Our Research focuses on autosomal dominant polycystic kidney disease (ADPKD), which is an inherited disorder that affects 1/500-1/1000 individuals regardless of race, ethnicity or country of origin. ADPKD is characterized by the development and growth of fluid filled cysts that eventually impair normal kidney function, resulting in end stage kidney disease in 50% of those affected. The disorder is caused by mutations in two genes, PKD1 and PKD2. Although these genes were cloned more than two decades ago, their function remains elusive. The NIDDK has funded three Research and Translation Core Centers (RTCCs), one of which is located at the University of Maryland. Our Center has funds to support 4 summer students working with investigators in our center. Briefly we have the following projects available:

Feng Qian PhD (Professor, nephrology): The product of the PKD1 gene is a large transmembrane protein that undergoes autoproteolytic cleavage. The two halves of the protein remain tethered to one another. The Qian lab is seeking to determine the function of this cleavage event and the individual fragments. A second project in the Qian lab is studying the function of another cystic kidney disease gene PKHD1, that causes a recessive form of PKD

Terry Watnick (Professor, nephrology). Although ADPKD is thought of as a kidney disease, the disorder has extra renal phenotypes, among them intracranial and other vascular aneurysms. We are studying the role of PKD1 and PKD2 in blood vessels. We are also interested in the genetics of aneurysm formation in ADPKD

Patricia Outeda-Garcia (Assistant Professor, Nephrology). Dr. Outeda-Garcia is the Director of the mouse models and biobank Core for the Maryland Research and translation Core Center. She is using mouse models of ADPKD to study the efficacy of various therapeutic agents. She also has an interest in the role of PKHD1 in liver development.

Owen Woodward (Associate Professor, Physiology). Dr. Woodward has developed a 3-d organoid model of cyst formation that he is using to study the earliest steps in cyst formation. Dr. Woodward's laboratory is also studying uric acid handling by the kidney and GI track. He is interested in the genetics of uric acid metabolism.

Stephen Seliger (Associate Professor, Nephrology). Dr. Seliger leads the Maryland PKD RTCC Clinical Core, which is a longitudinal, natural history study of ADPKD with a biorepository. We have generated a large volume of data that can be used to answer clinical questions. In the past students have used our patient reported outcome measures and have studied the association of measured GFR and total kidney volume, to name a few examples.

In addition to the projects described above, we are open to funding other projects that are related to kidney disease.