Name: Katie Beverley

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Major Professor: Bikash Pattnaik PhD.

Degree Objective: Ph.D. Endocrinology and Reproductive Physiology

Background: BS Biology, University of Indianapolis

Current Research Project:

Inwardly rectifying potassium (Kir) channels is responsible for maintaining cellular membrane potential hence play an important role in cardiac repolarization and epithelial transport. The channel is comprised of 7 family members that form a homo- or hetero-tetrameric structure on the plasma membrane. Amino acid sequence of the protein possesses two transmembrane, two cytoplasmic (N-, and C-terminal) and an extracellular K^+-selectivity filter. Within the Kir channel family, some Kir channels are strong inward rectifiers like the cardiac Kir2.1 channel, and others are weak inward rectifiers as the Kir7.1 channel in the retina we study in the lab. Heritable Kir7.1 mutations cause childhood blindness, and we are interested in a novel single amino acid change at position 153. At this position, a hydrophilic amino acid threonine is replaced with a hydrophobic amino acid isoleucine. Because the amino acid 153 is within the second transmembrane domain, we speculate that T153I mutation alters protein lipid interaction within the membrane milieu. Interestingly, we found through bioinformatic analysis that Kir7.1 T153 is highly conserved within species and among the Kir subfamily, except a few which have an isoleucine. Thus, we reason that the Kir7.1 T153 has functional significance that might determine channel's biophysical properties. We would like to use imaging, electrophysiology, and biochemistry to solve the structure function relationship of this disease mutation and determine its correlation to other Kir channels.

Honors: Finalist for Poster Award, ERP Symposium 2017

National Presentations:

Beverley, KM, DA Wiseman (2016) Enhancement of Anti-Cancer Efficacy through Combination Chemotherapy of Ciprofloxacin with either 5-Flourouracil or Gemcitabine, Sigma Zeta National Convention, Lebanon, IL, 2016, Oral Presentation.

Other Presentations:

Beverley, KM, PK Shahi, BR Pattnaik (2017) Changes in Structure and Function of Inward Rectifying Potassium Channel (Kir7.1) disease mutant, Endocrinology and Reproductive Physiology Annual Symposium, Madison, WI, 2017. Poster Presentation.

Beverley, KM, B Bangert, G Sandusky (2017) Use of Aperio whole slide digital imaging for quantitation of PD-1, PD-L1, and CD8 in Triple Negative Breast Cancer, Indiana Academy of Science, Indianapolis, IN, 2017. Oral Presentation.

Beverley, KM, DA Wiseman (2015) Selective Nitration of Munc18c Following Glucose Stimulation in Pancreatic Beta Cells. Buckeye Cell Biology Meeting, Columbus, OH, 2015. Poster Presentation.

ERP Service:

Recruitment 2017