

Faculty's Name	Department	What is the general research problem or project that the student will be completing under your mentorship?	What specific question will the student addressing during their rotation, and can it be completed during the rotation?	What type of study will the student be working on? What is the implementation plan for curricula?
Hemant Khanna	Ophthalmology & Visual Sciences	My laboratory is interested in understanding how photoreceptor ciliary structure and function degenerate due to mutations in a retinal disease gene? Our model system is CRISPR/Cas9-induced pig model, which is highly similar to the human counterpart.	Does the ciliary gene EYS (eyes shut homolog), a common cause of inherited retinal degeneration, affect ciliary trafficking and photoreceptor morphology in the pig retina?	Animal model characterization-Pigs and mice. The research plan will include sectioning and staining the mutant and control retinas with different antibodies and interpret results.
Lara Kovell	Medicine	We are examining blood pressure in pregnancy and the relationship to subclinical markers of cardiovascular disease. To do this, we are recruiting pregnant women with chronic hypertension from OB clinics, examining their diet quality, measuring blood pressure through pregnancy, and sampling serum to measure markers of subclinical cardiac disease (high-sensitivity troponin and brain-natriuretic peptide). We are also surveying women with hypertension in pregnancy to determine barriers to eating a healthy diet to aid in designing a diet intervention for pregnant women.	The students will address the questions of the impact of blood pressure on subclinical markers of cardiac injury and the barriers to healthy diet in pregnant women with hypertension. There are many ways to engage in technology with these projects - we use RedCap to administer surveys and MyChart to recruit women electronically for our studies.	These studies are case-control studies and survey based clinical studies, and involve direct interaction with patients and following them longitudinally. We meet as a clinical research group weekly over the summer to check in about the projects and give updates.
Gail March Cohen	Office of Undergraduate Medical Education	Research the curriculum opportunities and create a series of online educational videos to prepare residents, fellows, graduate students, and advanced medical students to teach and assess medical students.	What is the core curriculum presented as self-directed educational videos needed to prepare residents and non-faculty instructors to prepare to teach and assess medical students.	The study will investigate the current resident and non-faculty educational sources to determine the learning objectives, content, and design format for the online educational video project. As soon as the educational videos are beta tested at the end of the summer, the project videos will be posted online.
Jason Shohet	Pediatrics	Defining strategies for single cell sequencing of cancer stem cells in neuroblastoma. Testing novel small molecule inhibitors in preclinical models of pediatric cancer.	Defining dose response and characterizing apoptosis across neuroblastoma cell lines. Determining tumor responses by in vivo imaging of neuroblastoma xenografts. Predicting pediatric cancer patient accrual across our catchment area.	Molecular assays for apoptosis, cell culture and drug treatment methodology. Monitoring of in vivo tumor growth with bioluminescent imaging, Establishing novel reporter cell lines for imaging and drug response monitoring.

Xiaoduo Fan	Psychiatry	<p>The UMass Psychotic Disorders Program has developed the Community Intervention Program (CIP) with the mission of creating a more mindful Worcester by providing various supports and informational opportunities for those invested in the mental wellness of our communities. The CIP is specifically committed to addressing the needs of those affected by a severe mental illness, who particularly rely on community-based wellness resources.</p>	<p>the CIP includes three public education and intervention modules:</p> <p>The Lifestyle as Medicine module is for individuals to establish healthy lifestyle changes via recovery and support-based discussions and activities with a focus on making healthy food choices and increasing physical activity.</p> <p>The Arts and Music module is for individuals to harness and express their creative abilities and talents while offering a platform for social interaction via art or music therapy groups, and Dual Diagnosis Theatre drama therapy.</p> <p>The Early Detection and Intervention module presents an opportunity for young individuals exhibiting early signs of psychosis to collaborate with mental health care providers to improve access to treatment options.</p>	<p>The student can choose to be involved in ongoing projects in any of the 3 CIP modules or develop his or her own project. In the later case, ideally the student has developed the study plan with IRB approval before the rotation starts.</p> <p>The study design can be cross-sectional, case-control, or clinical trial.</p>
Jillian Richmond	Dermatology	What drives autoimmune skin disease (Cutaneous Lupus, Morphea) pathology?	How does UV light impact immune cell populations in the skin to trigger lupus flares? How does CXCL9 induce collagen transcription to drive fibrosis in Morphea?	<p>Model systems - mice & cells.</p> <p>Implementation plan is see one, do one, teach one. I will teach the students how to perform the techniques, then have them perform independently with supervision, then have them work with each other and my technician to run experiments.</p>
Timothy Fitzgibbons	Medicine	<p>Women with stress cardiomyopathy are known to have increased levels of depression and anxiety.</p> <p>This study will ask the question "does MBSR improve self reported levels of stress/anxiety in patients with SCM"?</p> <p>Second, we will ask the question does MBSR reduce levels of circulating catecholamines and improve LV function faster than those who do not undergo this therapy?</p>	<p>Three questions, that could potentially be addressed:</p> <ol style="list-style-type: none"> 1) Does MBSR reduce circulating levels of catecholamines? 2) Does MBSR improve LV function? 3) Does MBSR reduce self reported levels of stress? 	<p>1) Clinical trial</p> <p>Plan</p> <p>Transdisciplinary training with clinical research nurses, physicians, and molecular biology at the bedside. Student will learn about clinical trial design and implementation, cardiology, and molecular biology. They will then implement the skills learned to answer one or more of the questions above.</p>

Rebecca Blanchard	UMMS- Baystate/PUR- CH	<p>This project involves contributing to data collection for the evaluation of the PURCH Health Equity Incubator. This includes; participating in the Health Equity Incubator (4 weeks), collecting formative survey and interview data from a group of interprofessional students also participating in the Incubator, creating and distributing a survey to faculty and key stakeholders about the Incubator, helping to analyze data, and then helping to write this evaluation into a manuscript for submission.</p>	<p>How is the PURCH Health Equity Incubator meeting the expectations of its stakeholders?</p>	<p>Student will be working on a formative program evaluation, using surveys and interviews.</p>
Tara Lagu	Institute for Healthcare Delivery and Population Science, Baystate Health	<p>I have 3 potential projects:</p> <ul style="list-style-type: none"> -Identification of strategies to increase use of cardiac rehabilitation by patients with heart failure -Impact of Medicare Accountable Care Organizations on the treatment and outcomes of patients with heart failure -Identifying physical, structural, and attitudinal barriers for patients with disabilities (specifically, patients with mobility impairment) when accessing health care 	<ol style="list-style-type: none"> 1. What are the barriers are preventing patients with heart failure from attending cardiac rehabilitation? (could be completed) 2. What are trends in Medicare Accountable Care Organization enrollment for patients with heart failure? (definitely could be completed) 3. What is the impact on outcomes for patients with heart failure who are enrolled in Medicare Accountable Care Organizations? (could be completed) 4. When a patient with disability and the physician of that patient are asked to (individually) describe the barriers and frustrations during a single clinic visit, how does that description vary between the patient and the physician? (could be completed) 	<p>options include:</p> <ul style="list-style-type: none"> -Using Medicare Claims data to answer questions about treatment and outcomes for patients with heart failure (#2,3) -Using qualitative methods to interview patients/physicians or to analyze qualitative data about physician encounters (#1,4) <p>We have a lot of options for projects, though, and I love to see what creative projects the students themselves come up with (we have had some great ones over the last couple of years! Lots of papers are being completed, a couple are published)</p>

Peter Lindenauer	Institute for Health Care Delivery and Population Science	Can Instagram be used to deliver informational and social support to users with poorly controlled asthma?	The student will be involved in either or both a survey to understand the acceptability of using Instagram to deliver an intervention to increase control of asthma or a pilot study using Instagram as a means of delivering informational and social support to users with poor controlled asthma.	The survey study is a cross-sectional study, using a convenient sample of Instagram users. The pilot study is a randomized controlled trial. Subjects assigned to the intervention group will be asked to use their Instagram account to post about their asthma and to respond to the post of others through comments. They will also receive asthma self management support materials delivered by a coach through Instagram. Subjects in the intervention arm will "follow" #AsthmagramStudy, an Instagram hashtag that will be used by the research team and study participants. Subjects assigned to the control group will receive direct messages containing general information about asthma. At enrollment and completion of the study subjects will complete asthma- and health-related questionnaires. This study will assess the feasibility, acceptability, and fidelity of the protocol and study design.
Michelle Trivedi	Pediatrics	Understanding stakeholders perspectives on the real world implementation of school- supervised asthma therapy, a community-based pediatric asthma program. Also there will be participation in the cluster randomized controlled trial of this program.	What are the barriers and facilitators of real world implementation of this school-based pediatric asthma program (discovered through interviews with school superintendents, pharmacists, DPH officials, pediatric practice managers- stakeholders in this program's implementation). Additionally, is this asthma program effective at reducing asthma morbidity and healthcare utilization (such as ED visits) against a comparison/control group?	Qualitative Clinical Research, Implementation Science, Cluster Randomized Controlled Trial

Daniel Mullin, PsyD MPH	Family Medicine and Community Health	<p>This project is focused on curriculum development. Specifically, the 8 hour Waiver Course for Massachusetts Students. This course prepares to students to care for patients with Opioid Use Disorder and meets the requirements for students to receive their DATA waiver to prescribe buprenorphine. This course consists of 12 online, asynchronous modules that are being deployed in all 4 Massachusetts Medical schools.</p> <p>The student will review content and provide improvements to the course.</p>	<p>The student will: review modules to ensure functionality, time each module to verify course duration, review scientific accuracy of content and provided updated citations and incorporate new evidence from the peer reviewed literature, develop small group materials to be used in in-person learning sessions that supplement the online content.</p>	<p>The curricula will be deployed for the first time in the spring of 2020, and then again during the 2020-2021 academic year.</p>
Elizabeth Schoenfeld	Emergency Medicine	<p>1 - Decision aid development for the initiation of buprenorphine in patients with Opioid use disorder in the ED; 2- harm reduction dissemination;</p>	<p>Can we screen patients for opioid use disorder and use the decision aid to facilitate uptake of buprenorphine from the ED? (early phase - feasibility)</p>	<p>Qualitative research and prospective cohort / clinical trial (feasibility)</p>
Dr. Nancy Byatt	Psychiatry, Ob/Gyn, and Population and Quantitative Health Sciences	<p>One in five women suffers from a mental health condition when they are pregnant or postpartum, yet many go undiagnosed and untreated. UMass Medical School is a national leader in research to combat this gap in care. In 2014, our team created MCPAP for Moms (https://www.mcpapformoms.org/) to help front-line obstetric and other providers treat mental health conditions in women that are pregnant, postpartum, lactating, or considering having children. The success of this program has made it a national model for care and we are now consulting nationally and internationally to help other organizations develop similar programs.</p> <p>As this care model rapidly expands to other settings, it is important for us to understand barriers and facilitators to program success in different environments. This project will be using interview data from the leadership in developing programs to help inform our understanding.</p>	<p>What are the barriers and facilitators to successful implementation and utilization of Perinatal Psychiatry Access Programs and, in turn, how do programs address them?</p> <p>This is a qualitative study that will use content analysis to identify the main themes discussed in interviews with leadership from developing programs across the country. Themes will be distilled into useful information to current and future programs so that they are able to adjust their program implementation and procedures. The interviews will help us understand what the programs are doing, how they are doing it, and successes and failures they've had along the way. This information will be harnessed to further assist new and developing programs in their quest to help women with perinatal mental health conditions.</p>	<p>This is a qualitative study of key-informant interview data, obtained from the leadership of programs across the country. The data has been previously collected, so the student will primarily participate in transcription and/or quality checking of de-identified interviews, learn and complete basic qualitative analyses, and lead manuscript/presentation development. The student will work directly with members of our team. Since the data is pre-collected, he/she will start by familiarizing themselves with the study (e.g., reading protocols and supporting literature) and begin with interview transcription/checking. We anticipate that the data analysis and preliminary drafting of the manuscript can be completed over the summer. The student may continue with us throughout the rest of their medical education to complete the manuscript and assist with other projects if he/she wishes.</p>

Mayuko Ito Fukunaga	Medicine	Co-production and evaluation of educational text messages about lung cancer screening to improve patients' awareness	Acceptability of a paper-based educational material vs. educational text messages about lung cancer screening among lung cancer screening eligible patients	implementation science study
David McManus / Nate Hafer	Medicine / Center for Clinical and Translational Science	What are the best ways to accelerate product development of point of care technologies for heart, lung, blood, and sleep diseases?	The pace of technological change in healthcare is rapid and potentially transformative. Researchers at UMass Medical School focused on heart, lung, blood, and sleep disorders (CAPCaT) have created surveys to help inform how we support promising new technologies. We want to understand where new devices are most needed. Opportunities are available to help analyze data from these surveys to understand healthcare provider and patient attitudes towards these emerging technologies.	survey data collected from healthcare providers and patients product development related to 6 technologies being tested to better diagnose, treat, and manage heart, lung, blood, and sleep diseases
Melissa Fischer	OUME	Students can participate in projects related to curriculum development in areas of interest at iCELS and with the OUME including - implicit bias, diversity and inclusion - virtual and augmented reality - mindfulness - development and implementation of independent learning modules and small group teaching experiences	Given the variety of topics, we will work with students to identify a component of the work that is of interest to them and fits the timeframe available.	Framework and implementation plans vary depending on the project selected.
Lela Giannaris, PhD	Radiology, Division of Translational Anatomy	The goal of this project is to enhance and expand the collection of educational resources for independent student learning in DSF, primarily related to the anatomical sciences and medical imaging. These educational materials would be utilized as online self-assessment, consolidation and review resources. The student will collaborate with faculty to develop new and revised educational modules and have the opportunity to shape the design of these materials based on their own experiences with the curriculum. Faculty will work closely with the student and oversee the design, implementation and evaluation of these resources.		The newly developed curricular resources will be implemented in the AY20-21 DSF course.