

## Testing Therapeutic Candidates in a Mouse Model of Polycystic Kidney Disease

Shannon McConkey<sup>1</sup>, Jenny Yang<sup>1</sup>, Robert Bacallao<sup>2</sup> and Nicolas F. Barbari<sup>1</sup>

<sup>1</sup>Department of Biology, School of Science, Indiana University Purdue University, Indianapolis, Indiana

<sup>2</sup>Division of Nephrology, Richard Roudebush Veterans Affairs Medical Center and Indiana University School of Medicine, Indianapolis, Indiana

Approximately 1 in 500 middle aged people in the United States will be diagnosed with Polycystic Kidney Disease (PKD), an inherited genetic disorder that results in extreme cysts on the kidneys. PKD eventually leads to end-stage kidney failure and current treatments are limited to dialysis or transplantation. Thus, a pharmacological approach to prevent, delay, or slow the progression of PKD would revolutionize treatment and improve mortality. Interestingly, many proteins associated with PKD have been found in and around the primary cilia of renal epithelial cells. Cilia are small microtubule-based cellular appendages found on the surface of most cell types in the human body and are broadly classified as either “motile” or “primary” (immotile). Primary cilia are known to be mechano- and environmental sensors, and play a critical role in cell-to-cell communication. The aim of this proposed research is to use potential therapeutics identified *in silico* and *in vitro* in animal models of PKD to determine if the compound can delay or prevent cystogenesis. Here we test Sildenafil citrate (Viagra) in an animal model of rapidly progressing cyst formation for its ability to ameliorate the phenotype. Further research directed at understanding the cilia, cell-cycle, and cilia-mediated signalling activity will hopefully provide important insights into the mechanisms of renal cyst pathogenesis and lead to better approaches for therapeutic intervention for PKD.