focusing on the evaluation of the efficacy of several metabolically active substrates in maintaining cerebral energetics and minimizing the risk of secondary ischemic brain injury during limited resuscitation from combined brain injury and acute hemorrhage.
John Younger, M.D.	Emergency Medicine	Basic Science	936-6284	jyounger	My lab is interested in host defenses against bacterial infection in the lung. Specifically, we study the role of the complement system as pertains to how the lung defends itself as well as how this pathway can sometimes inadvertently injure the host. We work with several strains of pathogenic bacteria, and currently devote a good deal of effort to genetically engineering these organisms to alter their interactions with the host immune system.

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Michael D. Feters, M.D., M.P.H., M.A	Family Medicine	Clinical	998-7120	mfeters	1. The Decisions About Preventive Services (DAPS) study seeks to understand how physicians and patients prioritize the preventive services agenda during health maintenance examination. This qualitative study includes fieldwork and is rooted in the tradition of Anthropology. More than one student can participate. 2. The Patient Cultural Assessment of Quality (PCAQ) study seeks to understand culturally diverse patient viewpoints on quality healthcare. This mixed-methods project involves qualitative and quantitative data collection. Bilingual students (Arabic, Chinese, Japanese, Spanish) and English only students can participate.
Caroline R. Richardson, M.D.	Family Medicine	Clinical	998-7120	caroli	Physical activity in sick patients (ie diabetes, cardiovascular disease, serious mental illness, disability). Pedometer interventions to increase physical activity. Measurement of physical activity. Epidemiological studies of physical activity.
Mariana Kaplan, M.D.	Internal Medicine	Clinical	763-3031	makaplan	Our lab studies autoimmune diseases. We have a special interest in a disease called systemic lupus erythematosus. We are studying the role that increased apoptosis might have in the pathogenesis of autoimmune diseases. We are also studying mechanisms by which patients with lupus develop accelerated atherosclerosis.
Alvin H. Schmaier, M.D.	Internal Medicine	Clinical	647-3124	aschmaie	This laboratory is examining the interaction between blood pressure regulation and thrombosis using protein, cell culture, and animal models. This laboratory is also developing novel inhibitors to thrombin activation of platelets. Last, we are exploring the molecular mechanisms that regulate intracerebral hemorrhage. The student has the opportunity to participate in any of these three projects for the summer.
Grace L. Su, M.D.	Internal Medicine	Clinical	647-5469	gsu	My research interests are in the area of hepatic innate immune responses to LPS and bacteria and its role in the pathogenesis of liver injury. Specifically, we have been examining the mechanisms by which the immune system alters liver injury following toxins such as acetaminophen.

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Mark A. Supiano, M.D.	Internal Medicine	Clinical	761-7686	msupiano	Neurolarsurgical mechanisms in geriatric hypertension; vascular stiffness
Daniel F. Hayes, M.D.	Internal Medicine Breast Cancer Program	Clinical	765-6725	hayesdf	1. We are interested in the detection and characterization of circulating breast cancer cells using immunomagnetic separation techniques and immunophenotyping and generetic analysis of these cells. 2. Evaluation of potential breast cancer chemopreventive agents in both invitro and clinical trials. 3. Evaluation of novel predictive factors for benefit for standard and new chemotherapies.
David, J. Law, Ph.D.	Internal Medicine Gastroenterology	Basic Science	936-6363	davelaw	ZBP-89 is a multifunctional transcription factor and signaling molecule that helps regulate growth, differentiation, inflammation and apoptosis in many organs and tissues, including the mammalian gastrointestinal tract. ZBP-89 activity is upstream of common diseases such as colorectal cancer and inflammatory bowel diseases. Current research is focused on elaborating mechanisms that regulate ZBP-89 expression and function in normal and pathological conditions using both in vitro and mouse models.
Neil Alexander, M.D.	Internal Medicine Geriatric	Clinical	763-3172	nalexand	We have a series of projects focused on assessments and interventions in older adults including studies to: 1) assess postural control and decrease risk of falling (by using exercise and/or education classes); 2) assess aerobic function and improve aerobic endurance (using exercise); and 3) assess the contribution of cognition to mobility task performance.
Daniel Clauw, M.D.	Internal Medicine Rheumatology	Clinical	647-0907	dclauw	Studies focus on pain, cognition and fatigue in chronic multi-symptom illnesses such as Fibromyalgia and Chronic Fatigue Syndrome. Multiple projects involve use of fMRI and pain testing. Additional study will focus on exercise and sleep deprivation and the presence or absence of pain and fatigue symptoms. Availability for 2-3 students.

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David A. Fox, M.D.	Internal Medicine Rheumatology	Basic Science	936-5566	dfox	We study the biology of human T lymphocytes and their role in autoimmune disease, especially rheumatoid arthritis (RA) and animal models of RA. We focus on receptor/ligand and cell/cell interactions relevant to either pathogenesis or treatment of autoimmunity
Laura Beretta, Ph.D.	Microbiology and Immunology	Basic Science	615-5964	berettal	We are studying viral pathogenesis, focusing on hepatitis C virus. The major topics are (i) the mechanisms of resistance to interferon treatment observed in a large number of patients; (ii) the mechanisms of hepatocarcinogenesis related to HCV infection; (iii) the role of specific individual viral proteins in HCV pathogenesis. We wish also to identify early markers for the detection of hepatocarcinoma. Another project in the laboratory is to characterize the mechanisms of dendritic cell maturation, a potential target during viral infection.
Eva L. Feldman, M.D., Ph.D.	Neurology	Basic Science	763-7274	efeldman	Our laboratory is interested in the cellular signaling mechanisms responsible for cells to survive when exposed to toxic stimuli such as hyperosmolar or hyperglycemic insult. We use several model systems to achieve our goals: neuroblastoma immortalized cell lines as well as primary cultures including motor neurons, dorsal root ganglion (DGR), and Schwann cells. Lastly, we are interested in insulin-like growth factor -I (IGF-I) mediated cellular survival mechanisms.
Lewis B. Morgenstern, M.D.	Neurology, Emergency Medicine, Neurosurgery & Epidemiology	Basic Science	615-7390	lmorgens	We study the role of race/ethnicity and gender on the disease stroke. We have two community-based NIH funded studies with good databases for manuscripts to publish. We are interested in teaching doctors and communities about providing acute stroke treatment.
Linda M. Selwa, M.D.	Neurology	Basic Science	936-7910	lmselwa	I will be doing research on outcomes of epilepsy surgery and social/cultural issues in epileps
R. Scott Turner, M.D., Ph.D.	Neurology	Basic Science	761-7686	raymondrt	1) Study of transgenic mouse models of Alzheimer's disease. 2) Regulation of amyloid precursor protein metabolism in cultured cells and neuron
Gregory Christman, M.D.	OB/Gyn	Basic Science	764-8142	growthh	Participate in a project examining factors that control the growth and apoptosis of uterine leiomyomas. Scientific model systems include tissue culture, explants to immuno compromised SCID mice, and clinical studies. Project is limited to one student.

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Tamara A. Stein, John Delancey, M.D.	OB/Gyn	Basic Science	764-8092	Tastein@umich.edu	The Pelvic Floor Research Group, headed by Dr. Delancey, OB/Gyn, is currently conducting research using anatomical material & digital imaging to understand the basic structure (at gross and histological levels) & function of the female pelvic floor. The goal is to discern the basic mechanisms underlying pelvic floor disorders in order to improve prevention, treatment & research of these disorders in women.
Monte DelMonte, M.D. P.C. Kothary, Ph.D.	Ophthalmology	Basic Science	764-4163	madm kotha	Factors influencing abnormal retinal pigment epithelial cell proliferation in diabetes & eye diseases (non-surgical treatment)
Peter Hitchcock, Ph.D.	Ophthalmology and Visual Sciences	Basic Science Clinical	763-8169	peterh	Our lab studies persistent neurogenesis, stem cells and injury-induced neuronal regeneration in the retinas of teleost fish. Four lines of research are presently being undertaken: 1) in vivo analysis of neurogenesis and gene expression, 2) DNA microarrays to identify differentially-expressed genes following injury and during regeneration, 3) in vitro analysis of isolated stem cells and neuronal progenitors, 4) mutagenesis screening to identify induced genetic defects that impact retinal growth and regeneration.
Julia E. Richards	Ophthalmology and Visual Sciences	Basic Science	936-8966	richj	Mutation screening of DNA samples from subjects with inherited ocular disease can be used either for genotype/phenotype studies in the case of genes already known to be involved in the disease, or for testing of candidate genes to determine whether they play a causative role in the disease. Two projects are available in Dr. Richards' lab, one involving genotype/phenotype studies and one involving testing of candidate genes. The student would need to obtain funding to be able to participate in either of these two projects. Students participating in these projects will learn about PCR, sequencing, interpretation of sequence data, use of controls in these types of experiments, ethical issues in subject consent, and differences between research assays and clinical testing in the context of genetic testing.

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Douglas B. Chepeha, MD, MSPH, FRCS (C)	Otolaryngology-Head and Neck Division	Clinical	936-3172	dchepeha	Head and neck oncology outcomes research assessing the speech and swallowing function of patients treated with chemo-radiation or various novel reconstructive techniques for management of head and neck cancer. Student will become familiarized with the different treatment modalities and understand the impact of these modalities in a large cohort of patients by performing the following duties: 1). Survey administration 2). Learning to interpret swallow studies 3). Classification of head and neck defects 3). Data acquisition and entry into a large prospective database Student will have clinic exposure and opportunity to view head and neck surgical procedures.
Marci M. Lesperance, M.D.	Otolaryngology Head and Neck Surgery	Basic Science	763-9662	Lesperan	The Human Genetics laboratory at Kresge Hearing Research Institute is working with families with hereditary deafness to identify genes that are responsible for hearing impairment. Experience would include patient contact to recruit them for studies, and bench work experience in basic molecular genetic techniques.
Gabriel Nunez, M.D.	Pathology	Basic Science	764-8514	bclx	The main focus of the Nuñez's laboratory is understanding of intracellular pathways that regulate apoptosis (programmed cell death) and the response to host cells to pathogens (innate immunity.).

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Arul Chinnaiyan, M.D.	Pathology and Urology	Basic Science	936-1887	arul	The Chinnaiyan laboratory uses a functional genomic approach to study human disease processes ranging from inflammation to neoplasia. Currently the lab is focused on using DNA and protein microarrays to molecularly dissect prostate cancer. Dr. Chinnaiyan hopes to define a molecular classification for this common disease that will be of use in clinical practice. Hypotheses generated from global profiling studies have fueled current research endeavors leading to the identification of several candidate biomarkers and novel cancer regulatory genes. Furthermore, the group is developing novel bioinformatic techniques and resources that will be useful in analyzing gene and proteomic expression data in the context of clinical parameters. More information can be obtained from the lab website at: http://www.pathology.med.umich.edu/chinnaiyan/index.html .
John D. E. Barks, M.D.	Pediatrics	Basic Science	763-4109	jbarks	Investigating (a) the role of inflammatory mediators in neonatal brain injury, (b) mechanisms of recovery from neonatal brain injury and (c) hypothermic neuroprotection. We utilize morphometric, biochemical and neurobehavioral outcome measures in these studies.
John Charpie, M.D.	Pediatrics	Basic Science	936-7786	jcharpie	Approximately 30,000 infants w/congenital heart disease are born annually in the United States, w/approximately 1/3rd requiring surgical intervention during infancy. Cardiopulmonary bypass (CPB) & circulatory arrest (DHCA) are often necessary for surgical repair & palliation of complex congenital heart lesions, these techniques are associated w/myocardial ischemia-reperfusion & a systemic inflammatory response that contributes to the development of postoperative complications. Despite the relationship between CPB, DHCA, & organ dysfunction, the complex pathophysiology of these processes has yet to be fully elucidated. The objective is to investigate a possible mechanism for myocardial ischemia-reperfusion injury following CPB & DHCA, & to evaluate a novel preventative therapy in young animal models of cyanotic heart disease

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John J. LiPuma, M.D.	Pediatrics	Pediatrics	615-5909	jlipuma	Research in this lab focusses on the microbiology of bacteria within the Burkholderia cepacia complex, a group that causes severe respiratory tract infection in persons with cystic fibrosis. This lab serves as the national reference lab for this group of bacteria and our ongoing studies investigate the clinical microbiology, virulence, taxonomy and molecular epidemiology of these species.
Vasanth Padmanabhan, Ph.D.	Pediatrics	Basic Science	647-0276	vasantha	Fetal programming: Consequences of fetal steroid exposure on adult reproductive function including origin of Polycystic Ovarian Disease, a major cause of infertility
Richard F. Ransom, Ph.D.	Pediatrics	Basic Science	936-8662	rransom	I am studying the basis for the structural changes in glomerular podocytes that occur during the development of nephrotic syndrome, a common children's kidney disease. My research is focused on the mechanism of action of glucocorticoids, the primary therapy for nephrotic syndrome, on the structure and function of the podocyte actin cytoskeleton. The anticipated research project would involve verifying changes in the regulation of podocyte proteins in response to glucocorticoids originally identified by a proteomic analysis.
Daniel S. Wechsler, M.D., Ph.D.	Pediatrics Hematology-Oncology	Basic Science	936-8875	dwechsl	Studies on 1) the molecular pathogenesis of Infant Acute Myeloid Leukemia (AML), and 2) the role of Myc family proteins in the development and progression of childhood Neuroblastoma and Glioblastoma.
David Kurnit, M.D., P.h.D.	Pediatrics and Human Genetics	Basic Science	647-4747	sesame	The work will center on the important topic of nephropathy in diabetes. We have demonstrated that we can detect the abnormal presence of kidney podocytes in the urine of diabetics. This detection requires the sensitive and specific detection of nephrin using a specialized RT-QPCR reaction. These cells play a crucial role in separating the blood stream from the urine. This method appears more sensitive early on than the traditional method of looking for spillage of protein in the urine. Late in the course of disease, when protein in the urine is fixedly abnormal, the test apparently retains the ability to discriminate between those in whom drug treatment is working and those in whom it is not.

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Steven Leber, M.D., Ph.D.	Pediatrics and Neurology	Clinical	936-4179	Leber	Are children with chronic illness more prone to headaches than healthy children? If so, what sorts of headaches do they experience? The prevalence and headache diagnoses in children surveyed in the Pediatric Subspecialty clinics will be compared with those of children seen in Well Child Care clinics.
Ronald W. Holz, M.D., Ph.D.	Pharmacology	Basic Science	764-2267	holz	The molecular mechanisms underlying secretion of prepackaged hormones and neurotransmitters are being studied using primary adrenal medullary cells and PC12 cells in tissue culture as model systems. Biochemical, molecular genetic and powerful optical techniques (TIRFM) are being employed to study the effects of specific proteins and lipids
Benedict R. Lucchesi, M.D., Ph.D.	Pharmacology	Basic Science	647-3134	benluc	Studies in cardiovascular pharmacology with a focus on pathophysiologic mechanisms involved in the genesis of: (1). cardiac arrhythmias and sudden cardiac death, (2). vascular thrombosis and myocardial infarction and (3). immunological mechanisms related to myocardial ischemia/reperfusion injury. The ultimate goal is to develop and apply pharmacologic interventions for the prevention of sudden death (ventricular fibrillation), coronary artery thrombosis (antiplatelet and antithrombotic agents) and preservation of myocardial tissue subjected to ischemic injury and reperfusion (anti-complement agents). Our studies emphasize an integrative systems approach to the development of new pharmacologic interventions based upon an understanding of pathophysiologic mechanisms.
Louis D'Alecy, D.M.D., Ph.D.	Physiology and Vascular Surgery	Basic Science	763-2566	lgdalecy	The physiological control of nitric oxide synthase (NOS) and thus nitric oxide (NO) is largely understudied. Asymmetrical dimethylarginine (ADMA) is an endogenous inhibitor of NOS and we plan on identifying ADMA's tissue, cellular and molecular origin, metabolism and physiological and pathophysiological effects using rat and human protocols. ?? Two+ students?

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Fred Karsch, Ph.D.	Physiology	Basic Science	763-0247	fjkarsch	We are interested in how the brain regulates reproduction, in particular the ovulatory cycle of females. Our current research is focusing on how stress inhibits reproduction by acting to suppress the secretion of both brain and pituitary hormones necessary for ovarian function and ovulation.
Liangyou Rui, Ph.D.	Physiology	Basic Science	615-7542	ruily	We created a mouse model of obesity and type 2 diabetes by disrupting SH2-B gene. Using this model, we will analyze the roles of SH2-B in the action of insulin and leptin. We will identify and characterize SH2-B-binding proteins that mediate SH2-B signaling.
Maher Karam-Hage, M.D.	Psychiatry	Clinical	930-0201	maherakh	1) Smoking cessation among alcoholics by utilizing Bupropion-SR. 2) Smoking cessation among substance users by utilizing nicotine replacement. 3) Snus (Swedish Snuff) for smoking cessation, when other methods have failed 4) Combination of medications for treating cocaine dependence
Stephan F. Taylor, M.D.	Psychiatry	Clinical	936-9760	sftaylor	Research involves the uses functional magnetic resonance imaging to map brain regions which control emotional processing, toward the end of understanding psychiatric conditions such as schizophrenia and anxiety disorders. Students with strong engineering/computer background (Matlab, linux/unix) would do well.
Marcia Valenstein, M.D.	Psychiatry	Clinical	930-5141	marciav	We are exploring the use of nationwide registries of patients suffering from serious mental disorders. At this time, we are using the VA National Psychosis Registry to explore adherence with antipsychotic medication and the VA National Registry for Depression to explore the pharmacological treatment of patients with depression. We also have an ongoing randomized controlled trial exploring a pharmacy-based intervention to improve adherence among patients with schizophrenia. Students interested in health services research have the opportunity to gain experience using large data bases or join us in implementing a multi-site RCT.
Theodore Lawrence, M.D.	Radiation Oncology	Basic Science	647-9955	tsl	My laboratory studies interactions of chemotherapeutic agents and other new drugs with radiation with the goal of finding combinations of drugs with radiation which sensitize cancer cells to radiation. We study both schedule and delivery of these radiosensitizing agents as well as mechanism of action.

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Mukesh K. Nyati, Ph.D.	Radiation Oncology	Basic Science	764-3324	nyati	I am investigating the effects of ionizing radiation on EGFR and Erk1/2 signaling pathways in cancer cells. I am also exploring the uses of an irreversible inhibitor of EGFR family of receptor (CI-1033, Pfizer) in combination with radiation.
David Beer, Ph.D.	Surgery	Basic Science	763-0325	dgbeer	We are utilizing gene array technology (see Beer et al., Nature Medicine 8;816, 2002) to identify genes that define patients with tumors that have an aggressive phenotype and for which additional treatment should be provided. Research project will involve the A) an extensive analysis of survival-related genes, B) determination of post-transcriptional regulation, C) gene pathway determinations and D) expression/inhibition studies to define gene function.
Judith M. Connett, Ph.D.	Surgery	Basic Science Clinical	615-7923	Jconnett	Overview: The long term objective of this laboratory is to investigate the role of cytokines in the endogenous immune response to cancer with the goal of exploiting the mechanism of these anti-tumor responses to characterize the prognosis of, and/or design innovative treatment for human cancers. Project 1: Using multiple human breast cancer cell lines, we will determine whether Interferon-gamma mediated growth inhibition or apoptosis is dependent upon the Fas/FasLigand death receptor signaling pathway. This project will use both caspase inhibitors and blocking antibodies against Fas and FasL to inhibit the Fas/ FasL signal. The effects of inhibition of Fas and FasL on interferon-gamma induced growth suppression will be assayed as will the expression of several proteins which are important in this pathway. Project 2: Using tumors induced in normal mice and Interferon-gamma knockout (GKO) mice, we will determine if there are differences in growth characteristics, Major Histocompatibility (MHC) Class I and II protein expression, and the expression of several proteins important in the Interferon-gamma signal transduction pathway. We will look for answers to the questions using a variety of techniques including MTT reduction assays, FACS analysis, electric mobility shift assays, immunohistochemistry, and Western and Northern blots.

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Qiao Li, Ph.D.	Surgery	Basic Science	615-1977	qiaoli	Our laboratory is a tumor immunology and cancer immunotherapy lab utilizing T lymphocytes for adoptive transfer. The studies are conducted both in animal models and in clinical trials: 1. In vivo sensitization/induction of tumor reactive T cells by vaccine (e.g. tumor cells admixed with adjuvant; genetically modified tumor cells; or dendritic cells). 2. Ex vivo activation/polarization to generate immune effector T cells for subsequent adoptive immunotherapy. This involves primary CD3 signaling plus secondary CD28 signaling as well as other co-stimulatory signals, such as IL-12/IL-18 and 4-1BB to shift T cell responses toward type 1 cytokine patterns. 3. Isolation of T cell subsets responsible for antitumor reactivity by defining tumor-reactive CD4+ cells vs. CD8+ cells, differentiating Th1 vs. Th2 cytokine responses, or studying the adhesion molecule and V γ usage of T cell subsets. 4. Identification of tumor associated antigens by molecular cloning and characterization.
Michael S. Sabel, M.D.	Surgery Oncology	Basic Science	936-5827	msabel	Using mouse tumor models, we are studying the immune response generated to both cryosurgery (freezing) of the tumors, or injecting encapsulated cytokines into the tumor. For students not interested in laboratory work, we have created a breast cancer database and have several projects planned involving chart review on breast cancer patients.
J. Sybil Biermann, M.D.	Surgery Orthopaedic	Basic Science Clinical	936-9594	biermann	Patient use of the internet for medical information accuracy/completeness of information on the medical internet
Clifford L. Craig, M.D., Joshua Malki, M.D.	Surgery Orthopaedic	Basic Science	615-3599	clcraig	Developing techniques to identify the presence of organism in synovial fluid using PCR techniques enhance treatment of septic arthritis.
Steven A. Goldstein, Ph.D.	Surgery Orthopaedic	Basic Science	936-7417	stevegl	Projects on the mechanical properties of bone and soft tissues and evaluating the influence of mechanical and biologic factors on tissue regeneration. The work relates to tissue engineering, the design and evaluation of artificial joint prosthesis, bone fragility disorders, fracture repair, sports medicine, growth and development of the skeleton and others.

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Richard E. Hughes, Ph.D.	Surgery Orthopaedic	Basic Science Clinical	763-9674	rehughes	The focus of my research is shoulder biomechanics. I have projects for M1 students in two areas: (1) strength testing of human subjects; and (2) MRI of tendinosis in a rat model of tendon overuse. The human strength-testing project will involve recruiting volunteers and testing arm strength. The results of the study will be used to validate a computer model of shoulder mechanics. The clinical relevance is that the computer model can be used to simulate musculoskeletal pathology. The MRI project will involve studying the effects of treadmill running on the rotator cuff tendons of a rat. The project will involve working with rats and the radiology department's animal MRI facility. The clinical relevance of the project is that we are trying to determine the best MRI pulse sequence for imaging tendinosis of the rotator cuff. For more information about these projects, visit my web page at http://www.orl.med.umich.edu/orl/richard.htm
Bruce S. Miller, M.D.	Surgery Orthopaedic Sports Medicine	Basic Science	998-6287	BSMILLER	Our research focuses on sports-related injuries of the knee and shoulder. Project areas include biomechanics, cartilage regeneration, cell/molecular biology.
Arnold G. Coran, M.D.	Surgery Pediatric	Basic Science Clinical	764-4151	Acoran	We are studying the effects of environmental tobacco smoke (ETS) on ciliary beat frequency (CBF) in children undergoing general anesthesia. We obtain nasal cilia samples and correlate the CBF with urine nicotine and cotinine levels obtained on the day of surgery. It is hypothesized that ETS exposure increases anesthetic time, the time to extubation and total time in the PACU, increases respiratory symptoms and decreases ciliary beat frequency in children undergoing general anesthesia.
Kevin Chung, M.D., M.S.	Surgery Plastic		936-8925	kecchung	Students will be exposed to the fundamental concepts of outcomes research and clinical trials related to hand surgery. A research project involving such concepts will be structured to yield a manuscript. Students will also go to the operating room and have patient contact in the hand clinic.

Medical Student Biomedical Research Faculty Mentor List 2002-2003

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(Sorted by Department)

Name	Department	Research Type	Phone	Email Address (@umich.edu)	Description of Research
Melanie Urbancek, Ph.D.	Surgery Plastic	Basic Schience	936-2817	melurban	Effect of Tenotomy and Repair on Muscle Force and Power Capacities. Muscle tenotomy followed by repair can result in decreased muscle force capacity. The purpose of this rat model is to determine the contribution a tenotomy with repair makes: 1.) to a muscle force deficit and 2.) to muscle velocity during power movements.
Peter Henke	Surgery Vascular	Basic Science	936-5790	henke	Our lab effort studies the basic pathobiology of how deep venous thrombi resolve, which is relatively unknown. We use a combination of mouse and rat models, in conjunction with genetic deletions, biochemical, molecular biological and physiological assays to study what cytokines, chemokines and immune cells are involved in this process. Specifically, we are looking at how using anti-inflammatory and anti-cell adhesion molecule strategies may be useful for prevention of the vein wall scarring that occurs as the venous thrombosis is resolving.