Undergraduate Student Research opportunities in Reproductive Physiology

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Project Description

Endothelial cells are a thin single layer of cells that line the interior surface of blood vessels and lymphatic vessels. Dysregulation of endothelial cell function is associated with many cardiovascular and metabolic diseases. Children born to complicated pregnancies (such as preeclampsia) have increased risks of adult-onset cardiovascular disorders later in life, suggesting there is programming of the fetal vascular/endothelial system before birth. Our research project aims to reveal the mechanisms controlling the complicated pregnancy-induced fetal endothelial dysfunction in female and male fetal endothelial cells that associated with maternal obesity and endocrine disruptor exposure during pregnancy. Specifically, we aim to explore the role of microRNA and immune-endothelial cell interactions in complicated pregnancies-induced fetal endothelial dysfunction.

Lab website: https://sites.arizona.edu/chizhou-lab/

Undergraduate Students will:

1. Learn how to approach and solve a research problem or question related to reproductive biology and cell physiology.
2. Learn how to think critically when evaluating information present in a research setting.
3. Learn how to effectively understand, communicate, and practice common reproductive biology and cell physiology research methods.
4. Gain an understanding of basic scientific principles of reproductive biology and cell physiology.
5. Gain and understand the basic reproductive biology and cell physiology laboratory skills

Specific Research skills students will be training with:

1. Collect, label, identify, and maintain inventory log in lab supplies and specimens accurately
2. Proper scientific documentation of experimental records
3. Perform experimental procedures in reproductive biology and cell physiology such as:
    - RNA isolation (miRNA and total RNA)
    - Reverse transcription (miRNA and total RNA)
    - RT-qPCR (miRNA and protein-coding genes)
    - Immuno-Histochemistry
    - High-resolution Imaging
    - Primary endothelial cell isolation
    - Primary cell culture and imaging
    - Primary cell cryopreservation and passaging.

Expected hours in the lab: **10~15 hrs**. per week

Pre-graduate, pre-med, and pre-vet (including freshman and sophomore) students are encouraged to apply.

Recruitment programs:

Our lab can host undergraduate students through several different programs:

- 199,299,399,499: Independent Study with the student's home department (Pass or fail grade)
- 199H, 299H,399H,499H: Honors Independent Study with the student's home department (Regular letter grade: A, B, C, D, E, F)
- 192,292,392,492: Directed Research with the student's home department (Regular letter grade: A, B, C, D, E, F)
- Volunteer-based students

Application materials:

Please email the following document to Dr. Chi Zhou at chizhou@arizona.edu

- A statement of your research interests
- A copy of up-to-date resume/CV
- A copy of the most recent transcript.