Biomedical Informatics
Internship Projects – Summer 2020

**Evaluation of EHR system implementation and workflow at an academic medical center.**
Faculty: Drs. Michael Chiang & Michelle Hribar
Ongoing projects involve analysis of outcome measures such as speed, efficiency, and documentation quality; as well as optimization of clinical workflow using EHR data and computer simulations. Skills: statistical analysis (e.g. R), computer programming. On campus intern preferred.

**Understanding the Role of the Microbiome in Bladder Health**
Faculty: Lisa Karstens, PhD
Understanding the role of the microbiome in bladder health. The overall goal of this research is to understand how the microbiomes of the gut, vagina, and bladder contribute to bladder health and overactive bladder symptoms. Intern projects include developing, testing, and improving the pipelines for handling the clinical data associated with these projects (using REDCap), and bioinformatic pipelines for handling 16S rRNA gene sequencing data as well as NMR metabolomics data (primarily in R). The projects will provide experience of analysis and biological interpretation of so-called 'big data' that arises from the rich and complex datasets generated by high throughput techniques used in basic research. Excellent record-keeping skills and self-motivation are essential. Some familiarity with programming and statistical analysis are preferred but not essential.

**Understanding the brain – bladder connection**
Dr. Lisa Karstens, PhD - In collaboration with Drs. Damien Fair and Rahel Nardos, we are using advanced neuroimaging techniques to understand how the brain regulates bladder function and if there are functional and structural differences between women with overactive bladder syndrome and healthy controls. Interns will become exposed and learn state of the art neuroimaging techniques and data analysis, including using the Human Connectome Project (HCP) pipeline for data processing. Familiarity with command line programming and statistics are beneficial but not necessary. Self-motivation and organization skills are essential.