Cardiovascular Lab Research

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Introduction

Cardiovascular diseases are the leading causes of death in the world. My lab focuses on treatment and prevention plans for these diseases. Specifically, I work under Samantha Bohlman, a postdoc, whose project focuses on the metabolism of endothelial cells, cells that line the blood vessels. My weekly experiments look at the different substances that affect this metabolism.

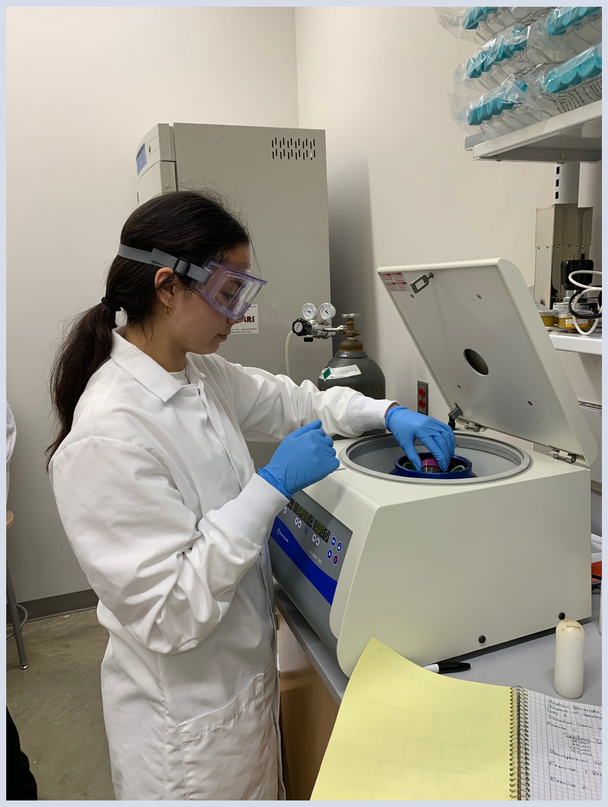

Image 1.

I am working with cells while running one of my weekly experiments. Image taken in the lab.

Site Information:

A. James Clark Hall- Vascular Kinetics Lab

University of Maryland, 8278 Paint Branch Dr, College Park, MD 20742

https://www.vascularkinetics.com/

Dr. Alisa Clyne (aclyne@umd.edu)

Our goal is to make medical advancements towards cardiovascular diseases.

Impact:

- I have learned a lot about the scientific process and the patience required in lab research throughout my experience
- My work has contributed to Samantha Bolhman's (my post-doc) work, hopefully creating a meaningful publication in the months to come.

General Methods:

- In a biosafety cabinet, I culture enough cells into 24-Well Plates so I have 4 replicates for each treatment group at each time point (0, 12, 24, 48 hours).
- I treat each plate with different media types (varies weekly) and then collect samples from each well at the different time points.
- I run the collected samples on a YSI machine.
- I analyze the data given to me. (glucose uptake/lactate production etc.)

Materials:

- Biosafety Cabinet equipped with culturing materials & 24 Well Plates
- Endothelial Cells- Cells heavily affected by cardiovascular disease
- YSI- Biochemical Analyzer (glucose uptake/lactate production etc.)

Image 2.

This is a biosafety cabinet where cell culturing is done. Image from the PPR Foundation (https://twitter.com/pprfoundation/status/873113126455066625/photo/1)

Results/ Discussion:

- Endothelial cell metabolism is hugely impacted by different environments in which they are placed.
  - Endothelial cell glucose uptake is decreased, while lactate production is increased and vice versa when different hormones and proteins are placed on them (ie. VEGF, Insulin, Cholesterol).
- Endothelial cell metabolism is a key indicator of how the overall body is affected by these different substances.
- With further work, this information can be used to develop medicines.

Acknowledgments:

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