

Poster Presentations

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Effects of biological factors on the expression of arginine vasopressin receptors

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Arginine vasopressin (AVP) is a hormone that functions to regulate blood pressure and bodily fluid homeostasis. Vasopressin has three main receptors AVPR1a, AVPR1b, and AVPR2 which were investigated in this project along with OXTR, LNPEP, and CUL5. AVPR1a functions in the smooth muscle and causes vasoconstriction, AVPR1b functions in the pituitary helping to regulate adrenocorticotrophic hormone release, and AVPR2 is expressed highly in the kidneys and works to concentrate urine. This project investigates how these various receptors are expressed with different factors related to

pregnancy such as, sex of the baby, chronically hypertensive mothers, and gestational age at delivery. A previous study from our lab explored these receptors in circulating maternal cells demonstrated that dendritic cells expressed the AVPR1b receptor more in the mothers who had male vs. female babies. Our goal was to determine whether similar differences were observed in cord blood of male versus female infants. Furthermore, we wanted to explore if other characteristics such as chronic hypertension and pre-term birth had an effect on the expression of these receptors. To address this

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question, umbilical cord blood cell pellets were obtained from the Maternal Fetal Tissue Bank (IRB# 200910784). RNA was extracted to generate cDNA for quantitative PCR to determine if there are any differences in receptor expression. Male and female babies were shown to have no significant differences in any of the six receptors while the chronic hypertensive samples showed significantly lower expression in the AVPR2 (4 fold decrease), LNPEP (5 fold decrease), and CUL5 (7.14 fold decrease) receptors when compared to those without chronic hypertension. Pre-term birth samples showed a significantly lower expression in the AVPR1b (3.73 fold decrease), AVPR2 (2.83 fold decrease), and OXTR (1.97 fold decrease) when compared to full-term birth samples.

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