

## Elizabeth “Beth” Elliott

Elizabeth conducted research as a high school student in the MSTC program at Dunbar High School, working with Susan Odom and Aman Kaur in the Department of Chemistry; her work focused on the synthesis of shelf-stable radical cation salts and served as her capstone research project. After that period, restructuring of that lab meant that she was looking for a new location to continue research, whereupon a chance encounter with Robin Cooper of the Biology department led to her taking a position in his lab.

She started out her first year of college with a Pre-Nursing major, but changed it to a Biology-major, Chemistry-minor path to allow more time for extracurriculars and more freedom in course load; given her beliefs that academics should be well-balanced with community involvement — as well as the empirical side of learning through research — the new major suits her well. Working with Dr. Cooper has provided an ideal way of combining research with outreach, as he is highly involved in community activities.

Within the past six months, Elizabeth has been able to help with mentoring a STEMcats research class of eight students, which has been focused on carrying out a class-wide research project assessing the effects of zinc on cardiac, muscular, and neurological function in various animal models. This class is presenting four posters at this year’s UK Showcase, and the data are also being submitted to a peer-reviewed journal once the project concludes.



*STEMcats class photo (2<sup>nd</sup> from right)*

Elizabeth also helped with multiple science fairs this year, serving as a judge at this year’s Kentucky American Water District Science Fair, at which hundreds of students presented, and assisting with multiple aspects of the state-level Science and Engineering fair at ECU; she helped register both participants and all 120 judges, as well as judging science projects and helping with clean-up.



*State science fair, organizing judges' paperwork (1<sup>st</sup> from left)*

She has also helped provide testimonial evidence about life in college and undergraduate research in a number of contexts; most recently, she spoke with a group of 29 high school students on a tour from Eminence, KY, which Dr. Cooper had organized as a means of introducing them to college and scientific work in general.



*Tour session (1<sup>st</sup> from left)*

Finally, in addition to these activities (and her class load), Elizabeth has been working on research as a BIO395 student, on topics similar to that discussed above. Currently, two manuscripts have been accepted with minor revisions, two are about to be completed, and two more are in manuscript phase.

Brock, K.E., **Elliott, E.R.**, Abul-Khoudoud, M.O. and Cooper, R.L. (2023) The effects of gram-positive and gram-negative bacterial endotoxins on cardiac function in *Drosophila melanogaster* larvae. (Accepted with minor revision)

Hensley, N., **Elliott, E.R.**, and Cooper, R.L. (2023) Effect of 2-Aminoethoxydiphenyl borate (2-APB) on heart rate and relation with suppressed calcium activated potassium channels: Larval *Drosophila* model. (Accepted with minor revision)

**Elliott, E.R.**, Hensley, N. and Cooper, R.L. (2023) Effect of doxapram (a K<sub>2</sub>p channel blocker), bacterial endotoxin and pH on heart rate: Larval *Drosophila* model (In manuscript)

**Elliott, E.R.**, et al. (2023) Effects of zinc on physiological processes in *Drosophila* and crayfish: Cardiac, neural, synaptic transmission and behavioral assays. (In manuscript).

Brock, K.E., Abul-Khoudoud, M.O., **Elliott, E.R.**, Lipoteichoic acid (LTA) affects synaptic transmission at the *Drosophila* and crayfish neuromuscular junctions. (In manuscript)

Katanbaf, A.M., Brock, K.E., **Elliott, E.R.**, Hensley, N., Haddad, C.N., Abul-Khoudoud, M.O., and Cooper, R.L. (2023) A review on acute non-genomic responses to bacterial components on membrane potential and synaptic transmission as well as neuronal and cardiac function. (In manuscript). \*All authors contributed equally to this review.

Among other activities, Elizabeth was encouraged to apply for fellowships for summer research to continue her projects; she was awarded two fellowships, though rejected one to allow for acceptance of the other.

### Fellowships:

Was granted the A&S Summer SURF undergraduate research fellowship for summer 2023. Award was \$5,000 (but was turned down to accept CURE fellowship instead)

Accepted the Commonwealth Undergraduate Research Experience (CURE) Fellowship for the summer of 2023 to perform undergraduate research and creative work. \$5,000 to aid in carrying out undergraduate research.

Awarded the **Gertrude Flora Ribble Scholarship** award from the Department of Biology for conducting research in the Spring and Fall 2023 semesters (\$2000)

She has also been or will be a part of a number of research presentations at various conferences.

Abul-Khoudoud, M.O., Brock, K.E. , **Elliott, E.R.**, Li, X. and Cooper, R.L. (2023) The effects of gram-positive and gram-negative bacterial endotoxins on cardiac function in *Drosophila melanogaster* larvae. UK Center for Clinical and Translational Science, University of Kentucky. March 27, 2023

Hensley, N., **Elliott, E.R.**, Abul-Khoudoud, M.O. and Cooper, R.L. (2023) Effect of 2-Aminoethoxydiphenyl borate (2-APB) on heart rate and relation with suppressed calcium activated potassium channels: Larval *Drosophila* model. Undergraduate Showcase of Scholars. University of Kentucky, Lexington, KY. April 26, 2023.

**Elliott, E.R.**, Abul-Khoudoud, M.O., Hensley, N. and Cooper, R.L. (2023) Effect of Doxapram (a K<sub>2</sub>p Channel Blocker), Bacterial Endotoxin and pH on Heart rate: Larval *Drosophila* Model. Undergraduate Showcase of Scholars. University of Kentucky, Lexington, KY. April 26, 2023.

- Abul-Khoudoud, M.O., Brock, K.E., **Elliott, E.R.**, and Cooper, R.L. (2023) The effects of gram-positive and gram-negative bacterial endotoxins on cardiac function in *Drosophila melanogaster* larvae. Undergraduate Showcase of Scholars. University of Kentucky, Lexington, KY. April 26, 2023.
- Roemer, K.A., Leach, A.B., Crawford, D.M., Datta, M.S., Hirtle, J.T., McIntosh, R.D., Sotingeanu, L.C., Vessels, B.D., **Elliott, E.R.**, Speed, S.L., Nadolski, J., Cooper, R.L. (2023) The effect of zinc on death and behavior in *Drosophila* and crawfish. Undergraduate Showcase of Scholars. University of Kentucky, Lexington, KY. April 26, 2023.
- McIntosh, R.D., Datta, M.S., Crawford, D.M., Hirtle, J.T., Leach, A.B., Roemer, K.A., Sotingeanu, L.C., Vessels, B.D., **Elliott, E.R.**, Speed, S.L., Cooper, R.L. (2023) The effect of zinc heart rate in crawfish and *Drosophila*. Undergraduate Showcase of Scholars. University of Kentucky, Lexington, KY. April 26, 2023.
- Sotingeanu, L.C., Vessels, B.D., Roemer, K.A., Leach, A.B., Datta, M.S., Hirtle, J.T., McIntosh, R.D., Crawford, D.M., **Elliott, E.R.**, Speed, S.L., Cooper, R.L. (2023) The effect of zinc on the neural activity of the muscle receptor organ. Undergraduate Showcase of Scholars. University of Kentucky, Lexington, KY. April 26, 2023.
- Crawford, D.M., Hirtle, J.T., Datta, M.S., Leach, A.B., McIntosh, R.D., Roemer, K.A., Sotingeanu, L.C., Vessels, B.D., **Elliott, E.R.**, Speed, S.L., Cooper, R.L. (2023) The effect of zinc on synaptic transmission at the neuromuscular junction. Undergraduate Showcase of Scholars. University of Kentucky, Lexington, KY. April 26, 2023.
- Sotingeanu, L.C., Vessels, B.D., Roemer, K.A., Leach, A.B., Datta, M.S., Hirtle, J.T., McIntosh, R.D., Crawford, D.M., **Elliott, E.R.**, Speed, S.L., Cooper, R.L. (2023) T Effects of zinc on physiological processes in *Drosophila* and crayfish: Cardiac, neural, synaptic transmission and behavioral assays. 48<sup>th</sup> Annual Naff Symposium hosted by the Department of Chemistry at the University of Kentucky. Lexington, KY April 21, 2023.

Elizabeth is going to continue her research over the summer, as well as assisting with more community outreach by helping Dr. Cooper manage UK's STEMblue camp, featuring approximately 200 middle school students.