

***UNIVERSITY OF MASSACHUSETTS
MEDICAL SCHOOL
OFFICE OF UNDERGRADUATE
MEDICAL EDUCATION***



***MEDICAL STUDENT
SUMMER RESEARCH FELLOWSHIPS***

***CATALOGUE
2010***

Directors:

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Family Medicine and Community Health

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Office of Undergraduate Medical Education

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1. Clinical

TITLE: Using Data to Drive Decision Making in Quality Improvement

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Department of Family Medicine and Community Health
Center for the Advancement of Primary Care
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Description: The Center for the Advancement of Primary Care continues to be involved in Quality Improvement efforts in the primary care setting. As practices continue to engage in improvement efforts it is crucial that they have the necessary data to drive decisions to improve clinical outcomes and office flow redesign. For more than 1 year, we have been tracking numerous process and outcome measures related to chronic disease management (diabetes, HTN, and CAD) in 12 UMassMemorial primary care practices. We have developed registries which currently include more than 4000 patients with diabetes and more than 6000 patients with HTN.

Student's Role: Our summer student will focus on data management and analysis and work in collaboration with the Center and practice staff on:

- defining the real information needs,
- collecting the right data,
- structuring analyses of the data
- helping to interpret the analysis
- presenting and communicating the analysis, and
- turning the analysis into information that will help practices in their quality improvement efforts
-

Required Skills: Familiarity with SPSS and SAS programs would be considered a plus for this project

Interview: Required

Location: UMass with possible site visits to local affiliated practices

2. Clinical

TITLE: A Serological and Brain Spectroscopic Neurochemical Biosignature for Major/Minor Depressive Disorder in Postpartum Women

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UMMC

Department of Psychiatry

Center for Psychopharmacologic Research and Treatment

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Worcester, MA

Description: We are conducting a prospective cohort study to examine depressive symptoms in women during late pregnancy and the early postpartum period in relation to blood levels of neuroactive steroids (NAS) and γ -aminobutyric acid (GABA) and brain spectroscopic levels of GABA. The specific aims of the present study are to prospectively examine the perinatal and postpartum levels of NAS and GABA in women at High-Risk of developing postpartum depression (PPDHR) as contrasted with Healthy Control Low-Risk (HCLR) women and to prospectively evaluate depression, anxiety, functional disability, quality of sleep, social support and quality of infant bonding in PPDHR and HCLR women. These pilot data will provide the critical data that is needed to adequately power larger, more definitive studies that will help to identify a neurochemical biosignature predictive of risk for postpartum depression (PPD).

The study is a small, single-site (UMass Memorial Medical Center-UMMMC) prospective cohort study to collect pilot and feasibility data. Approximately 180 pregnant women will be screened with a one page questionnaire that assesses risk of PPD during their routine 28 week gestational age prenatal visit at our UMMMC West 4 Ob-Gyn clinic. High risk and low risk women will be followed prospectively through the 6th -10th week postpartum for depressive symptoms over 4 time points.

Serial plasma measurements of NAS and GABA will be collected and standardized mood and psychosocial assessments will be completed at each study visit. PPDHR women who go on to develop minor/major PPD and HCLR women without depression will undergo noninvasive proton magnetic resonance spectroscopy (MRS) to quantify brain levels of GABA at their postpartum visit. Stored plasma will then be analyzed from these two cohorts of women to calculate the mean levels of NAS or GABA and their mean standard deviations at each of the studied time points in late pregnancy and the postpartum. This data will be used to calculate the correlation coefficient (r) between the serological markers and each study time point. We will then calculate the sample size and power analyses for the larger proposed study that will then be powered to identify between-group (PPDHR and HCLR) differences in serological biosignatures. We will conduct a similar analysis for the postpartum MRS GABA data in both PPDHR and HCLR women cohorts to calculate sample size and power analyses for the larger proposed study which will be powered to identify between-group (PPDHR and HCLR) differences in spectroscopic biosignatures.

Student's Role: The medical student's role, once CITI trained, can be extensive and hands on with research subjects, if desired. The medical student could be involved in consenting subjects, performing depression screening in prenatal subjects at the Memorial OB clinic (West 4); can learn how research psychiatric interviews are conducted which assess not only psychiatric symptoms but obstetrical data; follow subjects longitudinally from late pregnancy to the postpartum; learn about the MRS neuroimaging and neuroendocrine biomarkers and their significance towards understanding the pathophysiology of major depression during phases of the reproductive cycle in women; obtain collaborative skills with PI, senior psychiatry resident and research coordinator involved in the study, perform minimal research database entry to be shared with PI and research coordinator, etc. He/she will be able to learn about clinical trial design, recruitment strategies, research ethics, IRB procedures, etc as they pertain to the study. There are numerous facets in which to be involved, and the medical student would have a desk adjacent to the research coordinators in our research suite where the PI's office is within the CPRT research group. The medical student would attend all research group meetings so that he/she would have exposure to the other studies ongoing in the CPRT research group. Direct supervision would be by the PI for the entire research fellowship program.

Required Skills: Empathic; pays close attention to detail; capacity for both independent work and teamwork; dependable; computer adeptness

Interview: Required

Location: Center for Psychopharmacologic Research and Treatment (CPRT);
West 4 Obstetrics/Gynecology Clinic at Memorial; Labor and
Delivery Unit at Memorial

3. Clinical

TITLE: Delay in Heart Failure Study

Robert J. Goldberg, PhD

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University of Massachusetts Medical School

Quantitative Health Sciences

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ACCES Bldg, 7th Floor

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Description: The Observational Study of Delay in Heart Failure is a large, multi-center observational study with the primary goal of examining the extent of delay in seeking medical care in patients hospitalized with an episode of acute HF. A secondary goal of this clinical/epidemiologic study is to identify demographic, attitudinal, and clinical factors associated with duration of pre-hospital delay, particularly with regards to those factors that facilitate, or impede, patient's timely responses to their evolving symptoms. Patients who satisfy the Framingham Criteria for HF (study inclusion criteria), and who consent to study participation, are interviewed in the hospitals setting to obtain information about their knowledge of the signs and symptoms of their recent episode of acute HF, extent of delay in seeking medical care, and demographic, knowledge, behavioral, and clinical factors associated with delays in seeking medical care.

Student's Role: To assist with the interviewing of patients hospitalized with heart failure in the acute hospital setting, abstraction of data from hospital medical records, and in the write-up of the study results with collaborating investigators.

Required Skills: Patient interviewing skills and prior experience with data analysis.

Interview: Required

Location: UMass Medical School

4. Clinical

TITLE: Clinical Research. Implementation of Hand Surgery Outcomes Database.

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UMMC

**Departments of Orthopedic Surgery and
Rehabilitation and Cell Biology**

55 Lake Avenue, North

Worcester, MA 01655

Project Description: Assist in the implementation of an outcomes questionnaire (QuickDASH) for patients seen in the Hahnemann Hand Clinic. Student responsibilities will include assisting patients with completing QuickDASH questionnaires and insuring timely and accurate collection of questionnaires in the Hand Clinic. Additionally, the student will analyze the obstacles and strengths of the process as well as analysis of the QuickDASH results its correlation with patient variables. This project will involve direct patient contact, and will require a motivated, organized student. It is expected that this summer project will lead to publishable results, as well, once the database is fully implemented there will be ample opportunity for further research projects if the student desires.

Interview: Required

Location: Hahnemann Campus

5. Clinical

TITLE: Semi-Automated Transcription of Radiological Images

Young H Kim, MD, PhD

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UMass Medical School

Department: Radiology

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Description: Recent applications of speech recognition technology have contributed to decreasing radiology report turnaround time, but have not significantly changed the overall report content, structure, or input method (speech) used in the reporting process.

The objective of this project is to construct a new direct radiology report input method by developing a system that generates structured report text based on where the radiologist clicks on an image of the patient's anatomic area under analysis. As standardized anatomical terminology exists, we can automate description of the diseased anatomic area involved. The radiological images of interest will be displayed on the Picture Archiving Communication System (PACS) monitor currently in use at UMass Medical Center, then transcribed in place into a written document, based on mouse clicks. During the process, the radiologist has the option to check, edit, and/or expand the generated text, in order to properly express her diagnosis. This semi-automated approach represents a balance between expressiveness and automation, and should significantly reduce both the time and cost of image analysis, and mitigate many of the errors that are introduced in the current transcription process. Research projects will be performed jointly by Yang GL and Nowinski WL in Singapore Bioimaging Consortium.

Student's Role: Collection of radiologic image data sets with corresponding radiologic report and assist to Dr Kim to build up library of image with report template.

Required Skills: Artistic drawing, Photoshop, 3D graphics, Computer animation (if possible).

Interview: Required

Location of Research: Radiology Reading Room, UMass Memorial University Campus
S2 834 (PI's office), UMass Memorial University Campus

6. Clinical

TITLE: The Impact of Perimenopause on the Clinical Course of Bipolar Disorder

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University of Massachusetts

Department of Psychiatry

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Description: Increasing prospective evidence indicates the menopausal transition is a period of susceptibility to depression in women with a history of mood disorder, as well as in healthy women without a history of depression (Cohen et al 2006; Schmidt et al 2004; Harlow et al 2003). However, there has been little research on the perimenopause in women with bipolar disorder, a psychiatric illness with serious implications for day-to-day functioning and well-being.

In our initial work, we found a significant amount of depression in the perimenopausal age women with bipolar disorder compared to reproductive years, with 68% meeting criteria for a major depressive episode over an average of 17 months (Marsh et al 2007). In addition, perimenopausal age women with bipolar disorder experience significantly more clinic visits in the depressed state, and fewer in a healthy mood state, than like-aged men and young adult men and women with bipolar disorder (Marsh et al, 2009).

A systematic evaluation is warranted to improve our clinical understanding of the clinical course of bipolar disorder during the perimenopause and integrate these research findings to inform both psychiatric and gynecological clinical practice.

Specific Aims

Primary Aim: To compare the duration and severity of depressive episodes between women with bipolar disorder in early perimenopause, late perimenopause and post menopause (control) and by change in estradiol and FSH:

Hypothesis 1: The late perimenopausal will be associated with an increased severity of depression compared to early and especially compared to post menopause.

Hypothesis 2: A greater magnitude of change in reproductive hormones FSH (increase) and estradiol (decrease) will be with associated with depressive mood episode onset or severity.

Secondary Aim: To explore women's attribution of symptoms, and ways in which their attributions are related to attitudes regarding treatment-seeking.

Experimental Design

Overview: 60 Women with bipolar disorder I, II, or NOS in the early (n=20) or late (n=20) perimenopause or post-menopause (n=20) will undergo a diagnostic mood assessment, menstrual history and reproductive endocrinological battery at entry. The ChronoRecord Software Program, Tall Tree Software, Inc is a novel concept tool developed and validated (Bauer et al 2004) for prospective mood and reproductive status monitoring. Daily, subjects will enter mood on a 100pt visual analog scale, sleep, medication, menstruation and hot flushes. Monthly assessments include plasma levels of estradiol and follicle stimulating hormone (FSH) and standardized mood evaluations.

Student's Role: Learn and assist in conducting a clinical study, adaptable to student's interests, particularly opportunity for engaging in subject interactions and learning about mood disorders and reproductive endocrinology. Learn and assist in standardized mood assessments, bipolar diagnosis, and lab draws. Help manage subject scheduling and maintenance in study.

Required Skills: Excellent interpersonal skills, respect for confidentiality, organization, self-motivation.

Interview: Required

Location: 361 Plantation Street, the Outpatient Psychiatric Department

7. Clinical

TITLE: Assessment of Olfactory Processing in Parkinson's Disease Patients

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UMass Medical School

Department of Neurosurgery – Surgery

Room S2-850

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Description: It has become increasingly recognized that olfactory loss occurs during the pre-motor stages of Parkinson's Disease. Our group's recent focused on improving the positive predictive value of olfactory testing, by combing with a battery of psychological tests. Forty-five patients (Hoehn and Yahr stages 1-3, age 68.8 \pm 10.4, 24% female) and 44 age-matched controls (age 66.2 \pm 7.9, 45% female) were recruited and completed surveys of olfaction (Univ. of Penn. Smell Identification Test, UPSIT), mood (Beck depression inventory), apathy (Apathy Evaluation Scale, AES), and general health (UK Parkinson's Disease Society questionnaire, PDS). We found that general olfaction loss is a highly predictive marker of PD (sensitivity 93%, specificity 92%, $p < 0.0001$). When a staged diagnostic algorithm that combines olfaction and apathy was used, it provided a positive predictive value of 91% (sensitivity 98%, specificity 88%). In the second stage of this study, we explored the mechanism of olfactory loss in a subset of PD and control subjects using functional MRI (n=12) as the mechanism of olfactory loss is under debate. Patients underwent an imaging session in the functional MRI and were exposed to a series of neutral odors (via an odorometer) and tones (via headphones) according to a pre-determined program. Quantitative measure of activation in precise volumes of interest (VOI) related to the olfactory pathway, under different experimental paradigms will be analyzed. The next phase of this project is to repeat the clinical testing and imaging described above in Essential Tremor Patients. Autonomic testing will also be included.

Student's Role: Greeting patients and facilitating imaging session with qualified personnel, data analysis, statistics, and writing.

Required Skills: Familiarity with Excel, word processing, basic data analysis, writing skills

Interview: Required

Location: University Campus S2-850

8. Clinical

TITLE: Physical Activity in Pregnancy – A Patient Survey

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Memorial Campus

OB/GYN Department

Jaquith Building Room 4053

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Description: The purpose of this study is to determine the level of physical activity at the start of and in the third trimester of pregnancy in an obstetrical population in Worcester. We will then follow these women through their labor and delivery to determine if level of physical activity during pregnancy is associated with pregnancy/labor outcomes (primarily gestational weight gain). The information gathered from patients will be analyzed along with data obtained from medical records including demographics, documentation of advice/counseling, actual gestational weight gain and pregnancy outcomes. This study is one component of pilot data being collected in anticipation of a larger funded proposal that will focus on the design and administration of a brief and cost-effective clinical intervention with regards to counseling, nutrition and physical activity with the goal of increasing rates of healthy weight gain in pregnancy in accordance with Institute of Medicine guidelines.

Student's Role: Screening for subject eligibility
Subject recruitment & survey administration
Tracking of subjects for administration of follow-up survey
Chart review
Data entry & cleaning

Required Skills: Punctuality/reliability
Attention to detail
Strong interpersonal skills for interaction with administrative/nursing/physician staff and patients
Comfort with Xcel database
Organization skills
Completion of CITI exam
Strong independent student, comfortable asking questions
Inquisitive

Interview: Not required but preferred

Location: Memorial Campus

9 & 10. Clinical

TITLE: #2 Projects.

“Co-morbidities associated with Hepatitis C” and

“Long-term follow-up of women with Atypical Glandular Cells (a Pap Smear Dx)”

Anthony Valdin, MD, MS

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Greater Lawrence Family Health Center

34 Haverhill Street

Lawrence, MA

Description: We are interested in collaborating with student colleagues to move these two projects forward. They both involve updating and then re-analyzing data bases, via abstraction of medical records. Students will have access to these data bases and, in addition to working collaboratively with our research team, can design their own analysis, after acquainting themselves with the information therein.

The Hep C project has identified a large cohort of diabetic persons with HCV {observed>expected} and an HIV co-infected cohort that, so far, has had worrisome prognosis. We are interested in pursuing descriptive and natural history data regarding these two, and selected autoimmune phenomena - arthritis and skin diseases associated with HCV. n= approx 800 persons.

The Atypical Glandular Cell Pap registry follows women diagnosed with this uncommon (1/200) Pap Dx. We have described the prevalence of associated high grade lesions associated with this Pap smear Dx in a community setting. We are interested in updating the data base, comparing results before and after liquid-based cytology (vs “conventional”).

Student's Role: Literature review, chart abstraction, analysis with descriptive statistics, using EPI INFO

Required Skills: Low-level computer skills, willingness to “look things up”, ability to search medical data bases

Interview: Required

Location: Lawrence, MA

11. Laboratory

TITLE: Axonal Transport in Alcohol-induced Neuronal Injuries

Zheng-Zheng Bao, PhD
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University of Massachusetts Medical School
Department of Medicine
LRB #221
364 Plantation St.
Worcester, MA 01605

Description: Acute and chronic consumption of large amounts of Alcohol is known to cause impairment of brain function from short-term memory lapse to long term damages such as brain shrinkage. However, cellular mechanisms of neural damage caused by alcohol are not well understood. My lab has been studying membrane trafficking in the central nervous system. For this project, we will analyze the effects of ethanol on trafficking of organelles including mitochondria and macropinosomes in the axon of cortical neuron. Molecular and regulatory mechanisms of mitochondria trafficking will also be examined by using inhibitors and siRNA knockdowns to target candidate proteins. Proper localization of mitochondria is critical for axonal and synaptic function.

Student's Role: Culture primary cortical neuron, imaging mitochondria and macropinosome in the axon by fluorescence time-lapse microscopy, data analysis.

Required Skills: We will train but prefer someone with a little research experience.

Interview: Required

Location: LRB 270F&G

12. Laboratory

TITLE: Molecular Methods for the Diagnosis of Melanoma

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5087936240

**University of Massachusetts Medical School
Department of Anatomical Pathology
Laboratory of Diagnostic Molecular Oncology
Three Biotech, Room 276
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Worcester Ma 01605**

Description: Malignant melanoma is the most deadly skin cancer and the incidence is rising dramatically. The prognosis is closely related to the stage of the disease, thus, early diagnosis has summoned importance for patients' survival. However, histopathological diagnosis of melanoma can be very challenging sometime as a variety of benign melanocytic lesions, particularly some pediatric melanocytic neoplasms, such as Spitz nevi and dysplastic melanocytic nevi, share similar morphology with melanoma. A misdiagnosis will have an adverse impact on the patient. Early intervention is important to avoid metastasis, but over diagnosis will result in unnecessary aggressive chemotherapy.

A reliable and accurate assay is needed to distinguish patients with a benign entity from those with true melanoma. The Laboratory of Diagnostic Molecular Oncology has developed clinical assays with the potential to distinguish benign lesions from malignant data. Specifically, the lab has validated laser capture and robotic nucleic acid extraction technologies needed to obtain DNA from the target cells in FFPE sections. In addition, assays used for other tumor types (e.g. glioblastoma) including PNA clamp - Real Time Quantitative PCR will be used to look at point mutations (e.g. RAS, BRAF) and Multiplex Ligation-dependent Probe Amplification (MLPA) will be used to assess the amplification/deletion status of 400 tumor genes (e.g. MYC, p16, p53). Preliminary data obtained in the laboratory indicates that these molecular methods can assist with the diagnosis of melanoma on paraffin embedded formalin fixed (FFPE) tissue.

We intend to carry out a retrospective study using archived tissues in our institution and employ these molecular cytogenetics tools to create a "melanoma signature", to be used as an axillary modality for diagnosing melanoma. As such the aim of this study is to create a new diagnostic test that can be used as a "lab-developed" assay for clinical testing.

- Student's Role:**
1. Review melanoma lesions with the Dermatopathologist
 2. Aid in the laser capture microscopy and robotic DNA extraction of specimens
 3. Aid in performing PCR assays and using a ABI 3700 capillary gel electrophoresis system.
 4. Aid in classification of specimens that are positive/negative for point mutations or chromosomal abnormalities to determine a "melanoma signature"
 5. Aid in the creation/maintenance of a database for statistical analysis of the data.

Required Skills: Computer literacy

Interview: Required

Location: Three Biotech, Room 276, One Innovation Drive, Worcester Ma 01605

13. Laboratory

TITLE: Developing New Anti-viral Drugs

Robert Finberg, MD
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UMass Medical School
Department of Medicine
LRB 228
Worcester, MA 01655

Description: Using cell lines we are screening libraries of compounds that have the potential to be drugs that can treat viral infections. We have begun to identify small molecules that have activity in our preliminary experiments and we are now defining their in vitro activity with the goal of moving into animal models in the near future.

Student's Role: Students would participate in screening compound libraries for new anti-viral agents and would learn in vitro techniques and work with animals (mice) if they have previous experience or interest. From these studies they will learn about both basic cell biology and pathogenesis of infections and about the development and use of drugs.

Required Skills: Interest, proficiency or willingness to develop skills in tissue culture techniques.

Interview: Required

Location: Lazare Research Building

14. Laboratory

TITLE: Investigation into Genome-wide Differential Expression between Diabetic and Non-diabetic Patients in Healing of Ankle Fractures

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UMMHC

Department of Orthopedics

Hahnemann Campus

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Description: An estimated 20.8 million people in the US, 7% of the population, have diabetes mellitus (DM) and this number is expected to rise. Ankle fractures are among the most common injuries treated by orthopedic surgeons, with approximately 260,000 occurring per year in the United States. A reduced healing rate of fracture healing in diabetic patients has been well documented with time to fracture union reported to be >186% of controls. The historic rates of complications following an ankle fracture in patients with diabetes are nearly 30%. This is greater, 43%, in the subset of patients with established peripheral neuropathy. The complication rates for non-operative treatment have been reported to be greater still. Diabetes is a systemic disease with a strong genetic component and, although some progress has been made in identifying genes that may contribute to this disease, a molecular genetic basis for fracture healing in diabetics has not been made.

Previous studies investigating fracture healing have focused on specific outcomes or genes and gene products which were identified a priori for analysis. To date, no study has employed a prospective genome wide approach to address fracture healing in DM. The aim of the current proposal is to define differences in gene expression present at the site of an acute fracture between DM and non-DM patients. This is a stage of healing in which a therapeutic intervention would be most efficacious in changing the course of treatment. The study is designed to identify nearly all of the genes expressed at the site of fracture during the acute stage of fracture healing using a human genome microarray. We hypothesize that there are differences at the level of gene expression between these patient groups at the site of injury.

Samples of hematoma evacuated from ankle fractures at the fibular fracture site will be analyzed on a Human Gene 1.0 ST microarray (Affymetrix). Transcribed total RNA will be extracted from the hematoma and will then be hybridized to the array. The array will be analyzed to determine expression for greater than 28,000 genes simultaneously. The same procedure will be repeated for hematoma from DM (n=5) and non-DM patients (n=5). This sample size yields a power of 0.9 for each gene under study. We will then correlate the expected differences with biological function of all known genes in the human genome. In this way, we hope to elucidate the molecular genetic basis for the observed clinical differences between these patients.

Student's Role: The student will be involved in sample collection in the operative suite, RNA preparation and array hybridization, and gene expression analysis.

Required Skills: None. A background in basic science laboratory experience may be beneficial.

Interview: Required

Location: UMMMC

15. Laboratory

TITLE: Basic Science Research: Treatment of Particulate-induced Osteolysis with Proteasome Inhibitors

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UMMC
Departments of Orthopedic Surgery and
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Project Description: Assist in an established, funded project evaluating the effect of proteasome inhibition on the treatment of titanium and polyethelene particle induced osteolysis in the mouse calvaria (a model for human periprosthetic osteolysis). The student will perform animal experiments and evaluate these results by conventional radiography, micro-CT and histology. Additionally, cell culture experiments will be performed for analysis of RNA and protein expression.

Required Skills: Prior experience in a basic science lab is helpful but not required. IACUC training will be needed, time for this will be provided at the beginning of the summer program.

Interview: Required

Location: University Campus

TITLE: Age-Related Macular Degeneration (ARMD)

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University of Massachusetts Medical School

Department of Ophthalmology

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Description: Exudative or "wet" Age-Related Macular Degeneration (ARMD) and diabetic macular edema (DME) are the two angiogenic diseases that are leading causes of blindness in the Western world; their incidence continues to rise as the worldwide population lives longer and the incidence of diabetes continues to rise at an alarming rate. For the exudative or "wet" form of the disease (10-15% of all patients), there are potent anti-VEGF antibodies that have revolutionized the treatment of patients with both diseases but most significantly in those patients with choroidal neovascularization (CNV) associated with wet ARMD. However, this clinical advance comes at a heavy healthcare cost. Our lab has previously identified specific histone deacetylase inhibitors (HDACi) as potent compounds that double RPE transport function. Additionally, certain HDACi reduce VEGF and other pro-angiogenic cytokine levels in stressed RPE cells. Thus, these epigenetic modifiers are potentially important stand-alone drugs to treat angiogenic diseases or in combination with current treatments. Our continuing research focuses on further characterization of HDACi effects on the physiology and biochemistry of RPE cells and also in two mouse models of angiogenic diseases. The goals of our research includes determining in human primary RPE monolayers the effect of various classes of HDACis on RPE transport function, transepithelial resistance (TER), and cytokine expression. Our research also seeks to determine the effects of the same set of HDACi in a laser-induced CNV model and in a STZ-induced diabetic retinopathy model. This research will help the scientific community better understand HDACi biology in angiogenic diseases of the retina and rapidly and relatively inexpensively determine their clinical efficacy, since some of these drugs are already FDA-approved and will not require the usual, prolonged drug development pathway. Further, these drugs are off-patent and are available as generics. Shelley will work with our faculty, senior scientists and researchers in the department of Ophthalmology to assist in various project data and experiments in order to progress the advancement of the current research being conducted.

Student's Role: Summer Research Fellow/Research Associate

Location: Biotech 5, Suite 250
Department of Ophthalmology
Gene therapy Center
381 Plantation Street
Worcester, MA 01655

17. Laboratory

TITLE: Role of Inflammation in Diabetes and Cardiovascular Complications

Jason K. Kim, PhD

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Contact: Elana Hastings

UMass Medical School

Department of Molecular Medicine

Biotech V, Suite 200

381 Plantation Street

Worcester, MA 01605

Description: Background: Dr. Kim's lab investigates obesity, diabetes and its complications using elegant metabolic procedures and transgenic mouse models of altered metabolism. Our NIH-funded projects examine the role of inflammation in insulin resistance and cardiovascular diseases. The goal of our research is to understand how obesity causes diabetes and to find its cure.

Student's Role: A small project based on the lab's research focus and take part in other researchers' projects as part of multi-institutional collaboration.

Required Skills: Comfortable working with mice, basic bench skill involving biochemical and/or molecular assays

Interview: Required

Location: Biotech V, as well as LRB

TITLE: Cutaneous Radiation Wound Healing in Mice

**Janice F. Lalikos, MD; Ronald A. Ignatz, PhD; Michael Chin, MD
508-334-5945 (JFL) or 508-334-7692 (RAI)**

**University of Massachusetts Medical School
Department of Surgery
Division of Plastic Surgery
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Description: External beam radiation, used as treatment for a variety of malignancies, can cause significant cutaneous reactions. The increased use of concomitant chemo-radiotherapy can further potentiate the damage. The acute skin reactions can range from mild skin erythema to dry or moist desquamation. The number of radiation injuries is poorly documented and little is known about the extent to which skin reactions impact daily life. In addition to being painful, moist desquamation results in unwanted interruption in a radiotherapy course or limitation to the total dose of therapy.

Highly homogeneous and pure poly-N-acetyl glucosamine (pGlcNAc) nanofibers can be isolated by the culture of marine microalgae.¹ pGlcNAc patches, which contain microalgal nanofibers (SyvekPatch™, Marine Polymer Technologies, Danvers, MA), have been characterized as hemostatic agents to control bleeding and are currently used in interventional cardiology and radiology as non-invasive closure devices.² Recent research suggests that pGlcNAc may also be effective in wound healing through multiple interactions with mediators of the healing process.

The goal of this proposal is to establish a model for acute radiation injury and then investigate the wound healing capabilities of pGlcNAc in an irradiated wound. Our study will be an interdisciplinary collaboration between the Division of Plastic Surgery and the Department of Radiation Oncology at University of Massachusetts Medical School. Strontium-90 (Sr-90) radiation source will be supplied by the Radiation Oncology department and will be used under their strict supervision. The specific aims for this project and their rationales are as follows:

Aim 1: Establish the proper dose-response for radiation exposure that creates a cutaneous radiation injury in mice.

Rationale: The management of radiation skin reactions is controversial, and all too often, based on anecdotal evidence. There is no reliable translational model for testing new treatment modalities for radiation-induced injury given the frequency of use in treating a variety of cancers.^{4,5,6,7}

Hypothesis: Based on previous studies, we hypothesize that our target dose for moist desquamation will be 9,000 cGy.

Aim 2: Determine the wound healing kinetics of applied poly-N-acetyl glucosamine (sNAG) to acute radiation injury on murine skin.

Rationale: sNAG membranes have been shown to stimulate cell metabolism and endothelial and fibroblast migration, leading to a faster wound closure by re-epithelialization with increased keratinocyte migration, cell proliferation, granulation tissue formation, and vascularization.⁸

Hypothesis: Following acute radiation injury, we hypothesize that sNAG will have a significant effect on wound closure by encouraging epithelial migration in addition to inducing an increase in angiogenesis and proliferation.

Student's Role: student will be involved in all aspects of the project from inducing the wounds to application of treatments, frequent wound measurements and final histologic analysis to the healing wounds.

Required Skills: The student will be required to have completed the appropriate animal use training and have good general laboratory skills. The student will learn will learn basic histologic and immunohistologic techniques. He/she will also be expected to become familiar with the relevant scientific literature.

Interview: An interview with Dr. Lalikos and/or Ronald Ignatz is highly recommended

Location: All direct animal work will be done in the UMASS animal quarters on A level. Other laboratory work (histology/immunohistology) will be done in the Plastic Surgery Research laboratory, S4-752.

19. Laboratory

TITLE: Molecular Mechanisms Regulating Synaptic Plasticity of Mammalian Glutamatergic Synapses

Maria Morabito, PhD
(508) 856-2018
maria.morabito@umassmed.edu

University of Massachusetts Medical School
Department of Cell Biology, S7-244
55 Lake Avenue, North
Worcester, MA. 01655

Description: My lab is interested in understanding the molecular mechanisms that regulate glutamatergic synapses in the mammalian brain and how these are altered in developmental, psychiatric and neurological disorders. Several projects are available in the lab and the student is encouraged to decide which is the most interesting to him. For example, one of the projects concerns understanding the function of Autism-associated PTEN mutations at synapses; another is focused on understanding the mechanisms by which the amyloid beta peptide regulates synapses elimination; the third one is centered on understanding the dysfunction of synapses in schizophrenia.

Student's Role: The student will be working in close collaboration with a postdoctoral fellow but will conduct his own experiments within the umbrella project, will participate in weekly meetings in which he will present and discuss his research project .

Required Skills: knowledge of some molecular neuroscience and techniques such as western blots, immunostaining, cell cultures

Interview: Required

Location: UMass Medical School, Room S7-241

20. Laboratory

TITLE: Developmental Three-Dimensional Anatomy of the Oral Cavity and Neck

Richard S. Pieters M.D., Clinical Associate Professor of Radiation Oncology and Pediatrics

co-PI: Sheila Stille, D.M.D.

(508) 334-6550

Richard.Pieters@umassmemorial.org

UMMC

Levine Cancer Center

119 Belmont Street

Worcester, MA 01605

Description: The Varian Radiation Therapy Treatment Planning System provides the ability to image anatomy in three dimensions. For this project, the de-identified treatment planning CT scans from a number of children of varied ages who have previously been treated with radiation therapy to the head and neck for various malignancies will be utilized. The normal structures of the oral cavity and neck will be defined on CT slices, generating three-dimensional images of the structures. The result will be an atlas of developmental anatomy of the head and neck for use in instruction in the medical and dental school programs. A poster will be generated to conclude the project.

Student's Role: After instruction in the use of the technology, the student (and perhaps interested dental residents) will draw the volumes on the CT slices of the patients with review of the result by Dr. Pieters & Dr. Stille, and then will generate the poster for presentation. If a publishable paper results, the student will receive co-authorship.

Required Skills: Baseline first year knowledge of gross anatomy; some familiarity with computers

Interview: Required

Location: Radiation Oncology Department

21. Laboratory

TITLE: Three-Dimensional Anatomy of the Pelvis or extremities

Richard S. Pieters M.D., Clinical Associate Professor of Radiation Oncology and Pediatrics
co-PI: Sheila Stille, D.M.D.

(508) 334-6550

Richard.Pieters@umassmemorial.org

UMMC

Levine Cancer Center

119 Belmont Street

Worcester, MA 01605

Description: The Varian Radiation Therapy Treatment Planning System provides the ability to image anatomy in three dimensions. For this project, the de-identified treatment planning CT scans from a number of patients with pelvic or extremity malignancies who have previously been treated with radiation therapy to the either site will be utilized. The normal structures of the pelvis will be defined on CT slices, generating three-dimensional images of the structures. The result will be an atlas of anatomy of the pelvis or extremity for use in instruction in the medical and graduate nursing school programs. A poster will be generated to conclude the project.

Student's Role: After instruction in the use of the technology, the student (and perhaps interested surgical residents) will draw the volumes on the CT slices of the patients with review of the result by Dr. Pieters and then will generate the poster for presentation. If a publishable paper results, the student will receive co-authorship.

Required Skills: Baseline first year knowledge of gross anatomy; some familiarity with computers

Interview: Required

Location: Radiation Oncology Department

22. Laboratory

TITLE: Cellular Targets of the Bacteriophage Lambda Red Recombination System

Anthony R. Poteete, PhD

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University of Massachusetts Medical School

Department of Molecular Genetics and Microbiology

Room S6-119

55 Lake Avenue North

Worcester, MA 01655

Description: Homologous genetic recombination is a universal life process. It is nature's most accurate way to repair double strand breaks in DNA. It also catalyzes evolution, by providing a mechanism for assembling new combinations of alleles on individual chromosomes.

Historically, the shortest pathway to understanding molecular mechanisms has been to study the process in question in a model organism, usually a simple one, which offers the most powerful experimental approaches for the investigator. Most of our present, fragmentary understanding of homologous recombination at the level of molecular mechanism comes from studying the process in the bacterium *E. coli* and some of the viruses (bacteriophages) which infect it.

The Red system of the bacteriophage λ is one of the simplest and most intensively studied homologous recombination systems, and serves as a model for the vastly more complex Rad52 system of humans. Recent studies have made it clear that the Red system operates through interactions with cellular proteins involved in both replication and transcription. Armed with this insight, we have isolated cellular mutants altered in their interactions with the Red system. The project for this summer is to carry out genetic and biochemical experiments with these mutants, to determine the step(s) in recombination they affect.

Student's Role: Working with the principal investigator on all aspects of the research.

Required Skills: Keeping good notes

Interview: Required

Location: UMMS Room S6-110.

23. Laboratory

TITLE: Class Switch Recombination in Pim Kinase Deficient B Cells

Robert T. Woodland, PhD

(508) 856-2465

Robert.Woodland@umassmed.edu

**University of Massachusetts Medical School
Dept. of Molecular Genetics and Microbiology
Room S5-245
55 Lake Avenue, North
Worcester, MA 01655**

Description: Pim kinases are a class of serine/threonine kinases important for metabolism and protection against cell death by apoptosis. Pim genes are frequently found translocated in lymphoid cancers and targeting these kinases with small molecule inhibitors is being evaluated as an anti-tumor therapy. The role of Pim kinases in the biology and homeostasis of normal lymphocytes is just now being assessed. Our laboratory has identified a wide-ranging B cell immunodeficiency in mice whose Pim kinase genes have been deleted. Pim deficient mice fail to produce robust primary immune responses when challenged with T cell dependent or T cell independent antigens and are extremely susceptible to challenge with pathogens such as Pneumococcus. Preliminary work our lab has also shown that immunoglobulin class switch recombination (CSR) a process necessary for the production of optimally protective IgG and IgA antibodies is impaired although the B cell proliferation that precedes and is required for CSR is normal in Pim deficient B cells. This overall phenotype suggests to us a new B cell immunodeficiency entirely dependent on the Pim kinases.

Our summer project is to examine the molecular basis for the CSR defect in Pim deficient B cells by testing the hypothesis that Pim kinase phosphorylates and thereby modifies the action of Activation Induced Cytidine Deaminase (AID) a key enzyme necessary for CSR.

Student's Role: The student's role will be to isolate B cells from wt and Pim deficient mice and culture these B cells with selected B cell activators that induce CSR. CSR in the cell cultures will be monitored using FACS, the phosphorylation of AID, and the nuclear localization of PIM and AID determined using western blotting, and the molecular events necessary for CSR monitored using PCR procedures.

Required Skills: Tissue culture experience, handling small animals and familiarity with PCR techniques would be helpful.

Location: The research laboratory is in the Medical School, 5th floor
Basic Science Wing

TITLE: Evaluation of the YWCA/YMCA-Family Health Center Exercise Programs

Lucy Candib, MD and Matt Silva, PharmD
(508) 860-7827 and (508)373-5669

UMMC

Family Health Center

Department of Family Medicine and Community Health

26 Queen Street

Worcester, MA

Description: For almost 6 years, the Family Health Center of Worcester (FHCW) has had an active partnership with the YWCA. Through this partnership, low-income, often deconditioned patients have had open access to exercise facilities. This partnership has given rise to several specific, targeted programs that warrant study and evaluation. One program offered Latino patients with poorly controlled diabetes up to 12 exercise sessions with a Latino trainer. Twenty-two patients enrolled in the project and completed a series of health status questionnaires. Using information from these questionnaires as well as medical records, the student will develop a health and physical activity profile of these 22 patients. Participant data include: age, sex, diagnoses, height, weight, BMI, FLP, HA1c, PHQ-9 and responses to the Dartmouth COOP and the International Physical Activity Questionnaires. This profile will help inform current and future initiatives aimed at introducing physical activity into patients' weekly routines. A second sub study focuses on the subset of all FHCW patients with diagnosed diabetes who used the YWCA in the past 5 ½ years. The student will obtain data from medical records of these 92 FHCW patients and develop a profile of their health status over time. The profiles will include HA1c readings and other health indicators as well as a record of the number of visits each patient made to the YWCA.

Through another partnership, this one with the YMCA on Main Street, FHCW was able to offer patients opportunity to use this facility for exercise. Yet another evaluation study involves examining two years' of patient usage data when access was offered completely free of charge and comparing this to one year of usage following the institution of a \$10/month fee. Through extracting patient information from medical records, the student will be able to draw a profile of another cohort of patient users and examine use as well as selected health statistics pre and post institution of a monthly user fee. If time allows, the student may select patient YMCA users with diagnosed diabetes and examine their usage and health statistics.

Finally, the student may complete data entry of patient YWCA visits, thus bringing the database from 4 years to 6 years of data and will update the literature review of outcomes from clinician exercise referral projects/schemes.

Student's Role: Enter and analyze data, abstract information from patient records, participate in team meetings, write reports and contribute to development of manuscripts for publication.

Required Skills: Good interpersonal and writing skills; database development and maintenance, data analysis

Interview: Required

Location: Health Center, YWCA, YMCA

25. Public Health / Social

TITLE: Neighborhood Impact on Health and Health Behaviors

Wenjun Li, PhD

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wenjun.li@umassmed.edu

University of Massachusetts Medical School

Preventive and Behavioral Medicine

Shaw SH2-230

Worcester, MA. 01655

Description: This project evaluates the influences of community-level social and physical environment on health and health behaviors using both existing large databases and data to be collected. Health outcomes of interest include obesity, physical activity, dietary behavior, heart attacks and other cardiovascular problems, smoking, alcohol drinking, arthritis and disabilities, falls and fall-related injuries, and quality of life, in middle-aged and older population. Relevant neighborhood level data include area-based socioeconomic and demographic indicators, nutrition and physical activity environment, traffic conditions, etc.

Student's Role: Literature review, basic statistical analysis, technical writing, presenting data to research group

Required Skills: Good writing skills, knowledge about basic epidemiology and biostatistics

Interview: Required

Location: Shaw Building

26. Public Health / Social

TITLE: Diabetes Prevention Project

**Yunsheng Ma, MD, Ph.D., Ira S. Ockene, MD, Sherry Pagoto, Ph.D., Judith K. Ockene, Ph.D., Barbara Olenzki, RD MPH, LDN; and Phil Merriam, M.S.P.H.
(508) 856-1008**

UMMHC

**Department: Medicine; Preventive & Behavioral Medicine,
and Cardiovascular Medicine**

Shaw Building

419 Belmont Street

Worcester, MA

Description: The student project will be part of two NIH funded diabetes prevention projects: A Simple Dietary Message to Improve Dietary Quality for Metabolic Syndrome (CAN DO); and Depression, antidepressant use and risk of diabetes in the Women's Health Initiatives (WHI). The CAN DO is a four-year study supported by the NHLBI in which 240 patients with metabolic syndrome will be randomized to one of two dietary intervention conditions. The two approaches are 1) the American Heart Association (AHA) Dietary Guidelines; and 2) a simple dietary change condition that focuses on increasing fiber. Patients in both conditions will receive intensive dietary instruction for 3 months, followed by a 9 month maintenance phase. Both conditions will receive dietary instructions via individual and group sessions led by registered dietitians. The WHI is a two-year study supported by the NIDDK, in which we will investigate whether depression or antidepressant medication use are positively associated with an increased risk of developing diabetes using data collected from the WHI (N=161,808). In addition, we will explore possible mechanisms.

Student's Role: Student may choose between two tracks: data analysis track, or the combined intervention & data analysis track. In the *data analysis track*, the student will engage in the analysis of the WHI data and manuscript preparation. In the *intervention and data analysis track*, the student will link an intervention experience with data analysis. To obtain information for the project and widen experience, the student may assist with the ongoing lifestyle intervention which focuses on metabolic syndrome and weight loss.

Required Skills: An interest in learning about metabolic syndrome, dietary intervention, depression treatment, and the epidemiological analysis of study data; and good writing skills.

Interview: Required

Location: UMMS Shaw Bldg, 2nd floor

27. Public Health / Social

TITLE: Injury Prevention

Dr. Mariann Manno, MD
Director Pediatric Emergency Medicine
Department of Pediatrics
Co – Director, UMMHC Injury Prevention Program

Dr. Michael Hirsh, MD
Director Pediatric Surgery and Trauma
Department of Surgery
Co – Director, UMMCH Injury Prevention Program

Contact Person: Allison Rook Burr
774-443-8629

UMMHC
Departments of Surgery and Pediatrics
55 Lake Avenue, North
Worcester, MA 01655

Description: Preventable trauma is the leading cause of injury and death in children and young adults in the United States. The Injury Prevention Office runs clinically based, community oriented programs dedicated to educating members of the community on topics including; pedestrian, vehicle, and home safety, teenage driving safety, and child passenger safety.

Student's Role: Students will participate in community outreach through existing and developing Injury Prevention programs; assist with public health data management and analysis; observe in pediatric emergency and surgery clinical arenas.

Student Must have CORI check done by Worcester Public Schools

Required Skills: Must be able to work both independently and as part of a team. Must exhibit strong initiative and have an interest in preventing childhood injury.

Interview: Required

Location: University Campus, Community at Large

TITLE: Health Effects of the 2004 Federal Bureau of Prisons Tobacco Ban: Pilot Retrospective and Prospective Studies

Stephen A. Martin, MD, Ed.M.

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UMMC

Barre Family Health Center

Department of Family Medicine and Community Health

Department of Quantitative Health Sciences

151 Worcester Road

Barre, MA 01005

Description: Despite seismic shifts in popular culture and regulation, the United States still faces a daunting amount of tobacco-related morbidity and mortality. Tobacco is still the leading cause of preventable death. Chronic Obstructive Pulmonary Disease (COPD), caused by smoking in the vast majority of cases, is the fourth leading cause of death and the only cause increasing in prevalence. Yet we know relatively little about the natural history of lung disease – especially after smoking cessation. Answering certain questions, ones as basic as whether COPD may be reversible, would be of tremendous value to policy makers and clinicians alike. Unfortunately, the costs, constraints, and challenges in conducting long-term cohort studies, let alone an interventional trial, are an impediment to understanding the progression of diseases like COPD.

However, there is a natural intervention currently underway. In 2004, the Federal Bureau of Prisons (BOP) banned the general use of tobacco for all of its inmates. Because prisoners have a higher baseline prevalence of smoking than the general population (generally 60-80%), an effective intervention results in a highly powered study. In our study design, prospective and retrospective cohorts will be employed to evaluate the health effects of the 2004 smoking ban. Data will be collected by inmate surveys, medical chart reviews, lung function tests (via spirometry), six-minute walk tests, and blood tests.

According to reviews of the proposal by those with expertise in the field, there is no similar study to the one we are proposing. Our pulmonary consultant and international authority on COPD, Dr. Bartolome Celli, believes it to be an especially important research project. The proposed study has an unusually broad potential impact, involving health services research, health policy, clinical care, and a fuller understanding of the pathophysiology of tobacco-related disease with the potential for molecular targets. It would allow contributions to the medical and policy literature in each of these areas. The collaboration for this study is in a special constellation: a BOP with a reinvigorated research mission, an existing relationship between the BOP and U Mass, and personnel who are familiar with both the prison and academic settings. Our hope from this relatively small pilot study is to generate data that would help in obtaining significant external funding, such as from the NIH/NHLBI, for a larger project that would be possible given the scale and infrastructure of the BOP.

Student's Role:

- Work closely with the PI and other research team members in all steps of the research
- On-site research at the Federal Medical Center, Devens potentially including informed consent, questionnaires, spirometry, 6-minute walk tests, chart reviews, and other aspects of the study; work at Devens requires a background check
- Assist with the effective gathering and entering of research data
- Review and understand medical literature as applies to this study
- Skill acquisition and exploration of the research efforts of the sponsoring departments, the Department of Family Medicine and Community Health and the Department of Quantitative Health Sciences

Required Skills:

- Willingness to learn and apply research techniques
- Openness and motivation to work in a corrections environment (there will always be a Federal staff escort)
- Appreciation for working with all members of the research efforts: inmate subjects, Bureau of Prison staff, epidemiologists, clinicians
- Flexibility and energy to help implement the study protocol, adapt it as necessary
- Interest in potentially learning skills such as spirometry (breathing tests) for the study

Interview: Required

Location: Federal Medical Center, Devens
University of Massachusetts Medical School

TITLE: Integrating Online Patient Education into the Patient Centered Medical Home

Stacy Potts, MD

978-355-6321

Stacy.Potts@umassmemorial.org

Barre Family Health Center

Department of Family Medicine and Community Health

151 Worcester Road

Barre, MA 01531

Description: The Barre Family Health Center, a residency training site in family medicine is in the process of receiving certification from NCQA as a Patient Centered Medical Home. While our practice already meets many of the criteria for that designation, there is an opportunity for improvement in facilitating our patient's access to the tools which will enable them to participate in the management of their health. This would be an interesting opportunity to partner with the patient to collaboratively address their health needs. Specifically, our vision includes modifying our waiting area to make electronic access to health related information available. While the electronic infrastructure for both hard wired and wireless access already exists, we need to develop a system for access to information and design a method for assuring that patients are led to only credible evidence based health information. This would include patient kiosks for internet access in our waiting room and the availability of the same patient information access in the exam rooms while patients are waiting to be seen. This access could be used to help direct patients to relevant self driven education regarding their health and chronic medical conditions. This project would give the student opportunity to develop useful curricula for patients with diverse needs, from wellness and child development to chronic disease management. Physicians would then be able to direct individual patients to the resources and further discuss patients concerns following their self driven review of the materials.

The student may also choose to take the initiative to run focus groups with patients, or do questionnaires to assess patient and providers needs to best drive this initiative. The student will work with faculty of the Barre Health Center and will have regularly scheduled meetings with the faculty to help monitor the progress and collaborate on the initiative.

Student's Role: Collect and review patient education materials, develop patient education curricula for common chronic medical conditions, work with patients through focus groups and surveys as necessary.

Required Skills: Computer facility, Internet knowledge, Critical appraisal

Interview: Required

Location: Barre Family Health Center at least part time

30. Public Health / Social

**TITLE: Disclosure About a Prior Workers' Compensation Claim –
What Should I Tell my New Eemployer?**

Glenn Pransky, MD

UMMS

**Department of Family Medicine and Community Health
(508) 497-0234**

Co-PI: Amanda Young, PhD Scientist

Liberty Mutual Research Institute

71 Frankland Road

Hopkinton MA 01748

Description: Patients often have significant concerns about their employer finding out about their medical problems, current or past. Title I of the Americans with Disabilities Act of 1990 (ADA) makes it unlawful for an employer to discriminate against a qualified applicant or employee with a disability and prohibits employers from asking questions that are likely to reveal the existence of a disability before making a job offer. However, research has shown that discrimination against people with disabilities does occur and, understandably, people can be wary about disclosing details regarding their health and medical history. While the ADA does not require that an applicant inform an employer about the need for an accommodation, applicants can struggle with whether or not they should tell their prospective employers about past injuries, any ongoing limitations that they might have, and whether they might need accommodations to be able to perform the essential functions of the job. Currently, there is little empirical evidence to help patients decide when and if they should talk about such issues. There has been very little systematic research that attempts to find out what are the consequences, both positive and negative, of informing an employer about medical conditions that might affect job performance. The current project seeks to address this gap.

The project involves the analysis of data collected during interviews of injured workers who were unable to return to their pre-injury employer, because of their injury, and took jobs with a new employer. All participants were off work for a minimum of 6 months, received vocational rehabilitation as part of a state approved return-to-work plan, and subsequently found a new job. The data to be analyzed comes from interviews of 68 people who told their new employer about their prior work-related injury, and 40 in a similar situation who did not discuss it. We are seeking to content analyze discussions centered around why the participant chose to disclose and whether or not they are glad that they did, and why others chose not to tell their employers about their workers' compensation history.

Student's Role: The student will assist with developing an interview abstraction form, testing and implementing it, and with write up of the study data. This involves listening to audio recordings, transcription of relevant data, data coding and content analysis. The student researcher will have the opportunity for co-authorship of any papers reporting study findings.

Required Skills: Interest in disability, ideally some experience in qualitative study design and data analysis.

Interview: Required

31. Public Health / Social

TITLE: A Web-Based Health Resource Site for Health Professionals for their Underserved Patients

Hugh Silk, MD

508-334-8846

Hugh.silk@umassmemorial.org

UMMHC

Hahnemann Family Health Center

Department: Family Medicine and Community Health

279 Lincoln Street

Worcester, MA 01605

Description: This project will involve a brief survey of the Worcester District Medical Society's (WDMS) membership on what resources would be helpful for caring for underserved patients and then enhancing an existing web-based resource with this information. This is a project that will be a tremendous help to local health providers, service organizations and patients and citizens of Worcester.

The project will be conducted accordingly:

Designing a short 10 question survey to be sent electronically, via the administrative staff at WDMS, to the membership to inquire about what resources physicians would most like to have in their office to help patients who are underserved either because they lack full coverage health insurance, lose their health insurance, or have insurance but need information about other health-related resources in order to be healthy (e.g. Worcester-based free clinics, dental care, eye care, food security, etc.). Results of this survey will be used to improve the data base of resources that the WDMS currently has but that has not been updated in years.

Local resources will be contacted to update contact information, find about the extent of their services, how one accesses the services, and to be sure that the organization still exists.

Resources will include direct service agencies like free clinics or pharmaceutical sites for free meds as well as agencies that collect health-related information like 211.org and the Worcester Community Action Council. Certain agencies will need to be visited to better understand what they offer and how they work so that the information is very clear for providers that know very little about such agencies. The web site link will then need to be mass distributed and promoted via email and paper mail to WDMS members, sending the link to other health agencies including UMassMemorial, free clinics, social service agencies, AHEC, etc. We would also like to create a stand alone laminated card that can be sent out with promotional materials that will highlight the electronic link as well as contain key agency/resource information for easy access right on the card.

Finally, a follow-up survey, at the end of the summer, will be conducted of a few local physicians to get their feedback on this new/updated resource.

Student's Role: The student will participate in all aspects of the project as described above (i.e., designing and distributing 10-question survey, contacting and visiting locally-identified resources like direct service agencies to update information, updating the WDMS's database of local resources, organizing all materials for easy access by medical staff, distributing new

resource information to WDMS members, and conducting the follow-up survey to obtain feedback from local providers on this new resource),

Required Skills: Minimal computer skills, but an eagerness and motivation to help search out needed information on healthcare and related resources to assist local physicians in better meeting the needs of their underserved populations. A great opportunity for a medical student with good communication and fact-finding skills that will fill an unmet need in the healthcare community.

Interview: Required

Location: UMMS library
WDMS office in downtown Worcester
MassAHEC and Office of Community Programs offices as needed
Visits to various Worcester-based organizations
Hahnemann Family Health Center or Family Medicine departmental space for phone/computer access

TITLE: Central Massachusetts Communities of Care Evaluation

Melodie Wenz-Gross, PhD

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melodie.wenzgross@umassmed.edu

Communities of Care

Department: Psychiatry

16 Shaffner Street

Worcester, MA 01605

Description: Central Massachusetts Communities of Care (CMCC) is a 6-year SAMHSA funded system of care cooperative agreement with the Executive Office of Health and Human Services. Now in its 4th year, CMCC provides services to youth with severe emotional disturbances (SED) who are at risk of juvenile justice involvement with the goal of decreasing or preventing JJ involvement, as well as CHINS and detention diversion. Services are provided within a public health approach and include preventive interventions, information and referrals, as well as intensive wraparound care within CMCC's Youth and Family Center. An evaluation of these services is part of this cooperative agreement. As such, CMCC is part of a National Outcomes Study, and has a large, ongoing longitudinal database of youth and their caregivers served by CMCC. The study involves extensive interviews at baseline and every 6 months for up to 3 years (whether or not youth remain in services). Data includes services received, satisfaction with services, and multiple youth and family outcomes. Currently we have over 200 families in the sample with data collected out to the 24 months on a smaller subset. The study so far has shown significant improvements in youth symptoms and functioning over time, as well as decreased delinquency and high satisfaction. However, there is a need to begin to link specific service usage and dose (type of services received, number of hours, and length of service) with outcomes to examine what types of services effect different outcomes.

Student's Role: We are seeking an intern who would be interested in mining some of the extensive data collected on the types of services youth and families have received, beginning and end dates of services, and exploring the relation between type and dose of services to outcomes. The intern would also assist with literature reviews as well as writing reports and possible publication of results.

Required Skills: Knowledge of SPSS and Excel. Previous research experience preferred.

Interview: Required

Location: Communities of Care, 16 Shaffner Street, Worcester, MA 01605