Kansas City University
OF MEDICINE AND BIOSCIENCES™

SCIENCE FRIDAY TALKS

January 20, 2017 in Ricci Auditorium

Glucocorticoids in the Prenatal Brain: Friend or Foe?

Dr. Paula Monaghan-Nichols

Associate Dean for Research
Professor Biomedical Sciences, UMKC School of Medicine

Talk Summary - Pre-term labor is a significant health concern occurring in approximately 12% of pregnancies. Fortunately, the life threatening, emotional and economic burdens of premature birth have been greatly alleviated by antenatal treatment with synthetic glucocorticoids (sGCs). While antenatal sGCs reduce respiratory distress syndrome, intraventricular hemorrhage and necrotizing enterocolitis in premature infants, they can affect developmental processes in the brain and trigger adverse behavioral and metabolic outcomes later in life. Furthermore, there are significant sex and racial differences in morbidity and mortality in response to antenatal sGCs that remain unexplained, suggesting that for some infants, exposure is substandard while in others there may be overexposure. Therefore, there is an unmet clinical need to understand the mechanistic basis for sex- and race-specific effects of sGCs on the fetal brain and develop newer antenatal sGC therapies to reduce their potential adverse neurodevelopmental effects. We have examined the consequences of prenatal GC exposure on the developing mouse brain. Our approach includes molecular and behavioral studies, genome wide assessment of GR target genes and histological analysis of cerebral cortical development in a unique knock-in mouse model. This talk will outline the anatomical, molecular, biochemical and behavioral alterations that result from prenatal GC exposure. We have identified a novel GC pathway that impacts proliferation of embryonic neural stem/progenitor cells and propose to use these findings to determine if they identify a genetic fingerprint for disease susceptibility in humans.

Bio - Dr. Monaghan-Nichols is the newly appointed (as of August, 1 2016) Associate Dean for Research in UMKC SOM. She is also Professor in Dept. of Biomedical Sciences. She completed her undergraduate education in Trinity College Dublin, Ireland, earning a BA in genetics. She obtained a Ph.D. in Molecular Biology Engineering from the University of Edinburgh, Scotland, at the Medical Research Council's Human Genetics Unit. She then moved to Heidelberg, Germany for post-doctoral training at the German Cancer Center before accepting a position as Assistant Professor in Neurobiology at the University of Pittsburgh School of Medicine in Pennsylvania. Her research focuses on understanding the molecular and environmental factors that specifically alter the development of areas in the brain that are essential for emotion and cognition.

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Friday, January 20, 2017
12:00 - 1:00 p.m. (Refreshments served)
Ricci Auditorium
Strickland Educational Pavilion

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