UNIVERSITY OF MASSACHUSETTS
MEDICAL SCHOOL
OFFICE OF MEDICAL EDUCATION

MEDICAL STUDENT
SUMMER RESEARCH FELLOWSHIPS

CATALOGUE
2006

Directors:
Michael Godkin, PhD
Family and Community Medicine

Anthony Poteete, PhD
Molecular Genetics and Microbiology

Program Coordinator:
Christine Locke
Office of Medical Education

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March 2006

1. Cancer

TITLE: **Regulation of p53**

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UMass Medical School
Department of Medicine
LRB
Room 328
364 Plantation Street
Worcester, MA 01655

Project Description: P53 is a tumor suppressor that limits the growth of cells. We are studying how papillomaviruses abrogate p53 functions and allow cells to progress toward malignancy.

Student's Role: Perform experiments

Required Skills: None. We will train

Interview: Required

Location: **LRB 3**

2. Cancer

TITLE: **Mechanisms of Neurotensin-induced Prostate Cancer Cell Growth as Related to Fatty Acids and oxidized Fatty Acids**

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University of Massachusetts Medical School
Department of Physiology
Room S4-224 and S4-225
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Project Description: Neurotensin (NT) is an endocrine peptide that stimulates cancer cell growth. Receptors for NT are upregulated in human cancers. Since NT is released into the circulation during the ingestion of high fat meals, it is implicated in the epidemiological association of high fat intake and cancer incidence around the world.

We have shown that NT directly stimulates growth of cancer cell-lines that express NT receptors by effects involving liberation of EGF and arachidonic acid, and the activation of various kinase signaling pathways known to exert transcriptional control. We hypothesize that NT may also exert indirect effects on cancer growth by targeting mast cells and the endothelium to enhance the influx of mitogenic fatty acids into tumor sites. By this means, NT could also enhance the growth of cancers that did not express NT receptors.

To address this hypothesis, we are studying prostate cancer cell growth responses to fatty acids such as arachidonic acid that are known to be present in blood. We are also examining the ability of cancer cells to take-up and metabolize these fatty acids to mitogenic products.
The student will learn tissue culture technique, western blotting, high pressure liquid chromatography and a number of cell-based assays.

Specific Requirements: Although animal studies are ongoing, this project concerns itself only with cultured human cancer cells. Institutional review has been performed with approval.

Interview: Required

Location: **S4-224 and S4-225**

3. Cardiovascular

TITLE: Worcester Heart Failure Project

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Project Description: This is an ongoing NIH funded research project that is designed to examine changes over time in the magnitude, hospital and post-discharge outcomes, and management practices in hospitalized and outpatient populations of greater Worcester residents with independently confirmed heart failure. As part of this population-bases study of greater Worcester residents, we will also examine changes over time in out-of-hospital deaths attributed to heart failure. This clinical/epidemiological research project will examine these and additional study related endpoints over the 2 study years of 1995 and 2000.

Student's Role: The student will assist in the review of death certificates for greater Worcester residents dying from heart failure as an immediate, underlying, or contributory cause of death between the 2 study years of 1995 and 2000.

Required Skills: No special skills are required

Interview: Required

Location: **The student will work in the 3rd floor of Cardiology and on the 3rd floor of Biotech IV. The student will travel to Worcester City Hall and the 25 surrounding towns to assist in the review of the death certificates of greater Worcester residents dying from possible heart failure during selected study years.**

4. Cardiovascular

TITLE: **"Glucose-Insulin-Potassium (GIK) Immediate Myocardial Metabolic Enhancement during Initial Assessment and Treatment in Emergency Care", known as the IMMEDIATE Trial**

Robert Goldberg, PhD, MPH
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UMMC
Department of Cardiology
University Campus
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Project Description: This project proposes to test the use of GIK in a randomized controlled trial for prehospital Emergency Medical Services (EMS) use. Our institution is part of this multicentered trial being sponsored by the NIH and overseen by the Tufts-New England Medical Center. There has been substantial evidence that has shown that metabolic support can prolong the time window until the occurrence of irreversible necrosis. The IMMEDIATE Trial has been designed to deliver metabolic support to the ischemic myocardium in the setting of a threatened or established acute myocardial infarction (AMI) in a manner based on what the experimental evidence would suggest is optimal for salvage. Therefore, our study intends to enroll patients who present in the **prehospital** setting with symptoms highly suggestive of AMI or unstable angina pectoris. Starting the infusion of GIK in the prehospital setting will allow for the earliest possible administration and the greatest potential benefit. Study drug will be administer for 12 hours, and will follow the patient to any specialized care areas required for treatment of acute MI. Verbal, as well as written informed consent will be obtained. Data abstraction will consist of chart review and patient follow-up contact will last for up to one year.

Student's Role:	Patient enrollment consisting of obtaining informed consent, study protocol monitoring for consistency, data abstraction by chart review, web based data entry, and patient follow-up phone calls.
Required Skills:	Good interpersonal skills, basic medical knowledge of Acute Coronary Syndrome / MI
Interview:	Required
Location:	**University Campus, Memorial Campus and oversight at St. Vincent's Hospital**

5. Cardiovascular

TITLE: **Diet and Exercise Counseling Among Patients with Coronary Heart Disease**

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Division of Cardiovascular Medicine
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Project Description: Current information on counseling interventions for diet and physical activity (PA) in cardiac patients is limited for several reasons. 1.) The majority of studies examines early outpatient cardiac rehabilitation (CR) programs and don't provide information on counseling for the estimated 80% of AMI patients who do not receive CR. 2.) Data on rates of referral to any type of counseling including CR for patients with unstable angina (UA) or other forms of coronary heart disease (CHD) remain scarce. 3.) Patterns of adherence to dietary modification and PA associated with different counseling methodologies have not been described.

The observational component of the study includes the use surveys and chart review to examine receipt of counseling (nutritional, and PA) in 225 patients with documented CHD (AMI (n=75), UA (n=75) and patients found to have CHD at elective catheterization (n=75)) during hospitalization and at 6-month follow-up. The primary outcome is receipt of dietary or PA counseling, whether as part of CR (inpatient and outpatient) or in individual counseling interventions. Factors associated with adherence to a cardiac healthy diet and regular PA will be examined.

A second part of the study includes assessment of a telephone counseling program to deliver nutritional and PA information to a subset of the subjects. The telephone counseling intervention is adapted from a successful model used by Dr. I. Ockene for improvement in CHD risk factors. The data from this feasibility study and the observational component will be used as pilot data to obtain funding to conduct a randomized controlled trial testing the telephone counseling intervention. The study objectives are to provide data on a variety of counseling interventions available to CHD patients and to identify innovative methods to improve receipt of and adherence to counseling for lifestyle modification.

Students' Role and Required Skills:	The student will assist with subject recruitment including interviews, data management and analysis
Interview:	Required
Location:	**Research is being conducted at the Medical Center – University Campus**

6. Cardiovascular

TITLE: Prospective Echocardiographic Study of Patients with Congenitally Bicuspid Aortic Valves BAV

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Project Description: We have enrolled ca. 100 patients with BAV, to study the progression of aortic dilation and valve dysfunction over 5 years. Most of the patients have already undergone the second echo. Clinical, demographic and family history information are being gathered. Possible side project in collaboration with BWH is to screen family members for familial BAV.

Student's Role:	To interview patients and (eventually) obtain consent from patients, administer the intake and follow up questionnaires and review/measure echocardiograms for entering into the data base.
Required Skills:	UMMS 1 or 2
Interview:	Required
Location:	**University Campus**

7. Cell Biology

TITLE: *In vitro* Modification of Calcium Apatite Mineral Patterns by Osteoclasts

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Departments of Orthopedics and Cell Biology
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Description: Poly (2-hydroxethyl methacrylate), or pHEMA, is a synthetic hydrogel polymer widely widely used for contact lens, drug delivery and soft tissue engineering applications. Its application in musculoskeletal tissue e engineering has been limited by the lack of an effective technology to integrate osteoconductive biominerals with the hydrogel scaffold. Using a novel mineralization method method we recently developed, we are able to integrate hydroxyapatite (HA), the main mineral component of natural bone, with pHEMA hydrogel with unprecedented mineral-gel interfacial adhesion strength (Fig. A). In addition, we were able to control of both the pattern and the degree of mineralization (Fig. B) as well as the size (micrometer vs. nanometer scale) and preferential alignment of the HA crystals integrated with the polymer scaffold (Fig. C).

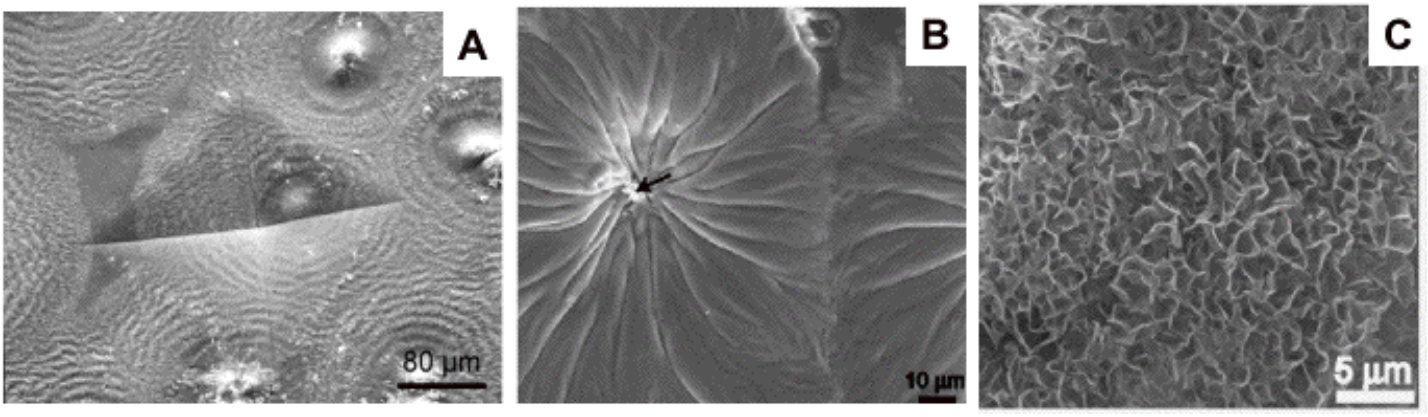

Figure. High-affinity integration of HA with hydrogel scaffolds can be achieved using a urea-mediated mineralization. (A) Vickers indentation test with a 15 N load performed over t over the surface of the composite did not lead to delamination of the mineral layer, suggesting excellent mineral-gel interfacial adhesion strength. Both the extent (B) and the crystallinity (C) of the HA mineralization can be fine-tuned.

To utilize these composites for musculoskeletal tissue engeering applications, interactions of osteoblastic and osteoclastic cells with these mineral surfaces need to be investigated. We are particularly interested in understanding how the size, crystallinity, preferential alignment as well as the adhesion strength of the mineral layer affect the resoprtion rate and remodelling patterns by osteoclasts in culture.

Student's Role:	Using a combination of cell culture and optical/scanning electron microscopy to investigate how osteoclasts modify nanocrystalline bone mineral patterns formed on synthetic hydrogels.
Required Skills:	Basic cell culture techniques or experience with SEM
Interview:	Required
Location:	**S4-859A**

8. Diabetes/Endocrinology

Title: A Pilot Study of the Safety and Effectiveness of a Telephone-based Weight Loss Program in the Treatment of Type 2 Diabetes

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UMass Fitchburg Family Medicine Residency
275 Nichols Road
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Project Description: The primary objective of the study is to test tools and procedures that will support the primary care physician (PCP) to tailor medical care in the face of effective weight reduction and to demonstrate that the HMR at Home program can be safely delivered to diabetic subjects when properly coordinated with their PCP.

The secondary objective is to document the clinical impact of weight loss achieved through a telephone-based weight loss program on measures of diabetic and cardiovascular risk.

Obese subjects with poorly controlled diabetes will be recruited to participate in the HMR at Home weight management program for 12 weeks. Changes in weight, A1c, and cardiovascular risk factors will be evaluated.

Diabetes is a complex medical condition. Concomitant complications (directly or indirectly caused by consistently elevated glucose levels) include the risk of microvascular and macrovascular disease. In fact, people with type 2 diabetes are two to four times more likely to develop coronary artery disease than people who do not have it.[3] By contributing to cardiovascular disease, obesity makes a significant contribution to the morbidity of type 2 diabetes. It is associated with hypertension, dislipidemia, atherosclerosis, and premature death from cardiovascular disease.

Weight loss can lead to an improvement of blood glucose control, an accompanying decrease in blood pressure, an increase in insulin sensitivity, and an improvement in blood lipid panels. A loss of 5-10% of initial body weight can result in statistically significant benefits, with clinically significant improvements in A1C achieved at $\geq$ 10% reduction in body weight. This is comparable to the improvement in glycemic control achieved with the addition of a second oral diabetic agent.[7]

Diet, weight loss, and exercise, along with tight control of blood sugar are becoming the cornerstone of the treatment of type 2 diabetes. Not only do these lifestyle changes lower blood glucose levels, they also reduce many of the frequently coexisting risk factors for cardiovascular disease.[8] Lifestyle changes have such a significant impact on blood glucose that, by themselves, they have been shown to be more effective than treatment with a single oral antihyperglycemic agent.[9]

The HMR at Home program for weight loss is ideally suited for weight-loss treatment in patients with diabetes. Along with a moderate calorie-deficit (Healthy

Solutions®) diet, the program offers telephone-based behavioral modification classes designed to teach people how to increase their physical activity, and make long-term healthy lifestyle changes. According to HMR data, average weight loss for patients in the HMR at Home program, is 7.54% of initial body weight (16.2 lbs.) in 6 weeks. (Patients completing 12 weeks of weight loss lost 23.8lbs, 10.97% of initial body weight.[10])

The resulting improvements in diabetes management are significant. Patients with diabetes, using the Healthy Solutions diet plan for 12 weeks, had an average reduction in A1C of 1.3%.[11]

In another recent report, HMR patients who started with a pre-treatment fasting blood glucose ≥100, lost weight using the VLCD/LCD or Healthy Solutions diet and participated in the HMR weight maintenance program were followed at 3-years. At follow-up, these patients were maintaining an average weight loss of 38 lbs or 15% of initial body weight. Cardiovascular risks had decreased substantially, and only 3.4% (5 of 150) required oral diabetes medications.[12]

The data is clear: significant weight loss and development of healthy lifestyle habits can have a profoundly positive effect on the management of diabetes mellitus in the overweight and obese population.

Student's Role: The student research fellow does not require prior research experience but should complete the UMass Human Subjects Research Training prior to participation. The fellow will participate in activities related to the study which will include:

1. researching and updating a bibliography of related studies.
2. participation in data collection through active communication with all practice sites participating in the program.
3. explore problems in data collection and transmission to the study center.
4. visit participating sites and .
5. follow up on adverse event reports.

Interview: Required

Location: **The primary center for research activity will be at the UMass Fitchburg FamilyMedicine Residency. Participating practice sites will be UMass affiliated primary care practices located in and around Worcester, MA.**

9. Diabetes/Endocrinology

TITLE: Improving the Care of Diabetic Patients

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UMMC
Family Medicine and Community Health
275 Nichols Road
Fitchburg MA

Project Description: CHC Family Health Center, a federally approved Community Health Center and site of the UMass-Fitchburg Family Medicine Residency, has made a commitment to significantly improve the care of the diabetic patients within the practice. We will be instituting the HRSA CARE model of chronic disease management, through PDSA (Plan-Do-Study-Act) cycles which result in systematic changes in the way we approach the chronic management of diabetes.

Students' Role: The student involved in this project will participate in weekly team meetings to plan and implement PDSA cycles for care improvement, then implement practice improvements including development of patient education materials or flow sheets for efficient care, case management to assist with individual patient concerns, development of group visits, and data gathering to assess efficacy of interventions. Additional projects are encouraged according to the student's interest.

Required Skills: Good interpersonal skills and an interest in learning more about Primary Care and practice based improvement.

Interview: Required, phone interview acceptable

Location: **CHC Family Health Center**
275 Nichols Road
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10. Genetics

TITLE: Molecular Mechanism of Gene Amplification

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Department of Molecular Genetics and Microbiology
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Project Description: The mechanism by which genes in the *Escherichia coli* chromosome undergo amplification in response to selection for increased expression will be examined. A strain bearing a tandem duplication of a defective *lac* operon has been constructed and found to undergo amplification at extremely high frequency in response to starvation conditions in which lactose is the sole available carbon source. The specific aims of the research will be to answer two key questions regarding this phenomenon: (1) What are the genetic requirements for amplification? (2) How does variation in the structure of the amplified unit (amplicon) affect the efficiency of amplification?

Methods and Procedures:

(1) Three general kinds of functions--genes involved in homologous recombination, replication, and stress responses--are hypothesized to be involved and/or required in amplification. DNA repair functions other than recombinational repair functions are hypothesized not to be involved. These hypotheses will be tested by constructing variants of the *lac* mutant duplication strain bearing knockout mutations of the genes in question, and measuring their amplification rates.

(2) The question of amplicon structure will be addressed by varying the length of the tandem repeat unit in the duplication strain, as well as the presence and size of unique DNA sequences between the two copies of the *lac* operon in the duplication strain.

Significance:

Gene amplification is an important, universal genetic mechanism. It is known to play a significant role in three life processes of particular interest: (1) In the development of many animals, gene amplification is employed transiently to supply the products of particular genes at very high levels when needed. (2) Overexpression through gene amplification is one of the processes by which proto-oncogenes become oncogenes in tumorigenesis. (3) Amplification of genes conferring weak resistance to chemotherapeutic agents is a well-known mechanism of acquired drug resistance, both in infectious diseases and in cancer. The *E. coli* system which is the subject of this proposal has features—a simple selection, a very high frequency of amplification, and unmatched genetic manipulability--which make it ideal for studying gene amplification.

Student's Role: Working with the PI on all aspects of the research

Required Skills: Keeping good notes

Interview: Required

Location: **UMMS, Room S6-110**

11. Immunology

TITLE: Asthma - Initiating a Planned Care Model of Asthma Care at HFHC

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Project Description: In the U.S., rates of asthma deaths, hospitalizations, and emergency department visits have been increasing for more than two decades, especially among African Americans and children. There are 14 - 15 million people in the U.S. with asthma, 4.8 million of them are children. The average age-adjusted asthma death rate for Blacks increased 71% between 1979-81 and 1997-99 (a 41% increase for Caucasians) and the death rate was almost three times that of Caucasians. Similarly, between 1992 and 1998, rates of emergency department visits for asthma increased, with the greatest increase in children ages 10 - 17. Children under 5 accounted for the highest rates of emergency department visits. Hospitalization rates also rose during this time frame with a 48% increase in hospitalizations for children under 5. In 1997-99, hospitalization rates were more than three times higher for African Americans than for whites. Among persons with asthma in the year 2000, there were 100 million days of restricted activity, 470,000 hospitalizations and 5,000 deaths.

The Hahnemann Family Health Center, under the leadership of Dr. Ron Adler, wants to expand their planned care model approach for chronic disease management to asthma care. HFHC will be using the Health Disparities Collaborative - Asthma Changing Practice Changing Lives manual as an implementation guide along with their experience in diabetes care. The project will focus on the areas of decision support, clinical information systems, delivery system design and self-management.

Student's Role: The student will co-lead the change process with the PI and the Family Medicine Department QI Project Manager. The student will be responsible for establishing a group visit model and practice structure for asthma patients. This will include supporting the implementation of embedded evidence-based guidelines within the practice, identifying asthma patients, establishing systems to support on-going monitoring and outreach to asthma patients, developing a system to generate reminders and care-planning tools for individual patients as well as feedback to the patient's care team and practice leaders and the training of providers and staff on how to help patients with self-management goals.

Required Skills: Strong interpersonal skills, ability to work independently, intermediate Excel computer skills, and an interest in improving asthma care delivery to patients of all ages.

Interview: Required
Location: **Hahnemann Family Health Center**

12. Immuology

TITLE: Immunopathogenesis of Hemorrhagic Fever Renal Syndrome

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Department: Center for Infectious Disease and Vaccine Research
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Worcester, MA 01655

Project Description: Hantaviruses are a family of rodent-borne RNA viruses that can produce two distinct clinical syndromes when transmitted to humans: i) Hemorrhagic Fever Renal Syndrome (HFRS), and ii) Hantavirus Cardiopulmonary Syndrome (HCPS). Puumula virus is a hantavirus that is endemic in Northern Europe and the Balkans and produces HFRS. We are conducting a prospective study of Puumula virus infection and disease in collaboration with colleagues in Finland. Our hypothesis is that HFRS is produced by dysregulated anti-viral T-cell responses to Puumula virus infection, particularly in the kidney.

The summer project will involve analyzing T-cell specific gene expression patterns in serial urine cell pellets collected from individuals enrolled in the prospective study of Puumula virus infection and HFRS. RNA will be extracted from the cell pellets and quantitative RT-PCR used to measure selected T-cell gene expression levels.

Required Skills: The project involves laboratory work with study subject samples. Desirable skills are any previous experience with PCR or RT-PCR. Required skills are pipetting ability.

Interview: Required, phone interview acceptable

Location: **Work will be performed in my laboratory**
Room S6-746
UMMS

13. Immunology

TITLE: Development of Rabies Therapeutic Monoclonal Antibody

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Massachusetts Biologic Laboratory
University of Massachusetts Medical School
305 South St. Room 808
Jamaica Plain, MA 02130

Project Description: A broadly neutralizing fully human monoclonal antibody against the Rabies G surface glycoprotein has been identified. The HuMAb has been shown protect animals from Rabies in a post exposure therapy model so was chosen for further development. This antibody is planned for clinical trials for early 2007. The development process for clinical testing requires that pilot batches be prepared for preclinical, toxicology and stability testing. This requires production of gram amounts of antibody under controlled conditions. The project will involve cell culture up 50L scale, gram scale chromatography and final formulation of the Rabies HuMAb for subsequent preclinical testing. The student will be responsible for participation in production, testing and record keeping for pilot lots. In addition to pilot scale MAb production, the rotation will also provide exposure to the HuMAb discovery and development process, quality control and regulatory aspects of biologic drug development.

Student's Role: Participate in culture and purification of pilot batches of a Rabies Monoclonal antibody

Required Skills: Cell culture experience, electrophoresis, chromatography experience helpful

Interview: Phone interview acceptable

Location: **MBL Campus Jamaica Plain, MA**

14. Immunology

TITLE: Survival Signaling in B Cell Lymphomas

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Department of Molecular Genetics and Microbiology
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Project Description: Normal B cells require the growth and survival factor BLyS (B lymphocyte stimulator) to resist death by spontaneous apoptosis. We have identified the signaling pathways that deliver the protective signal in normal B cells. We would like to determine if transformed B cells are also dependent on BLyS and if the same survival signal pathways are used. Inhibition of these signal cascades may provide a new therapeutic approach for the treatment of B cell tumors.

Student's Role: The student would test the utility of siRNA constructs for inhibiting BLyS dependent survival pathways in normal murine B cells.

Interview: Required

Location: **Department of Molecular Genetics and Microbiology**
Room S6-245

15. Medical Education

TITLE: Interactive Neurology Teaching Case Archive

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Department of Neurology
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Project Description: The Mind, Brain, and Behavior II course initiated a 2-hour interactive teaching session in 2005, modeled after the Biology of Disease exercise. An innovative feature of this session was the incorporation of video clips from a patient interview and examination. Students were polled with successive questions after each clip to help them think about neurological localization, differential diagnosis, and approaches to further testing and treatment. Student responses were available immediately by laptop polling, and the discussion was then tailored depending on the responses. It was clear during the session that students were engaged in the learning process and also related positively to seeing video of an actual patient.

A library of interesting cases consisting of patient video clips with associated teaching questions would offer a unique neurology learning resource. The Neurology department has a large collection of interesting patient interviews and neurological signs on videotape, and a computer with digital video editing capabilities is available in Dr. Hayward's lab.

The objective of this project is for a student to work creatively with Dr. Hayward and Dr. David Chad to edit these neurology videos into brief DVD teaching clips paired with thought-provoking questions. This could be an ideal project for a student with interest in neuroscience or neurology.

Student's Role: The student will be trained by Dr. Hayward to perform basic editing and will then be able to work directly with additional Neurology faculty members to develop the cases and questions for each module. The student will benefit from this direct interaction with faculty.

Required Skills: Interest in neurological cases and active and creative participation in the design of modules. General familiarity with computer use, but experience with digital video editing is not required.

Interview: Required

Location: **S5-714**

16. Medical Education

TITLE: Development of Digital Radiology Teaching File

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Department of Radiology
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Project Description: Radiologic Images are an essential part of medical education and practice. The development of a digital radiologic image library in a dedicated computer environment will provide easy and rapid access to radiology teaching files. We will create a digital radiology teaching file from an existing digital teaching file within the Department of Radiology. We will store these digital teaching files on a dedicated computer workstation for the medical student. Our goal is to develop a digital radiology teaching file on a dedicated computer workstation for the medical student and resident, allowing easy and rapid access to the radiology teaching files. It will also facilitate easy update of daily interesting cases from a rapidly growing PACS system. Medical students would become acquainted with radiologic normal anatomy, variation, and diseases through various imaging modalities (Plain X-ray, Ultrasound, Computed Tomography, Magnetic Resonance Imaging, Angiography, and Nuclear Medicine) stored in digital radiologic library systems. The Medical Student would understand radiologic findings of various diseases on different imaging modalities through manipulation of a dedicated computer workstation, which they would have access to the radiology library within the department. Depending on future funding, the digital library system can be stored either on a UMass Medical School Library computer or on the World Wide Web.

Student's Role: Radiology Image Collection, Classification, and Review of Image with Faculty

Required Skills: Basic Computer Skills.

Interview: Required

Location: **Radiology Reading Room/ Dr Young Kim's Office**

17. Medical Education

TITLE: Integration of Second Year Course Websites

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Project Description: Lyn Riza and Andrea Barrett (IS Dept), Susan Pasquale (OME) and I (MedMicro Course Coordinator) have developed a website for the Medical Microbiology course. The site contains course information, lecture notes, practice exams, summary tables and a few links to outside sites. The lecture notes often include links to slides that are shown in class, so that lectures can be reviewed in their entirety by computer. In addition, the website contains two practice exams that can be taken by students on the computer.

A medical student is currently adding summary tables to one of the Med Micro blocks and linking Medical Microbiology material to the Pharmacology course website, in particular to the section on Antimicrobial Agents. I am now seeking a medical student to work this coming summer to link the practice exam questions to the appropriate places in the lecture material. No particular background in microbiology, pharmacology, or programming is required. The student would work closely with IS and me, and would have access to all of the hardware and software required.

The benefits to the course are immense: the links placed by the student would facilitate efficient review of course material. The website is evolving to promote the formation of intellectual connections between different blocks of the same course and between different courses entirely. The student should also benefit by learning state-of-the-art web programming, and by reviewing and previewing first and second year course material. I anticipate that student input into design will be significant. I believe this is a great way to solidify the vast amount of material that med students are asked to incorporate. Furthermore, it is possible that a role for the student in the evolution of the website may extend beyond the summer.

Student's Role: Student(s) will work closely with Lyn Riza to acquire expertise in web programming and generate links within and between websites. John Leong (Coordinator of Medical Microbiology) and John McCullough (Coordinator of Pharmacology) will provide support for the material covered. The student(s) will also be heavily relied upon to make the site user friendly and an efficient tool for learning course material. Ideally, if the links between to MedMicro and Pharm websites can be finished in time, the student would help identify useful links between the websites of different courses.

Required Skills: None required. Some computing background useful.

Interview: Required
Location: **IS Department**

18. Medical Education

Title: Identification of the Unique Features of a Caring Attitude

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Family Medicine & Community Health
Community Faculty Development Center (CFDC)
Benedict Building
3rd floor, Suite A3-182
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Project Description: The aim of this project is to define what patients feel is a "caring attitude". To assess this, 3 scenarios were chosen: a). Disclosure of a Medical Error; b). Delivering Bad News; and c). Discussing Palliative Care. The overall methodology for the study is as follows: physicians are videotaped interacting with a standardized patient in each of the 3 scenarios and subsequently, these video-taped interactions are viewed by lay raters from the community. The lay raters are asked to provide their feedback about the tapes, specifically in regards to the physicians portraying a "caring" or "uncaring" attitude and this is assessed by filling out rating scales, providing "think-aloud" commentary and/or participating in focus groups.

Student's Role: The main focus of the student's role in this project is devoted to data gathering. This will include recruitment and monitoring/facilitating lay raters in focus group discussions. The student will also participate in some of the data entry and data analysis components of the project and help to interpret/write up the results.

Required Skills: Basic computer skills, knowledge of Microsoft Office (Excel, Word), minimal SPSS knowledge or an ability to learn some basic data analysis skills, organization skills and professional attitude.

Interview: Required

Location: **CFDC**
Benedict Building
3rd floor, Suite A3-182

19. Orthopedics

TITLE: Orthopedics In Prison: Overuse Injuries

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UMASS Medical School
Commonwealth Medicine
One Administrator Road
Bridgewater, MA 01518

Project Description: The nation's incarcerated population has ballooned in recent years, and currently comprises over two million men and women. The commonwealth of Massachusetts houses over 10 thousand inmates in its prisons today. Many of these inmates are motivated to improve their physical health, and as a result, they engage in weight training. However, with limited access to trainers, and with advancing age, these activities incur increasing dangers. We are interested in describing the nature of orthopedic complaints in a medium security prison in Bridgewater, using chart review and potentially patient surveys.

Student's Role: To assist in design and implementation. To engage in chart review to retrieve and enter data. To assist in analyzing data

Required Skills: Fortitude and tolerance to work in a correctional settting

Interview: Required

Location: **Bridgewater, MA**

20. Pediatrics

TITLE: Bowel obstruction in Newborn Infants – Relationship to Cystic Fibrosis

Brian P. O'Sullivan, MD and Anne Marie Comeau, PhD
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OsullivB@ummhc.org

University of Massachusetts Medical School
Department of Pediatrics
Room S5-860
55 Lake Avenue, North
Worcester, MA 01655

Project Description: This project was begun by a graduating fourth year student as her senior scholar program. We now need a student (at any level) to perform chart reviews to complete the project.

Purpose: To determine the incidence of Cystic Fibrosis (CF) among newborns with meconium ileus (a form of neonatal bowel obstruction). It has long been believed that upwards of 80% of newborns with meconium ileus have CF; however, recently 65% of newborns who have been reported to the New England Newborn Screening Program (NENSP) as having meconium ileus have screened negative for CF by the state newborn screen.
Objectives: (1) To determine why the apparent discrepancy exists between the expected and observed CF-MI correlation. (2) To confirm that CF newborn screen-negative infants with bowel obstruction have had further testing to confirm or deny a diagnosis of CF. Upon its completion we hope that this project will further aid in our understanding of CF, its clinical manifestations and the effectiveness of the newborn screening program. In addition, it will educate both subspecialists and primary care physicians regarding follow-up of neonates with the diagnoses of bowel obstruction and/or CF.
Methods: This study will involve reviewing the charts of Massachusetts newborns born between 02/1/1999 and 01/25/2005 who were reported to the New England Newborn Screening Program as having meconium ileus or other bowel obstruction (n ~150, 22 charts have been reviewed to date and IRB paperwork has been completed). The chart of each subject will be reviewed for clinical, laboratory, pathologic, and radiologic evidence that supports or refutes the diagnosis of both meconium ileus and CF.

Student's Role:	Review records of infants diagnosed with meconium ileus and enter information into NENSP database.
Required Skills:	We will educate the student regarding cystic fibrosis and gastrointestinal manifestations in the newborn period. The student will also learn about the newborn screening program. Computer skills in data entry are helpful, but the student can be taught these skills.
Interview:	Required
Location:	**New England Newborn Screening Program** **Jamaica Plain, MA and multiple hospital sites**

21. Pharmacology/Toxicology

TITLE: Nitric Oxide and Aging

Joan Mannick, MD
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Joan.mannick@umassmed.edu

UMass Medical School
Department of Medicine
LRB
Room 222
365 Plantation Street
Worcester, MA 01655

Project Description: Nitric oxide is a free radical gas produced by cells that regulates a wide array of biologic processes. However, the effects of nitric oxide on aging are not known.

Therefore we are determining if nitric oxide regulates aging. We are using drosophila as a model system because many of the pathways that regulate aging in mammals also regulate aging in drosophila.

The project involves determining if the life expectancy of drosophila increases after they are treated with compounds that release nitric oxide.

Students' Role:	Separating drosophila into male and female populations, feeding drosophila with nitric oxide donor compounds, determining the number of living and dead flies.
Required Skills:	None
Interview:	Required
Location:	**LRB** **Room 222**

22. Psych/Neuro

TITLE: Depression - Initiating a Planned Care Model of Depression Care

Macario Corpuz, MD and Stephen Earls, MD
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corpuzM@ummhc.org
earlsS@ummhc.or

Barre Family Health Center
Department: Family Medicine and Community Health
151 Worcester Road
Barre, MA 01005
Worcester, MA 01655

Project Description: Depression is one of the most common chronic illnesses in the U.S. with a one year prevalence rate of 5 - 6%. It is estimated that 20% of women and 10% of men will have an episode of major depression at some point in their lives. Depression impairs social functioning more than any other chronic illness, including arthritis, diabetes, CHF, and hypertension. Depression care in the U.S. is even more fragmented than care of other chronic illnesses, creating a major gap between the recommended guidelines for care an actual care. It is estimated that only 19% of people with depression who see their PCP receive appropriate, guideline-based care. The Barre Family Health Center (BFHC), under the leadership of Dr. Corpuz and Dr. Earls, intends to improve the delivery of depression care through the adoption of the planned care model for chronic disease management. BFHC will be using the Health Disparities Collaborative - Depression Changing Practice Changing Lives manual as an implementation guide. The project will focus on the areas of decision support, clinical information systems, delivery system design and self-management.

Student's Role: The student will co-lead the change process with the PI and the Family Medicine Department QI Project Manager. The student will be responsible for leading and supporting the implementation of embedded evidence-based guidelines within the practice, the identification of depressed patients through use of the PHQ9 depression screening tool, the establishment of systems to support on-going monitoring and outreach to depression patients, the development of a system to generate reminders and care-planning tools for individual patients as well as feedback to care team and leaders and the training of providers and staff on how to help patients with self-management goals.

Required Skills: Strong interpersonal skills, ability to work independently, intermediate Excel computer skills, and an interest in improving primary care delivery to patients.

Interview: Required

Location: **Barre Family Health Center**

23. Psych/Neuro

TITLE: **A Qualitative Exploration of the Symptoms of Nicotine Addiction in Adult Smokers**

Joseph R. DiFranza, MD and Robert J. Wellman, PhD
(508) 856-6568 (Dr. DiFranza)
(508) 334-4116 (Dr. Wellman)
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robert.wellman@umassmed.edu

University of Massachusetts Medical School
Department: Family Medicine & Community Health
Benedict Building
55 Lake Avenue, North
Worcester, MA 01655

Project Description: We are developing a survey instrument to assess the degree to which people have lost their autonomy over tobacco (i.e., the degree to which they are addicted). The student will interview adult smokers in depth, either individually or in small focus groups, to gather detailed descriptions of their experience of the symptoms of addiction. Our goal is to create survey items that accurately depict smokers' experiences.

Student's Role:	Recruit subjects; participate in conducting focus groups/ interviews; enter data; participate in data analysis and write-up of any reports
Required Skills:	Interviewing skills necessary; a basic understanding of qualitative research is useful
Interview:	Required
Location:	**Worcester and surrounding communities**

24. Psych/Neuro

TITLE: Visual Attention in School-aged Children

Teresa Mitchell, PhD
(781) 642-0253
teresa.mitchell@umassmed.edu

University of Massachusetts Medical School
Eunice Kennedy Shriver Center
200 Trapelo Road
Waltham, MA 02452

Project Description: We are seeking a student to assist us with conducting two behavioral studies with young children (ages 6 through 10). The first study is designed to investigate attention to small changes in a complex visual scene using a popular "flicker" paradigm. In this paradigm, the subject views a complex scene that flickers back and forth between two versions of the scene, and only one item differs between the two versions. The dependent measure is the time required to identify the change. We will investigate children's ability to detect changes in the center of the pictures as compared to the periphery, as well as their ability to detect color versus location versus size versus deletion changes. This work is motivated by many classical theories and studies in visual attention and the student will have the opportunity to learn about this research. Our second study investigates children's automatic processing of orthography, or the visual form of written words. Children will complete a task in which they see a very briefly presented letterstring which is then masked, followed by two letters; the subject is asked to identify which of the two letters appeared in the initial letterstring. This paradigm taps into the word superiority effect, or the fact that our ability to identify the target letter is greatly enhanced when that letter is embedded in a real word as opposed to a random letterstring. This effect is considered a signature of automaticity in reading. These tasks are programmed and ready to be used. The medical student will assist with subject recruitment, data collection, and data analysis. These studies are part of our larger program of research into the development of visual skills in deaf individuals (see our website, http://users.umassmed.edu/teresa.mitchell/).

Student's Role and Required Skills:	Comfort with young children and their families, attention to detail, knowledge of Excel software, student will collect and analyze behavioral data (e. g. reaction time and accuracy)
Interview:	Required
Location:	**Eunice Kennedy Shriver Center** **200 Trapelo Road** **Waltham, MA, 02452**

25. Public Health

TITLE: **Creation of a Multi-Site, Ambulatory Treatment and Research Network to Facilitate and Evaluate Buprenorphine Maintenance Treatment for Latinos and other Underserved Populations**

Jeffrey Baxter, MD
(508) 450-1524
Jeff.Baxter@umassmed.edu

Department of Family Medicine and Community Health
Benedict Building, 3rd Floor
55 Lake Avenue, North
Worcester, MA 01655

Project Description: Opiate abuse has reached epidemic proportions in the state of Massachusetts. The burden of opiate abuse in Massachusetts appears to be borne disproportionately by the Latino population. Buprenorphine provides a viable alternative to methadone for maintenance therapy for opiate addiction. Initial studies have shown buprenorphine is bringing new patients into treatment, but no published studies have described treatment outcomes specifically for Latinos or underserved populations. Retrospective data from the first two years of treatment in our program suggest outpatient buprenorphine treatment may be less accessible for or less attractive to Latino patients. With this project we propose to establish a database to track characteristics and treatment outcomes for all patients, with a specific focus on Latino patients, to identify factors associated with favorable or unfavorable outcomes. We hope to identify factors associated with attracting and retaining Latino patients in buprenorphine treatment, and use that information to create systems to improve and sustain treatment for Latinos and other underserved populations.

Student's Role: A student involved in the summer of 2006 will step into this project at its beginning stages and will be able to assist with all aspects of the implementation. Key goals for the summer months include preparation and submission of the IRB application, establishing a central intake process for patients interested in buprenorphine treatment, review and refinement of patient data and treatment endpoints that will be tracked, and working with a consultant to create the patient database in Microsoft Access. In addition, we will be developing new PDA-based data collection tools and training providers at the participating sites in how to use them. The student will have the opportunity to work with patients seeking treatment at both the Family Health Center of Worcester and Community Health Link.

Required Skills: Basic facility with computers, Microsoft OS, OVID/Medline, and PDA's. Spanish language skills a plus, but not required.

Interview: Required

Location:

1. **Family Health Center of Worcester, 26 Queen St., Worcester**
2. **Community Health Link, 72 Jaques Ave., Worcester**
3. **UMASS Medical School, Benedict Building**

26. Public Health

TITLE: Club Drugs, Adulterants, Coingestants, and HIV Transmission

Edward W. Boyer MD PhD
Contact Person: Christina McAuliffe, Project Coordinator)
(508 421-1462)
christineaMcAuliffe@umassmed.edu

UMMC
Department of Emergency Medicine
Level A, Lakeside Extension
55 Lake Avenue North
Worcester, MA 01655

Project Description: Drug use in high risk venues is associated with increased risk of HIV transmission in men who have sex with men ("MSM"). The ultimate goal of this research is to explore the relationship between the twin epidemics of substance use and behaviors that may increase the risks of HIV transmission. We intend to estimate the magnitude of drug, adulterant, and coingestant use and their impact on HIV transmission risk behaviors among MSM.

Club drugs are a broad range of substances used in dance clubs, circuit parties, raves, bars, and other venues. Unfortunately, the concept of "club drug use" is neither simple nor well understood. Drug formulations often contain pharmacologically active agents known as "adulterants". These substances, whose presence is unknown to users, that produce undesirable effects. To modulate these effects, MSM often take "coingestants". The use of multiple substances by MSM in high risk environments is common; even individuals who intend to use a single drug such as "ecstasy" may often receive greater than one substance because of adulterants.

Adulterants, drugs, and coingestants affect human physiology and, consequently, sexual behavior and HIV risk. For example, "ecstasy" tablets—especially those adulterated with methamphetamine—produce impotence, preventing MSM from performing insertive anal intercourse. In highly sexualized environments, these men may engage in receptive anal sex, a behavior that increases HIV transmission risk. As a prophylaxis against these effects, Viagra is paradoxically used by some MSM as an HIV prevention measure because it promotes erection, facilitates use of a condom, and allows penetrative anal sex. Viagra also facilitates increased numbers of sexual contacts, longer periods of sexual activity, and intergenerational sex, features that may increase the risk of HIV transmission.

Little is known about the phenomenon of drug, adulterant, and coingestant use. Because adulterants' presence is unknown, surveys cannot examine the self-report of their use. The range of adulterants used by MSM is not, therefore, well understood. Similarly, the range of coingestants used by MSM or reasons for their use is poorly understood. Viagra may exert a bi-directional risk on HIV transmission, but no comprehensive studies have established the outcomes of coingestant use. The ultimate effect of coingestants remains unknown.

Because of the effect of substance use on social behavior and HIV risk, an understanding of drug-related behaviors requires that we know exactly what drugs were used. Unfortunately, club drugs as well as coingestants, particularly Viagra, are commonly adulterated. This field study examines the risk of HIV transmission as a function of drugs used by MSM in high risk environments.

Student's Role:	Identifying venues in which to conduct the study, recruiting study respondents.
Required Skills:	Must be comfortable talking about sex and drug use behavior with men who have sex with men.
Interview:	Required
Location:	**Provincetown, MA**

27. Public Health

TITLE: **Collaboration for Health: An open Access Exercise Program for Community Health Center Patients at the YWCA**

Lucy Candib, MD, Matt Silva, PharmD, Suzanne Cashman, ScD
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Suzanne.cashman@umassmed.edu

UMMC
Family Health Center of Worcester
Department of Family Medicine and Community Health
26 Queen Street
Worcester, MA 01610

Project Description: For almost two years, through a collaborative arrangement between Family Health Center of Worcester (FHCW) and the YWCA, patients have had the option of engaging in physical activity at the Y. For patients who have used the Y, we have been tracking their visits as well as their adherence to medications and selected health status indicators. We are particularly interested in understanding how physical exercise affects patient conditions such as diabetes and depression. In addition to an extensive quantitative dataset, we will be generating qualitative data. Our aim in developing this qualitative aspect of the project will be to learn from the patients themselves about a series of issues that include: what has and has not worked for them in relation to engaging in physical activity, whether they feel that physical activity has helped them feel more empowered and thus more likely to adhere to medications, barriers to engaging in physical activity that continue to exist, why patients may begin a regimen of physical activity and then find themselves unable to continue, how issues of seasonality affect patient use of the Y, the amount of physical activity that appears to be needed for someone to feel a part of the Y and/or a convert to exercise. Qualitative data obtained through patient focus groups and/or interviews will contribute to ensuring that interpretation of the quantitative data is accurate, while deepening our understanding of results obtained through chart audit and Y usage records.

Students' Role and Required Skills: Plan and participate in several focus groups; conduct patient interviews. Some data entry, analysis, and writing. Ability to learn how to help conduct focus groups, how to engage patients for interviewing purposes; chart audit, data entry and analysis; ability to express results in writing. Spanish language ability an asset. Will need to obtain Human Subjects Certification through the UMMS Research Office.

Interview: Required

Location: Family Health Center of Worcester

28. Public Health

TITLE: **Central Massachusetts Seasonal Agriculture Workers: Assessing and Addressing the Unmet Healthcare Needs**

Kathy Mariani, MD
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marianik@ummhc.org

Worcester Family Practice Residency Program
Barre Family Health Center
Barre, MA 01005

Project Description: Migrant workers provide a critical work force to our economy providing seasonal agriculture labor. Historically these workers are often from other countries and may not be in this country legally and therefore may not be protected by fare wage laws and may not have any access to the healthcare system. Even with proper documentation, access to health care may be limited. Although on a smaller scale than other parts of the United States, New England continues to host many different groups of seasonal agricultural workers. Central Massachusetts is known as home of Johnny Appleseed and still has extensive apple orchards. These orchards are often owned by families for many generations. Small family farms are also still common in many parts of the state. One unique group of workers on these farms and orchards come from Jamaica. The Jamaican workers often have been working seasonally on the same family farm for decades and have developed strong work and social relationships with the family which employs them.

Many of these workers have chronic medical conditions such as diabetes and hypertension which may not be managed during their stay in our region. We suspect that their healthcare is limited to emergency room visits for farm related injuries. Office based visits when necessary may be paid for by their employer. Medical costs could quickly overwhelm the struggling small farmer.

This project assesses the health related needs of the seasonal agriculture workers in Central Massachusetts. We will also take an inventory of resources available and assess how accessible these resources are to farm workers. The student will help develop a health needs survey. This will address urgent care, chronic medical problems and mental health. The survey will help us design and implement programs to address these needs in the future.

Student's Role: The student's role in this project will be to interview farmers and agriculture workers. Most of our regional workers are from Jamaica and so Spanish would not be required. Ideally the student will be able to work independently to organize and conduct interviews. The student will be responsible for researching available health resources and investigating if patients have ready access to these resources. Together we will design a short but effective survey tool, some of which may already be available.

Required Skills: Enthusiasm and self-starter

Interview: Preferred, phone interview acceptable

Location: **Barre and surrounding communities**

29. Public Health

TITLE: Injury Free Coalition for Kids of Worcester

Colleen McGuire
(508) 856-2103
mcguirec@ummhc.org

UMass Memorial Children's Medical Center
Department of Surgery
Division of Pediatric Surgery
UMass H5-343
55 Lake Avenue North
Worcester, MA 01655

Project Description: The Injury Free Coalition for Kids of Worcester is a community–based Injury Prevention Program based at UMass Memorial Children's Medical Center in the division of Pediatric Surgery. As part of the program we have designed an injury Surveillance program to track children's injuries pre and post intervention. The following are projects to be completed by our summer student (s)

-QC 10% medical records for pediatric injury admissions and pediatric injury E.D. visits

-Design tool to measure test injury prevention related knowledge before and after education:
- -Car Seat Safety Checks
- -Bike Helmets
- -One shot educational sessions
- -Playground Safety Education

-Research related to transportation-related injuries

-Input and analyze Safe at Home data

-Research related to playground safety

-Research pedestrian Safety programs.

-Participate in Car Seat Safety Checks and Safe at Home kit distribution.

Student's Role: We, as the preceptors, will frame the projects to be completed, and provide guidance and feedback, but the students will work independently on each project.

Required Skills: Must have an interest in pediatric injury prevention and be self-directed

Interview: Required

Location: **H5-343, School Library, sites in the community**

30. Public Health

TITLE: Lawrence Latino Diabetes Prevention Project

Ira S. Ockene, MD; Yunsheng Ma, PhD, Barbara Olendzki, RD MPH, LDN; and Phil Merriam, MSPH
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Philip.merriam@umassmed.edu

University of Massachusetts Medical School
Medicine; Cardiovascular Medicine and Preventive & Behavioral Medicine
Shaw Building
419 Belmont Street
Worcester, MA 01655

Project Description: The student project will be part of the Lawrence Latino Diabetes Project (LLDPP). The LLDPP is a four-year study supported by NIDDK in which 400 Latino participants at high risk for the development of diabetes will be randomized to one of two conditions. Participants in the intervention condition will participate in a theory-based intervention for diet and physical activity modification/maintenance that will be primarily group-based, but also includes individual counseling sessions. Educational materials are literacy-tailored and culturally specific, and include an educational drama, large visuals, provision of pedometers, cooking demonstrations and other hands-on experiences.

Students' Role: Student may choose between three tracks: intervention track, data analysis track, or the combined intervention & data analysis track. In the *intervention track*, the student will assist with the ongoing development of the lifestyle intervention which focuses on metabolic syndrome and weight loss. It includes culturally appropriate materials to assist with nutritional change, and increasing physical activity. The student will assist with the intervention classes, and design a project targeting the lifestyle prevention of diabetes in the Latino population. In the *data analysis track* the student will engage in the analysis of preliminary data. In the *intervention and data analysis track*, the student will link an intervention experience with data analysis.

Required Skills: An interest in learning about metabolic syndrome, Latino cuisine & physical activity, and the epidemiological analysis of study data; good writing skills; with Spanish speaking a plus.

Interview: Required

Location: **UMMS Shaw Bldg, 2nd floor and the Senior Center in Lawrence, MA**

31. Public Health

TITLE: **Assessing the Role of Education in Women's Knowledge and Perceptions of Adjunct HPV Testing for Cervical Cancer Screening**

Important Note: This is a half-time project. The student researcher will be paid a stipend of $1920

Debra Papa, MD
(508) 334-6255
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UMMC
Department of Obstetrics and Gynecology
J4 Memorial
119 Belmont Street,
Worcester, MA 01605

Project Description: Recent guidelines for cervical cancer screening recommend HPV testing along with Pap smears. The hypothesis for the study is that HPV testing will cause unease among women as to what this means for them. Their concerns may be in relation to their own health, risk to others, and also what this implies in their current relationship.

The goal of the project is to do a questionnaire asking women about their current knowledge and concerns regarding HPV. This would be followed by both written and verbal education. A second questionnaire would then be given asking if the material they received (both written and verbal) was helpful to them. Did it increase their understanding of HPV, especially in relation to cervical cancer? Did the education address their concerns? Did it make their concerns better or worse? These questionnaires would then be evaluated.

Student's Role: The student would be involved in educating the patient. Women who present to their Ob-Gyn, and who agree to participate, would receive the 1st questionnaire, and then meet with the student to receive the written and verbal education. The preceptor would then follow-up up and would ask if they have any other questions. Work on the questionnaire is just beginning, so it is possible the student also would have direct involvement in the format of the questions. The goal is to have the project completed in the eight weeks time. This would allow the student to participate in the evaluation of the results. The student would also be able to participate in the write up as well.

Required Skills: Comfort with meeting new people. Learning a new topic i.e. HPV. This will be done for the student by the preceptor, along with reading about HPV and searching the literature.

Interview: Telephone interview acceptable

Location: **Memorial Campus-W4**
Obstetrics and Gynecology Faculty Practice

32. Public Health

TITLE: **Hispanic Low-Income Parents' Attitudes Toward Treatment of Attention-Deficit/Hyperactivity Disorder in a Community Health Center**

Valerie Pietry, MD, MS
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(508) 860-7768

Family Health Center of Worcester
26 Queen Street
Worcester, MA 01610

Project Description: This project aims to describe the attitudes and knowledge of low-income Latino parents toward treatment of Attention-Deficit/Hyperactivity Disorder (ADHD) in their children. A survey tool, the ADHD Knowledge and Opinions Survey (AKOS), will be employed in both English and Spanish to assess parents' attitudes at the start of treatment in a primary care-based ADHD Clinic. The study aims to both to capture information about parents' baseline knowledge and opinions, and to evaluate the use of the AKOS survey in this population, as little has been described in the literature about either of these areas. Results of the study are hoped to add to the knowledge base regarding treatment of ADHD in minority populations, thus addressing health disparities in this area of medical care.

Student's Role: The role of the student will be to meet with parents who are new to the Clinic, and in collaboration with the Study Nurse Coordinator, solicit participation in the survey. The student will assist in administering the survey to parents, and will be trained to enter survey data into the EpiInfo statistical software program. The student will have the opportunity to interact with parents in English and Spanish, to collaborate with research project staff, and to assist with data entry.

Required Skills: Ability to talk easily with patients of diverse backgrounds, as well as familiarity with computers and ability to perform detail-oriented work. The student will be required to participate in an online training course in working with human subjects, lasting approximately 4 hours. Bilinguality in English and Spanish is helpful, but not required. The student should preferably have an interest in working with underserved populations and/or in behavioral pediatrics. The student will be expected to become familiar with the medical literature pertinent to the study.

Interview: Required

Location: **Family Health Center of Worcester**

33. Surgery

TITLE: Total Joint, Spine, Hand Center Outcomes Registries

David Ayers, MD Chair – Orthopedics
Patrick Connolly, MD – Spine
Lance Warhold, MD - Hand
Contact: Janel Milner (508) 334-2251
milnerJ@ummhc.org

UMass Medical Center
Department of Orthopedics
55 Lake Avenue, North
Worcester, MA 01655

Project Description: (1-2 students) - Orthopedic Research is growing in the above specialty areas. Research registries are in various stages of development and additional assistance is needed in order to gather patient reported pain and function over time. This position would work in the Orthopedic Clinic in one of the above areas to assist the physician/PI with data collection from patients prior and during the office visit. Research questions vary and are in different stages of development. These electronic registries are unique to UMass in the ambulatory setting and are part of the bench to bedside effort to promote translational research.

Students' Role: Students will assist the PI's in many phases of these projects. These duties would include:

- Assisting patients with data collection tools
- Assist with the development or execution of specific research questions as they relate to the Orthopedic Specialty
- Assist in date collected
- Assisting in the infrastructure implementation (computer set-up and data collection techniques)

Required Skills:

- Organizational & project management skills
- Excellent written and verbal communication skills
- Ability to assist patients/staff in understanding research goals and objectives

Interview: Required

Location: **Memorial & Hahnemann Campus**

34. Surgery

TITLE: **Exercise, Activity and Rehabilitation Research Following Total Knee Replacement**

David Ayers, MD Chair – Orthopedics
Patricia Franklin, MD, MBA, MPH
Director of Clinical and Outcomes Research
Contact: Janel Milner (508) 334-2251
milnerJ@ummhc.org

UMass Medical Center
Department of Orthopedics
55 Lake Avenue, North
Worcester, MA 01655

Project Description: (1 student) – This study is currently in progress and has been developed from an earlier pilot study which has recently been submitted for funding. The on-going study seeks to determine optimal levels of exercise and rehabilitation after Knee Replacement Surgery. Using a Step Activity Monitor (SAM) patients are studied for general activity levels at different points in time, post surgery. Data from self reported surveys, logs and SAM data are compared to answer specific research questions about physical therapy and rehabilitation as it relates to the likelihood of returning to optimal levels of physical function.

Students' Role: Students will assist the PI's in many phases of these projects. These duties would include:

- Assisting patients with data collection tools
- Assist with the development or execution of specific research questions as they relate to the Orthopedic Specialty
- Assist in date collected
- Assisting in the infrastructure implementation (computer set-up and data collection techniques)

Required Skills:

- Organizational & project management skills
- Excellent written and verbal communication skills
- Ability to assist patients/staff in understanding research goals and objectives

Interview: Required

Location: **University Campus**

35. Surgery

TITLE: **Satisfaction with Surgical Outcomes: A Comparison of the Pelvic Floor Impact Questionnaire with 3 Generic, Global Questions**

Abraham Morse, MD
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UMASS Memorial Hospital
Department: OB/GYN
Jaquith 4
110 Belmont Street
Worcester, MA 01605

Project Description: The study involves chart reviews and telephone interviews with patients who have undergone pelvic reconstructive surgery by the Division of Urogynecology at Umass Memorial within the previous two years. The telephone interview will consist of the pelvic floor impact questionnaire (a validated, condition-specific quality of life instrument for use in patients with pelvic floor dysfunction and then three generic and global questions to assess patient satisfaction. Correlations between the two approaches and overall impressions from clinical chart review will be the primary outcome measures.

Student's Role: The student will assist with the design and piloting of the study methodology and then conduct chart reviews and make telephone contact with patients. He/She will work closely with the Urogyn Fellow and other members of the Division. The student will also participate in data entry, data analysis and manuscript preparation. Findings will be submitted to a national meeting on the topic of pelvic floor dysfunction for presentation and to a journal for publication.

Required Skills: Good telephone etiquette, basic computer skills [Microsoft Office]

Interview: Phone interview acceptable

Location: **UMASS Memorial Hospital**
Jaquith 4

36. Surgery

TITLE: The Benefits of Contralateral Acoustic Stimulation for Cochlear Implant Recipients

PI: Sarah F. Poissant, PhD, Adjunct Assistant Professor
Co-PI: Daniel J. Lee, MD, Chief, Division of Otology and Neurotology
Co-PI: Eva Bero, MA, Clinical Director CI Program
413-519-3498 (Poissant)
508-856-4161 (Lee)
508-334-8795 (Bero)

UMMC
Department of Otolaryngology
55 Lake Avenue, North
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Project Description: Cochlear implants provide useful hearing to tens of thousands of adults and children who are severely-to-profoundly deaf. While many cochlear implant recipients are able to use the hearing provided by their implant to converse without the use of lip-reading and to carry on conversations on the telephone, the cochlear implant does not restore normal hearing. In fact, cochlear implant users are known to have difficulty differentiating speakers which may lead to extreme difficulty understanding speech in the presence of multiple talkers. They may also experience difficulty appreciating/recognizing music. It is hypothesized that these difficulties stem from the fact that while the cochlear implant provides sufficient cues to allow for understanding of speech in quiet, critical cues for talker-gender identification and music recognition are absent in the cochlear-implant processed signal. It is becoming ever increasingly likely that ear opposite to the ear which has received a cochlear implant maintains some limited, yet useful, hearing. It is very possible that this residual acoustic hearing, when used in conjunction with the electrical hearing provided by the implant, will result in significantly better outcomes than the use of the cochlear implant alone.

The objective of this study is to determine the benefits of contralateral acoustic hearing provided through a hearing aid in addition to electric hearing provided by a cochlear implant. Potential benefits will be examined in the following domains: speech understanding, localization, talker/gender recognition, melody recognition, and subjective impressions (i.e., questionnaire data). Results obtained from subjects using both acoustic and electric hearing (i.e., a hearing aid in one ear and a cochlear implant in the other ear) will be compared to results obtained from a small group of subjects who utilize a cochlear implant in both ears. The purpose of including the group of bilateral cochlear implant recipients is to determine if the use of two cochlear implants provides similar benefits to the use of a hearing aid and a cochlear implant or, as predicted, there are additional benefits to having access to some of the acoustic components of speech and music. This study is a non-significant risk study in which the results may lead to improvements in the above domains through recommendations for the use of a hearing

aid on the ear contralateral to a cochlear implant in cochlear implant recipients who may not currently utilize both devices simultaneously.

Students' Role: The medical student assigned to this project will be responsible for assisting the investigators in a review of the literature, subject enrollment, data collection, data analysis, paper preparation, and journal manuscript authorship.

Required Skills: As this research involves human subjects with significant hearing loss, students must be patient communicators.

Interview: Required. Phone interview acceptable

Location: **UMass Memorial Rehab Group**
15 Belmont St
Worcester, MA

37. Surgery

TITLE: Outcome Study on CMCJ Dislocations

John V. Shufflebarger, MD
(508) 334-5952
shufflej@ummhc.org

UMass Medical Center
Department of Surgery
Hahnemann Campus
281 Lincoln Street
Worcester, MA 01605

Project Description: Data entry, calling to administrator of DASH Survey, statistics, writing papers; working with hand surgeons and Pat Franklin Organize & implement patient registry in Hand Clinic. Standardized exams, DASH outcome measurements, storage plus input systems for data are part of jobs. This will be used ultimately for research.

Students' Role and Required Skills: Computer skills, Chart review, Manuscript preparation, data entry statistics (minimal), working with DASH scores/outcome studies.

Interview: Not required but preferred

Location: **Hahnemann Campus**

38. Surgery

TITLE: Help Developing Patient Registry for Hand Clinic

John V. Shufflebarger, MD
(508) 334-5952
shufflej@ummhc.org

UMass Medical Center
Department of Surgery
Hahnemann Campus
281 Lincoln Street
Worcester, MA 01605

Project Description: Data entry, calling to administrator of DASH Survey, statistics, writing papers; working with hand surgeons and Pat Franklin Organize & implement patient registry in Hand Clinic. Standardized exams, DASH outcome measurements, storage plus input systems for data are part of jobs. This will be used ultimately for research.

Students' Role and Required Skills: Computer skills, Chart review, Manuscript preparation, data entry statistics (minimal), working with DASH scores/outcome studies.

Interview: Not required but preferred

Location: **Hahnemann Campus**