

WFSM Office of Women in Medicine and Science

Women's Health Internship Projects

Fall 2013

www.wakehealth.edu/School/OWIMS/Internships.htm

The Office of Women in Medicine and Science (OWIMS) is committed to the promotion of women's health and we know that the recruitment of future top-notch researchers and physicians begins at the undergraduate level of college. The OWIMS coordinates women's health internships between Wake Forest University School of Medicine (WFSM) researchers and healthcare providers and undergraduate students from area colleges who are looking for projects for course credit and/or experience (these are *unpaid* positions).

To inquire about submitting or applying for an internship project or if you have any additional questions about the program, please contact Rita Groce at rgroce@wakehealth.edu.

Projects currently recruiting for interns:

Heat Therapy to Improve Functional Decline with Aging in Female Monkeys

This project will explore the effects of regular heated hydrotherapy on cardiovascular and gastrointestinal function in elderly diabetic and non-diabetic monkeys as compared to younger monkeys. This project will require significant training in working with nonhuman primates, twice weekly contact with primates for 4 hour sessions, and the ability to maintain data in Excel spreadsheets. Project can support 1-2 interns.

Effects of Pesticide Exposure on Neurological Function

The internship is designed to offer new research experience that is community-based, community supported, and data analysis that engages issues of gender differences and health disparities including cognitive function and other health issues in Latino adults. The student will gain first-hand experience with community-based data collection, data entry, and data analysis in hard-to-reach populations including Latino men and women farmworkers and community-dwelling manual workers. Project can support two interns. Spanish speaking undergraduates are especially needed.

EUDL FIRE – Enforcing Underage Drinking Laws Field Initiated Research and Evaluation

Enforcing Underage Drinking Laws Field Initiated Research and Evaluation is interested in having an intern to assist the project manager in searching for city and county policies related to alcohol and underage drinking in participating study communities. The intern would need to be detailed oriented, be able to navigate various legal websites to identify city and county codes related to alcohol and underage drinking, and have excel/word skills. This project can serve one intern.

Gender Differences in Autoimmune Disease Genetics

Background: A significant subset of autoimmune diseases disproportionately affect females (i.e., women and girls). These diseases have a very strong genetic contribution to risk.

Task: Under my guidance,

- 1) identify the autoimmune diseases with a strong female bias (e.g., systemic lupus erythematosus has a 9:1 female to male ratio, juvenile arthritis has a 4:1 to 9:1 ratio depending on subtype).
- 2) Identify which of these autoimmune diseases have genome-wide association studies completed and available on dbGaP.
- 3) Assist in applying for these data in collaboration with Laurie Russell (project manager) and me.

Result: Upon completion of this survey of diseases and their availability in dbGaP, I plan to submit a NIH grant to intensively study chromosome X and its impact on gender bias in autoimmune diseases. In addition, we plan to scan the entire genome for gene-gender interactions that are consistent across multiple autoimmune diseases. Are these interactions the same for children (girls) and adults (women)?

Conclusion: If successful, this will help unify a large proportion of autoimmune disease genetics and provide deeper insight into those that differentially effect females. Project can support 1-2 interns.

Evaluating Eyelid Contour Abnormalities in Tanzanians Who have had Eyelid Surgery

In many developing countries, a large proportion of the population suffers from a disease called trachoma. It is a bacterial ocular infection (essentially pink eye) that children get repeatedly. Years of repeat infection cause the eyelid to scar and turn in, such that lashes touch the eye (trichiasis). This can lead to blindness if left uncorrected; currently 8 million people worldwide have trichiasis. Surgery is used to correct in-turned eyelashes, but often surgical results are poor. In this project, we are evaluating photographs of eyelids that have had surgery to determine whether they have an eyelid contour abnormality, and if so, how that abnormality changes over a 2 year period. Students would be involved in helping to finalize the grading scheme and in grading photographs from 2 clinical trials. Time permitted, students may also be involved in preparing manuscripts for publication. Project can support 1 intern.

Glomerulosclerosis in Aging Females

This project will be investigating the link between dietary metabolic acid load and the decline of kidney function in elderly and have an interesting mouse model of aging kidney in which aging-associated kidney pathology occurs predominantly in females. The project is conducted in collaboration with investigators involved in the Health ABC study, where we are following the same process in aging women.

Significance. Because declining kidney function carries significant burden of comorbidities and shortens life expectancy, these studies have a potential to establish an important preventive dietary measure that is comparably easy to implement and may alter the course of kidney functional decline in elderly adults.

The role of the summer student would be to examine mouse kidney sections using immunohistochemistry and indirect immunofluorescence. Training in wide field transmitted light and fluorescence microscopy are parts of the summer internship. Depending on the productivity of the student and the length of the internship, training in confocal microscopy may be included as well. This project can serve one intern.

Piano Program for the Arts & Health Committee

Under the guidance and supervision of the Arts & Health Coordinator, your intern would take the lead on organizing our Piano Program including actively connecting with local artists (both in the community and within the medical center) and will focus on identifying, scheduling and booking diverse performers (including female artists and artists that are ethnically and culturally diverse and that are currently underrepresented in the arts at the Medical Center). This project can serve one intern.

Alternative Methods to Generate Pluripotent Stem Cells

The project centers around stem cell technologies. We have used forced expression of selected genes to induce pluripotency in human fetal cells. Other groups have used small molecule inhibitors to induce pluripotency without use of ectopic gene expression. The intern will be introduced to lab life and selected technologies as expertise is acquired. Located at the downtown campus (A1/Dean). This project can support one intern.

Transcranial Doppler and Preeclampsia Pilot Study

The objectives of this study are twofold. The first objective is to measure cerebral and peripheral vasomotor reactivity in women with a history of severe preeclampsia (cases) compared to women with normal pregnancies (controls). Preeclampsia is also known as toxemia and is a disorder of high blood pressure and protein in the urine that occurs during pregnancy. The second objective is to measure peripheral blood biomarkers relevant to the pathophysiology of preeclampsia and/or stroke. The over-arching goal of this work is to better understand the persistent physiological and biomarker abnormalities that could be related to future stroke risk in women approximately 6 weeks after delivery who have history of severe preeclampsia, and to intervene with prevention strategies prior to the onset of stroke or cardiovascular disease events. Project can support one intern.

Sex, Aging, and Vascular Functionality (SAVVY) Study

The purpose of this research study is to see if men and women with vascular risk factors such as high blood pressure, high cholesterol, type 2 diabetes, and tobacco smokers have differences in blood vessel wall thickening and blood vessel widening. The inclusion criteria for this study consists of men and women between the ages of 45-64 and one or more of risk factors including hypertension, high cholesterol, non insulin-dependent diabetes, and smokers. The exclusion criteria consists of Hx of stroke or TIA, Hx of MI, Hx of PAD, Hx of DVT, Hx of polycystic ovarian syndrome, and BMI greater than 45. This project can support one intern.

Interstitial Cystitis Pain and Sacral Neuromodulation

Treatment of interstitial cystitis is difficult, with each patient responding to a unique cocktail of noninvasive and invasive treatments. Currently, sacral neuromodulation is assigned an evidence strength C value in the AUA IC Guidelines. It is our clinical hypothesis that sacral neuromodulation does improve IC related pain symptoms. The Baptist Medical Center Department of Urology treats a large volume of patients with interstitial cystitis and Interstim® placement is a cornerstone of therapy at this institute. The goals of this study are to assess preoperative and postoperative pain in patients undergoing sacral neuromodulation treatment to establish clinical evidence strength, and also identify which symptoms are responsive to sacral neurostimulation. Additional objectives are to identify patient demographics and clinical characteristics that may predict outcomes in sacral neuromodulation and other interstitial cystitis therapies. This project can support 1-2 interns.

Hydrodistention Response Indicators in Interstitial Cystitis Patients

The Urology Department at the Wake Forest Baptist Medical Center treats a large number of interstitial cystitis patients yearly with many undergoing hydrodistention. To better define the place of hydrodistention in the treatment of interstitial cystitis, we hope to identify subsets of patients who are likely to respond favorably to the procedure. We will collect data for each patient undergoing cystoscopy and hydrodistention, with or without biopsy and/ or drug instillation, including age, gender, race, past medical and surgical history, family history, social history, past physical exam findings, prior labs and radiographic studies, as well as findings during cystoscopy and hydrodistention, including biopsy findings. We will also assess patient symptoms scores as using generic global assessment of pain and visual analog scales, as well as the O'leary-Sant Interstitial Cystitis Symptom Index/ Interstitial Cystitis Problem Index (ICSI/ICPI) survey and a Pelvic Pain and Urgency/Frequency Patient Symptom Scale (PUF) both before and after the procedure. Both the O'leary-Sant and PUF questionnaires have been well established in the diagnosis and treatment of interstitial cystitis. After identifying those patients who respond well to hydrodistention, as evidenced by an improvement in symptom scores, we hope to identify characteristics that may be similar among interstitial cystitis patients who respond well to hydrodistention and hopefully specific subsets who can be considered good candidates for the procedure. This project can support 1-2 interns.