**Paediatrics Research Day - Abstract Submission Form**

**Deadline: Friday, April 1st, 2022** (send to Renee.Vachon@lhsc.on.ca)

#### Presenter’s Name: \_\_\_Carleton\_\_\_\_\_\_\_\_ \_\_\_Jennifer\_\_\_\_\_\_\_\_\_\_ \_jcarlet@uwo.ca\_

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Program (eg. CHRI, Pediatrics, Dev Biology, etc.) \_\_\_\_\_\_\_\_\_\_\_\_Developmental Biology\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Type of Trainee (i.e. resident, fellow, undergraduate student, graduate student or post-doctoral fellow):

\_Graduate Student\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Year in program: \_\_\_\_\_\_2\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Preferred presentation format: \_\_\_\_ verbal \_\_\_\_\_ poster \_\_X\_\_\_ no preference**

**Please ensure the abstract fits in the box**

**Type of Research: (Clinical, Basic Science etc)\_\_\_\_\_\_\_\_**Basic Science**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Title:** Characterizing the tissue specific roles for Shroom3 in development and postnatal physiology

**Authors:** J. Carleton, R. Halabi, Q. Feng, T. Drysdale

**Background**: Loss of actin cytoskeleton control can hinder integral developmental processes and physiological functions, providing the basis for a variety of developmental defects and postnatal maladies. Our research focuses on the actin binding protein SHROOM3, and how its loss affects heart and kidney development and physiology. Our lab has created the first Shroom3 floxed mouse line, allowing for spatial and temporal control of *Shroom3* loss. With this, we have produced the first myocardial specific *Shroom3* loss during development and the first full-body postnatal *Shroom3* loss. These will aid us in understanding the tissue specific and temporal roles for SHROOM3, as well as the consequences of its loss.

**Hypothesis**: SHROOM3 acts developmentally to mediate essential cell shape changes in the heart and kidney in an organ autonomous manner, and has additional postnatal interactions which regulate and maintain cell function essential for normal physiology.

**Methods and Results**: Mice from the *Shroom3fl* line were bred to a myocardial specific *Nkx2-5-Cre* recombinase line to allow for myocardial specific *Shroom3* loss. Of the *Nkx2-5-Cre* containing pups born from this cross, 76% lived beyond weaning age, and the remaining 24% died within 24 hours of birth. Within neonates who died, there were no ventricular septal defects, semilunar valve defects, nor ventricular thinning observed, all of which were seen in the full-body loss of *Shroom3*.

*Shroom3fl* mice containing an inducible *UBC-Cre* recombinase were administered 5 doses of tamoxifen via oral gavage (2 mg/kg body weight), over 5 days, inducing postnatal *Shroom3* loss. One month following treatment, analysis of the kidney showed a significant dilation of the Bowman’s capsule in mice containing *UBC-Cre* compared to littermates without.

**Discussion**: Results from myocardial *Shroom3* loss pose that this loss can be viable and does not significantly impact cardiac development. This indicates that interaction with other *Shroom3* expressing cell types, such as the cardiac neural crest cells, may maintain proper heart development. Results from this first instance of postnatal *Shroom3* loss indicate that SHROOM3 continues to support tissue structural integrity in the postnatal kidney.