**Sophie Kate Ashbrook**

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**EDUCATION**

**Florida International University (FIU), Miami, FL  *January 2022 – Current***

Doctor of Philosophy, Biomedical Engineering *GPA: 3.56*

Advisor: Dr. Joshua D. Hutcheson

Anticipated Date of Ph.D. Conferral: Fall 2025

**Mississippi State University (MSU), Starkville, MS *August 2018 – December 2021***

Bachelors in Science, Biomedical Engineering *GPA: 3.51*

Minor in Mathematics

Graduate with Cum Laude Honors

**RESEARCH EXPERIENCE**

**Cardiovascular Matrix Remodeling Laboratory *January 2022 – Current*** Advisor: Dr. Joshua Hutcheson

* Studying how EGFR inhibition prevents vascular calcification by altering caveolin-1 trafficking both in vitro and in vivo

**Cellular Engineering Laboratory** ***March 2020 – December 2021***

Advisor: Dr. C. LaShan Simpson

* Studied the mechanisms in cardiovascular disease that lead to vascular calcification in vitro by decellularizing and recellularizing porcine arteries to model the phenomenon

**JOURNAL PUBLICATIONS**

**Ashbrook, S. K.,** Valentin Cabrera, A. M., Shaver, M., Hutcheson, J. D. Analysis of Extracellular Vesicle-Mediated Vascular Calcification Using In Vitro and In Vivo Models. *Journal of Visualized Experiments*. 2023 January.

**RESEARCH PRESENTATIONS**

**Ashbrook, S. K.,** Bakhshian Nik, A., Hutcheson, J. D. EGFR Inhibition Alters Caveolin-1 Trafficking and Prevents Vascular Calcification. 18th International Society for Applied Cardiovascular Biology Biennial Meeting; 2022 Sept 28 – Oct 1; Memphis, TN.

**LEADERSHIP AND OUTREACH**

**Thirst for Science, Thirsty Fellow *November 2022 – Current***

Advisor: Dr. Josh Hutcheson and Dr. Zach Danziger

* Plan and executes outreach events targeted at a general audience to explain scientific concepts in an accessible way
* Coordinates speakers and brewery locations for the event as well as the social media engagement and marketing

**Bagley College of Engineering, Ambassador *January 2020 – December 2021***

Advisor: Joy Smith

* Facilitated guided tours and information sessions for potential students who visited Mississippi State University Bagley College of Engineering
* Assisted in answering questions, recruitment events, and aided the college in growing the student population

**Bagley College of Engineering, ELLC Mentor and Tutor *August 2020 – August 2021***

Advisor: Dr. Robert Green

* Served as a tutor for the College of Engineering at Mississippi State in calculus 1 and 2, general biology 1, general chemistry 1 and 2, and calculus-based general physics 1
* Mentored and oversaw first year students within the engineering learning and living community throughout the semester by updating students on resources and events around campus as well as the community

**MSU Athletic Academics, Tutor *January 2020 – January 2021***

* Tutored and mentored athletes at Mississippi State University in college algebra, trigonometry, calculus 1 and 2, general chemistry 1 and 2, and elementary chemistry

**CERTIFICATIONS**

**Collaborative Institutional Training Initiative (CITI)**

Biomedical Responsible Conduct of Research Course

Working with the IACUC- Lab Animal Research

Working with Mice in Research Settings- Lab Animal Research

Conflicts of Interest

**FIU Development Training**

Environmental Awareness Part 1 and 2

EPA: Hazardous Waste Awareness and Handling

Small Spills and Leaks

Safe Management of Biohazardous Waste

Fire Safety

Blood-Borne Pathogens Awareness

Laboratory Safety: The Finer Points

Hazard Communication (HAZCOM)

Compressed Gas Cylinder Safety

Laboratory Hazard Awareness

Personal Protective Equipment (PPE): Laboratory

Safe Use of Biosafety Cabinets

Safe Use of Fume Hoods

Chemical Handling Safety – Basic Principles

Export Control for Research and Operations Personnel

**SKILLS AND ABILITIES**

*Computer Skills*

Microsoft Office*,* MATLAB*,* GraphPad Prism*,* NIH ImageJ Analysis*,* SPSS*,* SOLIDWORKS*,* InventorPro

*Laboratory Techniques*

Cell Culture, RNA and EV Extraction, Immunoblotting

*Animal Experiences*

Mouse Handling, Oral Gavage, Tail Vein Injection, Intraperitoneal Injection, Anesthesia/Euthanasia, Mouse Dissection, Tissue Embedding

**PROJECTS**

**Senior Design Project, Mississippi State University *August 2020 – May 2021***

Title: Cost effective 3D printed prosthetic feet using different standard materials

Advisor: Dr. Steven Elder

* Designed, manufactured, and tested three models of 3D printed prosthetic feet utilizing SolidWorks and mechanical testing methods in comparison to clinically available feet prosthetics

**Research Project, Illinois Math and Science Academy**  ***August 2016 – May 2018***

Title: Fostering cultural competency through education and lending a helping hand

Advisor: David Lundgren

* Designed and manufactured low-cost 3D prosthetic hands using InventorPro for underrepresented children that could be used STEM teaching tool paired with our created cultural competency curriculum
* Developed a curriculum for schools to educate students on disabilities and inclusion

**PROFESSIONAL AFFILIATIONS**

**International Society of Applied Cardiovascular Biology** *August 2022 – Current*

**Society of Women Engineers (SWE)** *August 2018 – Current*

**Theta Tau Professional Engineering Fraternity**  *August 2018 – December 2021*