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 and runs through the last week of July. 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 March 17, 2017. 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 2017

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 Zika and Neglected Tropical Diseases:** This is a two-part project on infectious disease. We are gathering information on education of our population on Zika virus. We are working with a number of community groups for this purpose. We need to do a survey to understand the impact of the education programs, and to put together data on sites where mosquito abatement may be required. The student would conduct the survey, analyze the data and present it to partners. In addition the student will put together information on areas that require mosquito abatement and that would be gathered and presented to appropriate officials for action.

A second part of this project will be regarding neglected tropical diseases. 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).

**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 and the ‘Famous Foot’:** 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 essential.**

• **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 at The University of Texas Rio Grande Valley South Texas Diabetes and Obesity Institute (STDOI). He also serves as Vice Chair of the Institutional Biosafety Committee (IBC). Dr. Johnson is currently studying genetic risk factors of diabetes-related eye disease and together with a group of researchers from the STDOI has established an eye study in South Texas.

Dr. Johnson’s Projects:

• **Genetic epidemiology of ocular health and disease:** Blindness and poor vision are major public health concerns throughout the world. Approximately one tenth of the worlds’ 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

Joanne E. Curran, Ph.D. is a Professor in the South Texas Diabetes and Obesity Institute (STDOI) in the UTRGV School of Medicine. Dr. Curran is a molecular geneticist with more than 15 years of experience in the genetic analysis of human
complex diseases. Her main research interest lies in the identification and characterization of susceptibility genes for disease conditions such as type 2 diabetes, obesity, cardiovascular disease and related complications in the general population; with the ultimate objective of gaining an insight into the biological pathways involved in disease pathogenesis. She has extensive experience in high-throughput genomic technologies and is now focused on applying these novel genomics approaches to help understand the genetic underpinnings of disease.

Dr. Curran’s Projects:

• **Molecular Genetic Analysis of Complex Diseases:** The project will involve several aspects of human molecular genetic analysis including such tasks as the extraction of DNA from human blood samples, genotyping of DNA sequence variants (both low and high-throughput), sequencing of both DNA and RNA, and phenotyping assays in human plasma samples.

• **Statistical Genetic Analysis of Complex Diseases:** We have a wealth of phenotype and genomic data in our Mexican American cohort and a very strong team of statistical geneticists who are experienced with this data. There are several options, based on disease preference, for student projects working with members of the analysis team to analyze data and write a publication based on the outcomes. We can take on 2 students for such projects.

**Belinda Reininger, DrPH.** is a faculty member in the Health Promotion and Behavioral Sciences department at the University of Texas Health Science Center at Houston, School of Public Health. Her research interests include community-based health promotion, health disparities, and evaluation research. She has authored dozens of articles on chronic diseases and has been an integral part of the development of programs such as Cyclobia, the Brownsville Farmer’s Market, Salud y Vida, and the annual city-wide weight loss challenge. Dr. Reininger has made a significant impact on the community by working to reduce obesity and diabetes rates in the Rio Grande Valley and has worked in partnership with an
active community advisory board that has supported policy and environmental changes.

Dr. Reininger’s Projects:

• **Salud y Vida—2 Students**

  This Chronic Care management initiative works with numerous hospital, clinic and community-based organizations to reach over 4,000 low-income uninsured residents in the Rio Grande Valley who have uncontrolled diabetes. Community Health Workers work in tandem with clinic providers, mental health providers, and diabetes educators to provide the motivation and support needed to reduce the participant’s HbA1c and prevent complications related to diabetes. Home visits, case review, referrals to community-based Diabetes Self-Management classes and support groups, quarterly HbA1c testing, mental health case management and transportation. The student(s) would be involved with faculty in literature review and data analysis around several topics for the purpose of program reporting, evaluation and publication, and could be involved in qualitative research with program participants. *(Some Spanish preferred)*

• **Tu Salud ¡Si Cuenta! Community Wide Campaign—2 Students**

  This evidence-based intervention using policy, environmental and system changes to encourage lifestyle changes and improve health outcomes. The School of Public Health works with nine cities, towns and municipalities in Cameron County to implement the program which uses strategies like the media, trail and park infrastructure, open streets initiatives, social support through neighborhood-based exercise groups, community gardening, the media, motivational text-messaging and community health workers providing education and home-based follow-up focused on improving BMI and blood pressure among mostly low-income, uninsured residents. The student(s) would be involved in assessments and surveys in various communities as well as policy maker interviews and other activities associated with program/campaign evaluation as well as research and literature review around funding and designations for trails and active tourism.
• Mobile Clinic—1 Student

One mobile clinic has been operating in northern Cameron County for many years, but in the last several years we have added a navigation program with four Community Health Workers (CHWs) who navigate rural residents to the clinic, follow up in their homes to monitor blood pressure and BMI, and provide health education and opportunities for low-income uninsured residents living near where the clinic may park with free exercise and nutrition classes. We are opening a second clinic in the Brownsville area, with a Nurse Practitioner providing the services as a stop gap for people who are on wait lists for local indigent clinics and FQHCs. As part of this project, CHWs identify community members who frequent hospital emergency departments, sometimes for primary care because they have no medical home, and navigate them to the clinic or services to prevent further ER drop-ins. The student would be involved in data collection, entry and some analysis as well as qualitative interviews with these participants to evaluate the program impact on their quality of life, health outcomes as well as cost savings to hospitals and taxpayers. (Spanish required)

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 growth and development on the genomic level and how it relates to chronic diseases, such as obesity and cardiovascular disease. Dr. Czerwinski has been involved in numerous research studies, and the main project in which he is involved in is the Fels Longitudinal Study. Additionally, he is planning to use data from this cohort to conduct investigations in South Texas.

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 relation to obesity and cardiometabolic disorders. Dr. Lee plans to use data from the Fels Longitudinal Study cohort to conduct her future studies in South Texas.

Dr. Lee’s Project:

- **Genetic Epidemiology: Telomere Genetics and Obesity:** The obesity epidemic and an aging society pose major public health burdens, because of their pathophysiological links to chronic diseases such as type 2 diabetes. Telomere length, a biomarker of cellular aging, is associated with human aging, obesity and chronic diseases. Using the data collected in the Fels Longitudinal Study, prospective 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 the 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, cardiovascular disease, and genetics. She has received awards
such as the Edward E. Hunt student award from the Human Biology Association and the Juan Comas Award from the American Association of Physical Anthropologists. Dr. Choh plans to use data from the Fels Longitudinal Study to conduct her future research 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.