

Wednesday, April 29<sup>th</sup>, 2020

10:00 AM

Defense held online via Zoom

***Raksha Raghunathan***

PhD Dissertation Defense

Dr. Kirill Larin, Faculty Advisor

**“Assessing teratogen-induced changes in murine fetal brain vasculature using in utero optical coherence tomography”**



### Abstract

Embryogenesis is a highly complex, dynamic, and tightly regulated process that is highly susceptible to external factors. Prenatal substance abuse is a major public health concern. The severity of the resulting birth defect(s) depends on the substance, amount of substance used, and the period of gestation during which the abuse happened. Although substance abuse during the first trimester is very common, several women continue the abuse into their second trimester, which is a crucial period for fetal neurogenesis and angiogenesis. The microvasculature that invades the fetal brain during this period supports nutritional needs, provides endocrine control of fetal growth, and promotes neural development. Although several studies have documented morphological changes in the fetal brain and behavioral changes due to teratogen exposure, acute changes in vasculature of the fetal brain are not well understood or documented. This study used angiographic optical coherence tomography to evaluate acute changes in murine fetal brain vasculature due to maternal exposure to three of the most commonly abused substances: alcohol, nicotine, and synthetic cannabinoids. Results showed drastic reduction in vasculature within 45 minutes after maternal exposure to the respective teratogen.

Zoom link: <https://zoom.us/j/439527966?pwd=cnZldElhNUh5dzRXbW9JdmpKekZzdz09>

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