

Session/Poster#

Presenter

B13

Frederick Okoye

Urology Research Fellow

Advisor(s): Dr. Richard Kollmar, Cellular Biology

Techniques Used to Identify Vasopressin Receptors in Bat: A Potential Novel Animal Model for Nocturia

The cause of nocturia is not fully understood. Two observations together suggest an involvement of the water-regulatory hormone arginine vasopressin (AVP). First, the prevalence of nocturia in humans increases with age. Second, in rats AVP receptor (AVPR) concentrations in the kidney and bladder increase with age, suggesting that AVP levels may decrease with age. The fruit bat *Carollia perspicillata* can be kept in captivity for ~13 years and has a physiology very similar to humans, making *C. perspicillata* an attractive translational model to study aging, including nocturia. Our overall objective is to determine whether expression levels of AVPR change with age in *C. perspicillata*. Our first aim is identifying antibodies that recognize AVPR in this novel animal model.

Total protein was extracted from bat and mouse tissues, separated by size via denaturing protein gel electrophoresis and transferred to membranes by electroblotting. Membranes were incubated with commercial antibodies against human or rodent AVPR1A and AVPR2. Fluorophore-conjugated secondary antibodies were bound and then detected with a fluorescence imager.

The anti-AVPR1A antibody bound to a single band in bat brain and mouse liver at molecular masses of ~42 kDa and ~47 kDa, respectively. Mouse liver was a positive anti-AVPR1A control. Our anti-AVPR2 antibodies bound to a single band in the bat brain and testes at ~50 kDa and ~45 kDa, respectively. Doublets were seen in the mouse kidney and liver at ~43 kDa.

Our results show that commercial antibodies against human or rodent AVPR1A or AVPR2 can recognize *C. perspicillata* proteins, making this bat a tractable model for molecular studies of AVP's role in nocturia. Literature on AVPR1A shows a molecular mass of ~47 kDa, but the molecular masses reported for AVPR2 receptors range from 20-100 kDa. These values are consistent with the values we observed in the bat. Upon further confirmation, we will proceed to compare AVPR levels in young and old bats.