Overview

The Summer Institute for South Texas Public Health Research was established in the summer of 2013 to provide a graduate level research experience in public health research to undergraduate and graduate students under the direct mentoring of established University of Texas Health Science Center researchers. This year the program has expanded to include School of Medicine students. The eight-week program begins the first week of June (June 4th) and runs through the last week of July (July 27th). During this time, interns work one-on-one with faculty on research projects in their field of interest. In addition, interns will have an opportunity to be involved in community health projects that provide an additional insight to public health on the South Texas Border.

The internship provides a small $1,000 stipend, research materials and other resources needed to successfully complete the research project. Housing and incidentals will be the responsibility of the intern.

The selection to the program is based on matching to a specific project. The applicant will list their top 3 choices and the Faculty Researchers selections will be made based on matching of the applicants to the project. The deadline for applications is February 9, 2018. Students will be notified no later than the beginning of April so they will have time to make arrangements for travel and housing. Below are a list of projects with a short biography on the Faculty Researcher connected to those projects.

Projects for the summer of 2018

Joseph B. McCormick, M.D., M.S. is the Dean of the University of Texas Health Science Center at Houston, School of Public Health – Brownsville Campus. He has more than 40 years of experience in the study of infectious diseases, particularly viral such as Ebola and Lassa fever; epidemiology and bioterrorism; as well as other health issues in international settings. Dr. McCormick has received several awards from institutions such as The Texas Department of Health, Duke University Medical School, and Florida Southern College. He has held numerous
positions such as Director of the Platforme d’Epidemiologie in Lyon France and Vice President for South Texas Programs at UTHSC-San Antonio. Dr. McCormick has also served as a consultant for various organizations including the World Health Organization (WHO) and the Institute Pasteur. In addition, he has collaborated in over 200 publications and has been a reviewer for major journals such as the Journal of Infectious Diseases, the Journal of Virology, and the Lancet.

**Dr. McCormick’s Project:**

- **Project on Flaviviruses:** We are gathering information on the epidemiology of Zika and Dengue viruses in our area using specimens from our cohort. We are also working with a number of community groups for this purpose. The student will put together information on areas that require mosquito abatement and education of the population, to present to appropriate officials for action.

- **Project on Neglected Tropical Diseases (NTDs).** We are doing a study of a range of neglected tropical disease including serology and PCR. The student will help with the coordination of this program particularly with projects aimed at looking for infections in children and in potential reservoirs (dogs). These data may also form the basis of a paper.

**Susan Fisher-Hoch, M.D.** is a faculty member in the Epidemiology, Human Genetics & Environmental Sciences department at the University of Texas Health Science Center at Houston, School of Public Health. Her research interests include microbiology, molecular epidemiology, and virology. She has earned numerous grants from various organizations including the National Institute of Allergy and Infectious Diseases and the Cancer Prevention Research Institute. Dr. Fisher-Hoch is also a supervisor of the Cameron County Hispanic Cohort and the Clinical Research Unit.

**Dr. Fisher-Hoch’s Projects:**

- **Hispanic Liver Cancer Cohort (clinical):** The LRGV has the highest rates of liver cancer in the nation, driven chiefly by diabetes and obesity. The intern will work with liver cancer team in the Clinical Research Unit to recruit patients with liver cancer and advanced fibrosis and their first and second degree relatives. Patients and participants are interviewed and examined
extensively, including elastography of their liver to determine extent of fibrosis, etc. **This project requires fluent Spanish.** This project will teach recruitment, data collection and clinical skills. Assist with analysis of field data and with preparation of papers.

**Hispanic Liver Cancer Cohort (data):** The LRGV has the highest rates of liver cancer in the nation, driven chiefly by diabetes and obesity. The intern will work with team in the Clinical Research Unit and the Data Management Team to refine the data collection and database for this project. Use of SAS to conduct preliminary analyses. This project will teach data management and analysis of primary data. Assist with data analysis and preparation of papers. **Spanish useful but not essential**

**Peripheral Artery Disease:** The LRGV has the highest rates of amputation in the country due to diabetes. Work with team in the Clinical Research unit to recruit and examine participants to measure arterial blood flow in the legs. Object is to understand development of disease leading to amputations and intervention measures. Work with diabetes educators using the foot model developed at Rice is also ongoing. This project will teach recruitment, clinical skills, intervention and outreach. Opportunity to participate in the project and assist with data collection, analyses and publication. **Spanish desirable.**

**Prevention of Cervical Cancer in the LRGV:** The LRGV has among the highest rates of cervical cancer in the country. This project is part of an ongoing program designed to get women into screening programs and provide treatment as needed. There will be outreach programs to recruit women, and data collection. One challenge is to determine the stage of cervical cancers seen in the region, since the suspicion is that most are stages 3-4 when they actually get diagnosed. But we have no data. This project will teach recruitment and clinical program design, exploration of data sources, analysis and reporting of results. Opportunity to participate in the project and assist with data collection, analyses and publications. **Spanish useful.**
Matthew Johnson, Ph.D. is an associate professor and biomedical research scientist in the South Texas Diabetes & Obesity Institute (STDOI), and Department of Human Genetics, School of Medicine, The University of Texas Rio Grande Valley. Dr. Johnson’s research program centers on the identification of genetic mechanisms influencing normal ocular biology diabetes-related eye diseases such as diabetic retinopathy, glaucoma and cataract.

Dr. Johnson’s Projects:

- Genetic epidemiology of ocular health and disease – 1 student
  Blindness and poor vision are major public health concerns throughout the world. Approximately one tenth of the world’s population (i.e., around 733 million individuals), has impaired vision. Approximately 660 million (90%) of these individuals reside in developing countries like Nepal. The two leading causes of impaired vision are uncorrected refractive errors such as nearsightedness and farsightedness, and cataract, both of which are substantially influenced by genetic risk factors. The primary objective of this project is to identify genetic factors influencing biometry of normal vision and impaired vision (e.g. cataract) in the Jirel ethnic group of Nepal. This project is part of an exciting new research program at the South Texas Diabetes and Obesity Institute (STDOI), UTRGV, and it is in collaboration with the Tilganga Institute of Ophthalmology, Kathmandu, Nepal. For this project, the student will work closely on a daily basis with lab staff (Cecilia Colom and Johnathon Waggoner).

Stefan Czerwinski, Ph.D. is a faculty member in the Epidemiology, Human Genetics & Environmental Sciences department at the University of Texas Health Science Center at Houston, School of Public Health. His research interests include the epidemiology/ genetic epidemiology of growth and development, aging, and chronic disease risk. Dr. Czerwinski has been involved in numerous research studies, and the main project in which he has been involved is the Fels
Longitudinal Study. Additionally, he is planning to collect new research data from participants in South Texas to examine issues related to health disparities.

**Dr. Czerwinski’s Project:**

- **Fels Longitudinal Study:** Obesity is a risk factor for cardiovascular disease, type 2 diabetes mellitus, and other morbidities. This project will examine the relationship between measures of body composition (fat, muscle and bone) and risk for common chronic diseases using a lifespan approach. This project will use data from the Fels Longitudinal Study, the world's longest continuous serial study of human growth, development and body composition over the lifespan. Data collection for the study has been ongoing since 1929, and there are currently 1,315 active participants who have been observed more than 26,000 times over their lifetime. Students will have the opportunity to work with the research team in the statistical analysis of vast amounts of data including longitudinal analysis of serial data for a variety of risk factor traits.

**Miryoung Lee, Ph.D.** is a faculty member in the Epidemiology, Human Genetics & Environmental Sciences department at the University of Texas Health Science Center at Houston, School of Public Health. Dr. Lee's research interests include telomere genetics and epigenetic modifications in cardiometabolic disorders. Dr. Lee plans to use data from the Fels Longitudinal Study cohort and Cameron County Hispanic Cohort to conduct her future studies in South Texas.

**Dr. Miryoung Lee’s Project:**

- **Telomere Genetics and Cardiometabolic Disease Risk Factors:** Telomere length, a biomarker of cellular aging, is associated with human aging, obesity and chronic diseases such as cardiovascular disease. Using the longitudinal data collected in the Fels Longitudinal Study, students will have the opportunities to investigate following research topics: 1) the influence of obesity (total body and abdominal obesity) on human aging and telomere length and 2) the localization of genes influencing telomere length variation. Students will use statistical analysis tools to examine the research topics. The purpose of this project is to understand how telomere
biology is linked to obesity, aging, and cardiometabolic disease epidemiology.

Audrey Choh, Ph.D. is a faculty member in the Epidemiology, Human Genetics & Environmental Sciences department at the University of Texas Health Science Center at Houston, School of Public Health. Her research interests include obesity, blood pressure, growth and development, cardiovascular disease, and genetics. More recently, her research interests have expanded to include the influence of childhood, adulthood and lifetime adiposity and blood pressure history on cognition and cerebrovascular health in later life in the Fels Longitudinal Study. Dr. Choh plans to continue using data from the Fels Longitudinal Study and to develop new research relevant to health in South Texas.

Dr. Choh’s Project:

- **Cognition in the Fels Longitudinal Study:** Individuals with chronic conditions such as obesity, hypertension, cardiovascular disease, and type-2 diabetes, often have poor cognitive function. Childhood obesity and blood pressure history are likely to be important risk factors for adulthood cognitive function because 1) childhood obesity tracks into adulthood, and 2) childhood obesity is related to many adulthood metabolic derangements and chronic diseases. Using Fels Longitudinal Study data, some potential research questions for students include 1) how different domains of cognitive function are distributed across age and sex, and 2) how past exposures to obesity and hypertension influences various cognitive domains, after adjusting for significant concurrent cardiometabolic, demographic, and lifestyle risk factors. Students will have opportunities to participate in data analyses and publications.