

Summer Student Research Program

Project Description

FACULTY SPONSOR'S NAME AND DEGREE: *Sophie Astrof, Ph.D.*

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DEPARTMENT AND INTERNAL MAILING ADDRESS: *Cell Biology and Molecular Medicine*

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PROJECT TITLE (200 Characters max):

Genetic and molecular mechanisms of congenital heart disease

HYPOTHESIS:

Understanding mutations and mechanisms underlying congenital heart disease will help in designing future prophylactic approaches and treatments.

PROJECT DESCRIPTION (Include design, methodology, data collection, techniques, data analysis to be employed and evaluation and interpretation methodology)

Our goal is to uncover stem cells that give rise to the vasculature of the aortic pole of the heart and regulatory mechanisms orchestrating the morphogenesis of the heart and the aortic arch arteries. In our work, we use mouse genetic models, lineage tracing, cell biology, and live imaging to understand the mechanisms regulating cardiovascular morphogenesis.

SPONSOR'S MOST RECENT PUBLICATIONS RELEVANT TO THIS RESEARCH:

Endothelium in the pharyngeal arches 3, 4 and 6 is derived from the second heart field.

Wang X, Chen D, Chen K, Jubran A, Ramirez A, Astrof S.

Dev Biol. 2017 Jan 15;421(2):108-117. doi: 10.1016/j.ydbio.2016.12.010. Epub 2016 Dec 9.

Neural crest cell-autonomous roles of fibronectin in cardiovascular development.

Wang X, Astrof S.

Development. 2016 Jan 1;143(1):88-100. doi: 10.1242/dev.125286. Epub 2015 Nov 9.

THIS PROJECT IS: Clinical Laboratory Behavioral Other

THIS PROJECT IS CANCER-RELATED

Please explain Cancer relevance

THIS PROJECT IS HEART, LUNG & BLOOD- RELATED

Please explain Heart, Lung, Blood relevance

THIS PROJECT INVOLVE RADIOISOTOPES?

THIS PROJECT INVOLVES THE USE OF ANIMALS

PENDING

APPROVED

IACUC PROTOCOL # PROTO201800226

THIS PROJECT INVOLVES THE USE OF HUMAN SUBJECTS?

PENDING

APPROVED

IRB PROTOCOL # M

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THIS PROJECT IS SUITABLE FOR:

UNDERGRADUATE STUDENTS
SOPHMORES

ENTERING FRESHMAN
ALL STUDENTS

THIS PROJECT IS WORK-STUDY: Yes or No

**THIS PROJECT WILL BE POSTED DURING ACADEMIC YEAR
FOR INTERESTED VOLUNTEERS:** Yes or No

WHAT WILL THE STUDENT LEARN FROM THIS EXPERIENCE?

You will learn to design and execute experiments to answer scientific questions.