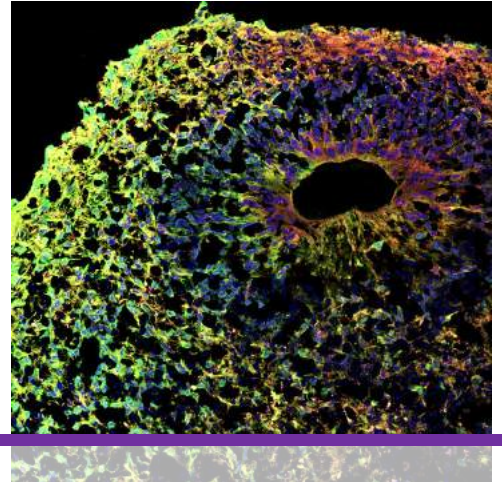
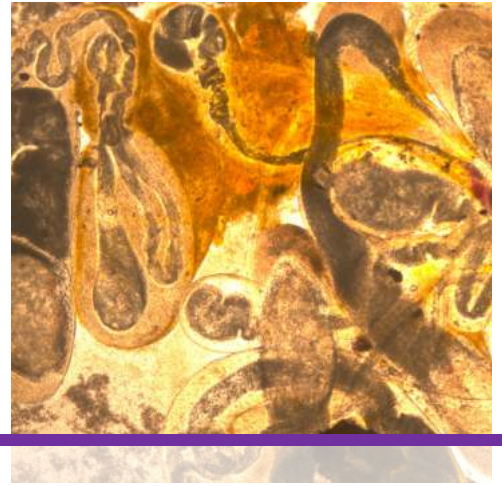
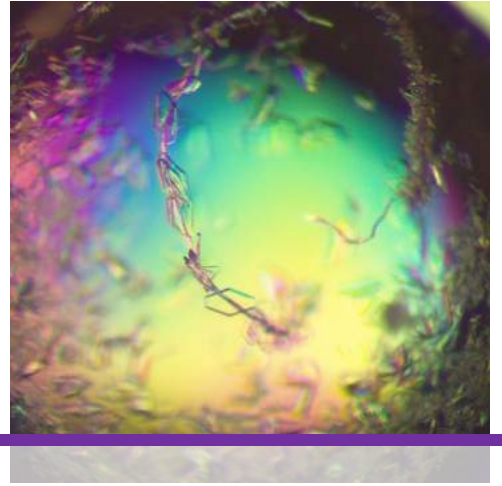
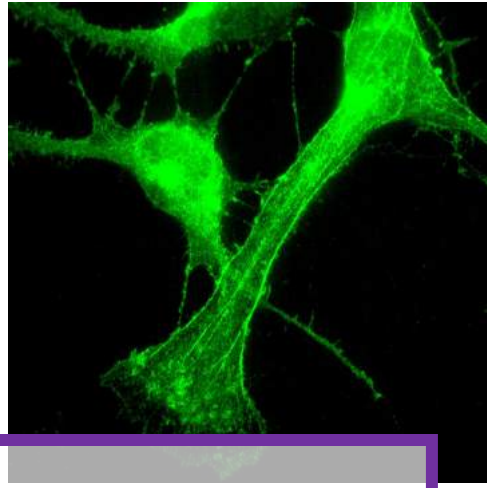






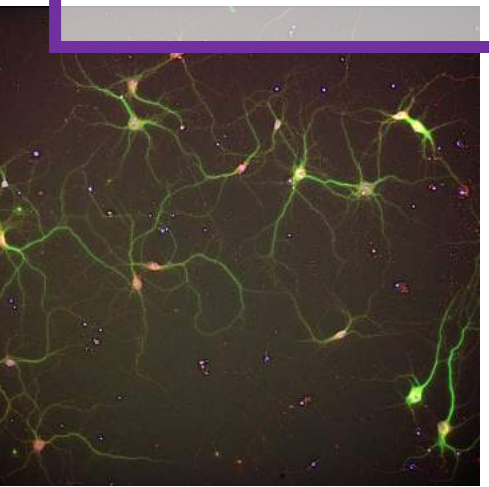
2ND ANNUAL "CAPTURING THE ART OF SCIENCE" IMAGE COMPETITION HOSTED BY LASER TAG

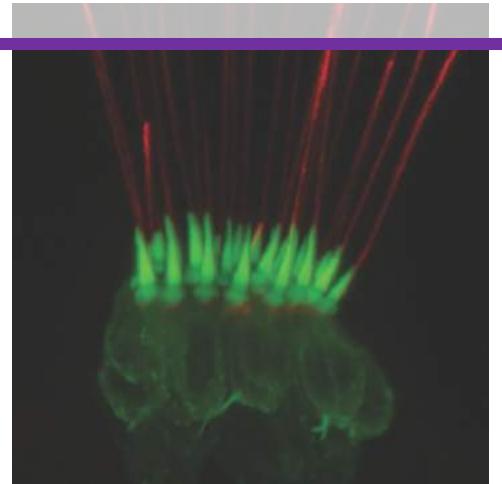
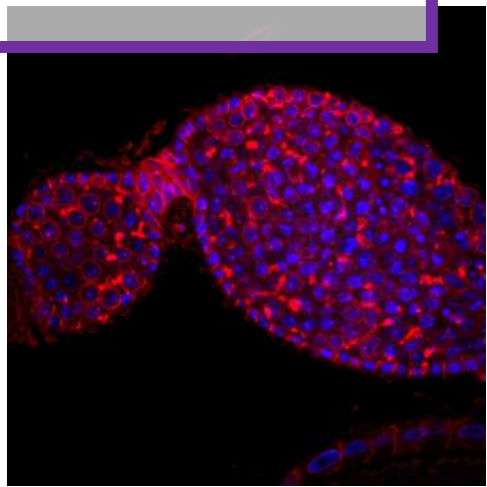
To enter, submit your best research image* and a brief research description** to litwak16@ecu.edu by **Friday, March 19, 2021.**

*Images can be edited and artistically stylized. **No more than 5 sentences.

Winners will be announced during RCAW.

Winning submissions will be displayed at the new NC Museum of Natural Sciences at Greenville.

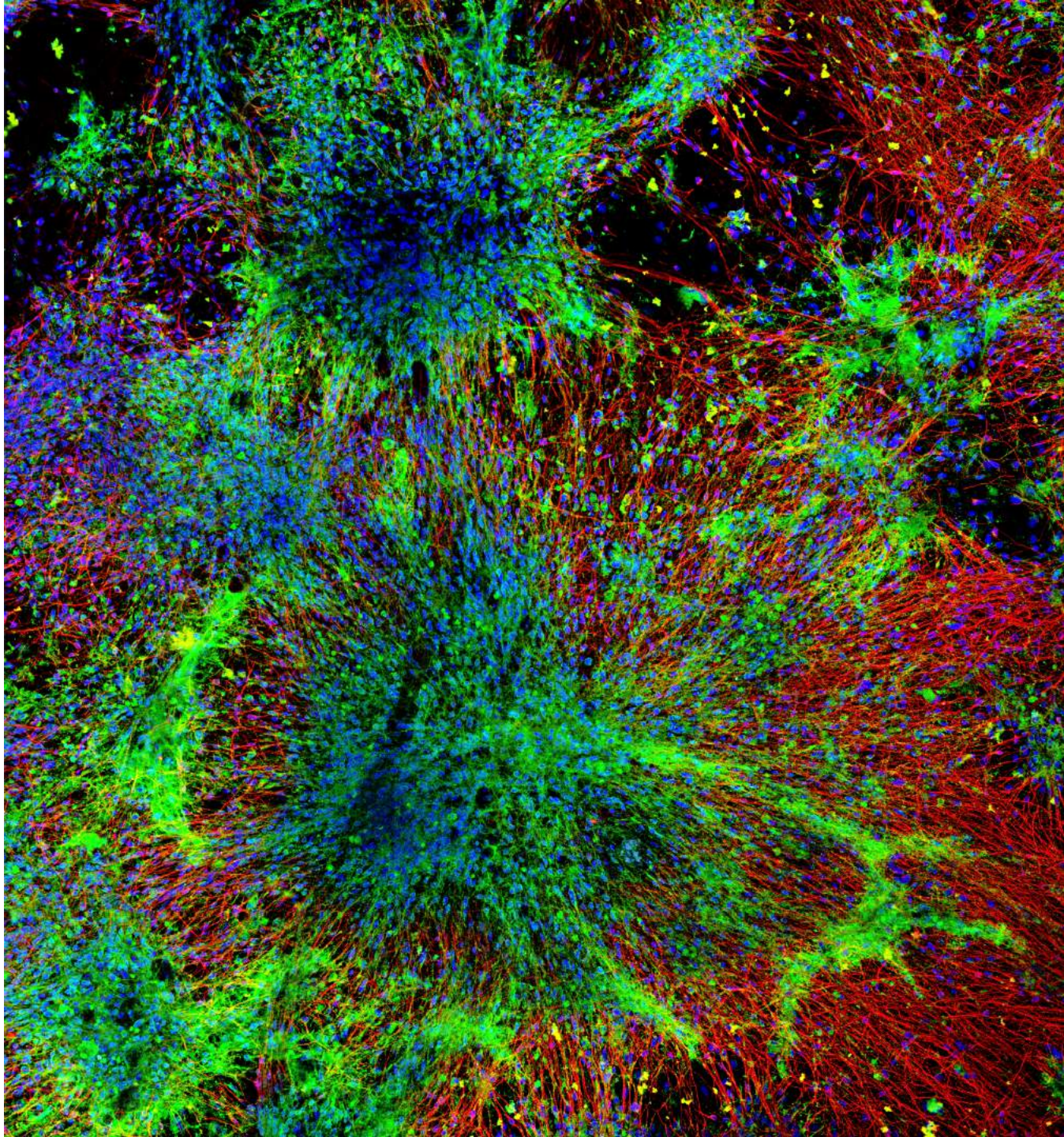


And the winners of the 2021 image competition are…

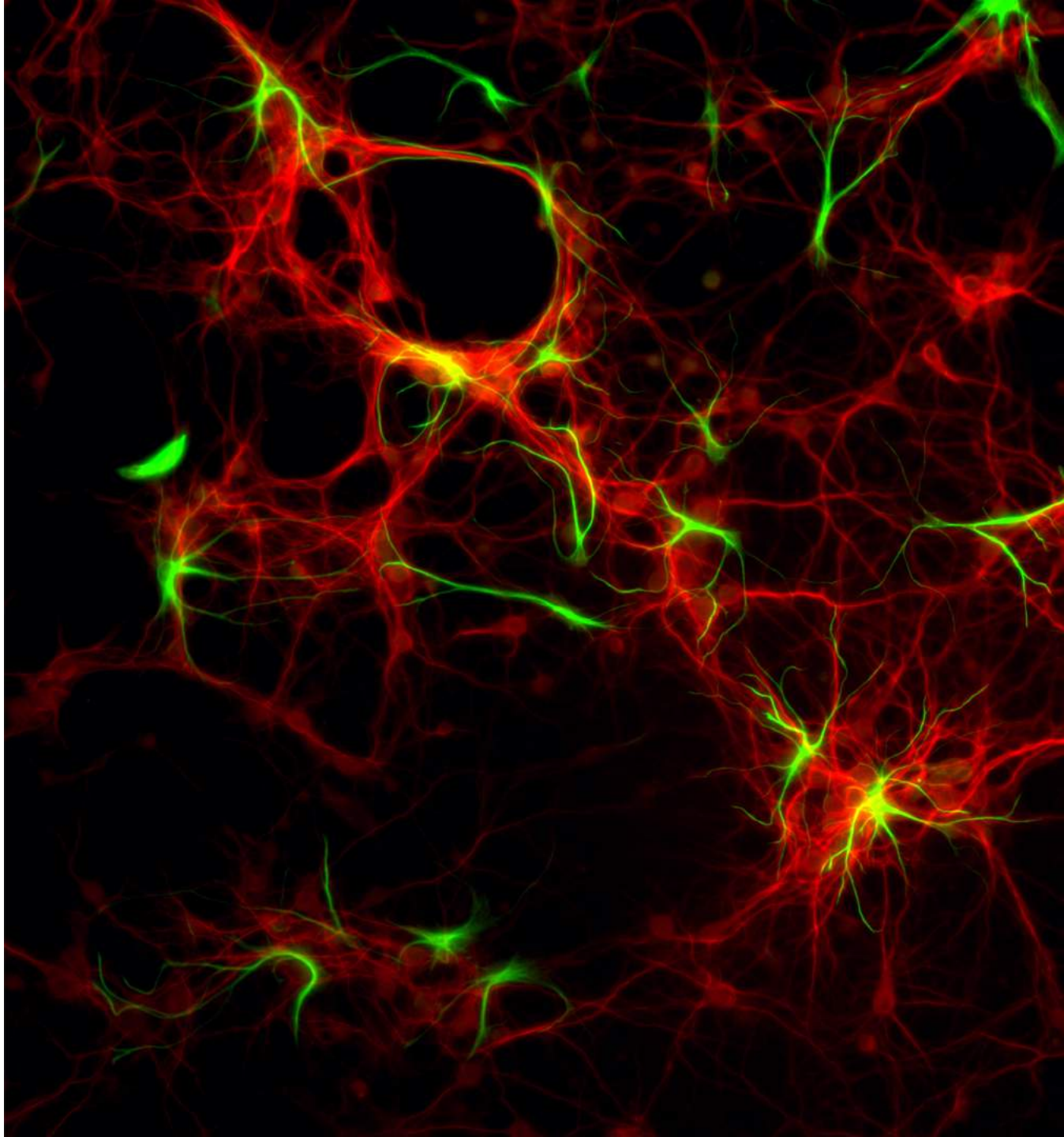
First Place: Emily Wilson

My research project uses induced pluripotent stem cell-derived 3D cultures to study the neural networks in the human brain during development! We can dissociate these 3D cultures into single-plane 2D cultures and record the firing of synapses after manipulating their environment. By manipulating neural networks such as this one, I have shown that the composition of molecules outside the cell (the extracellular matrix) can affect synaptic function. In this immunofluorescent image: blue marks cell nuclei (DAPI), red marks neuronal projections (BIII-tubulin) and green marks our molecule of interest (hyaluronic acid) which is a major component of the extracellular matrix. Look closely and you can appreciate the complex network of neurons and their surrounding components.



Second Place: Rohan Parekh

Our laboratory focuses on the neural control mechanisms involved in hypertension. This image depicts primary neurons cultured from mice. We are interested in understanding cellular interactions and signaling mechanisms between different neural cell types. Double immunohistochemical staining of neurons (red) and astrocytes (green) have allowed us to better understand the multidirectional communication between different cells in the brain. We hope that our primary cultures will help further elucidate novel therapeutic targets to combat neurogenic hypertension.

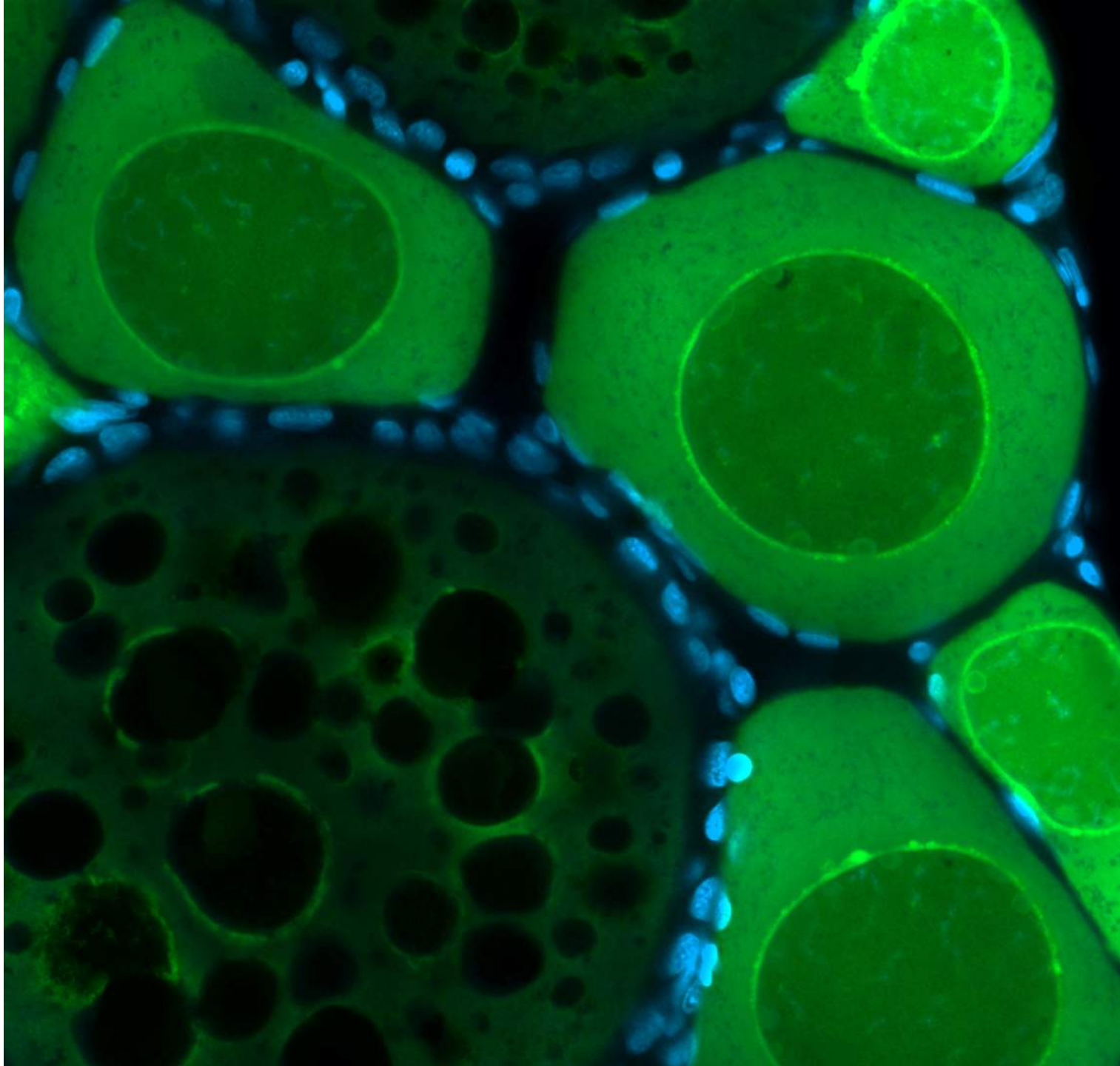


Third Place (Tie): Sarah Goodnight

Four young green tree frogs (*Hyla cinerea*) cluster together on a warm summer's night at a retention pond in eastern North Carolina. These frogs congregate *en masse* at breeding ponds during the summer months to mate, where the males will sing in large choruses to attract choosy females. However, breeding ponds can also be sources of disease—in fact, parasitic worms often infect green tree frogs and reduce males' ability to call and attract mates. For my research at ECU, I study how such parasites may alter sexual selection in these frogs, and how they transmit from host to host in our freshwater ecosystems.

Third Place (tie): Jonathon Carver

Germ cells are the only cells in an adult animal's body that can give rise to a new living organism. Depicted here is an optical section of oocytes and adjacent follicular (granulosa and thecal) cells from an 8-week-old zebrafish taken with a laser scanning confocal microscope. Note the dark green nuclei in the center of bright green cytoplasm in Stage I primary oocytes, this is the germinal vesicle that will eventually break down when the oocyte resumes meiosis and matures. The larger oocyte in the bottom left corner with a darker green color is a Stage II oocyte that has already begun to fill with yolk (dark circles). The oocytes are stained green with *tg(vasa:GFP)*, and the nuclei of follicular cells are stained blue with DAPI.

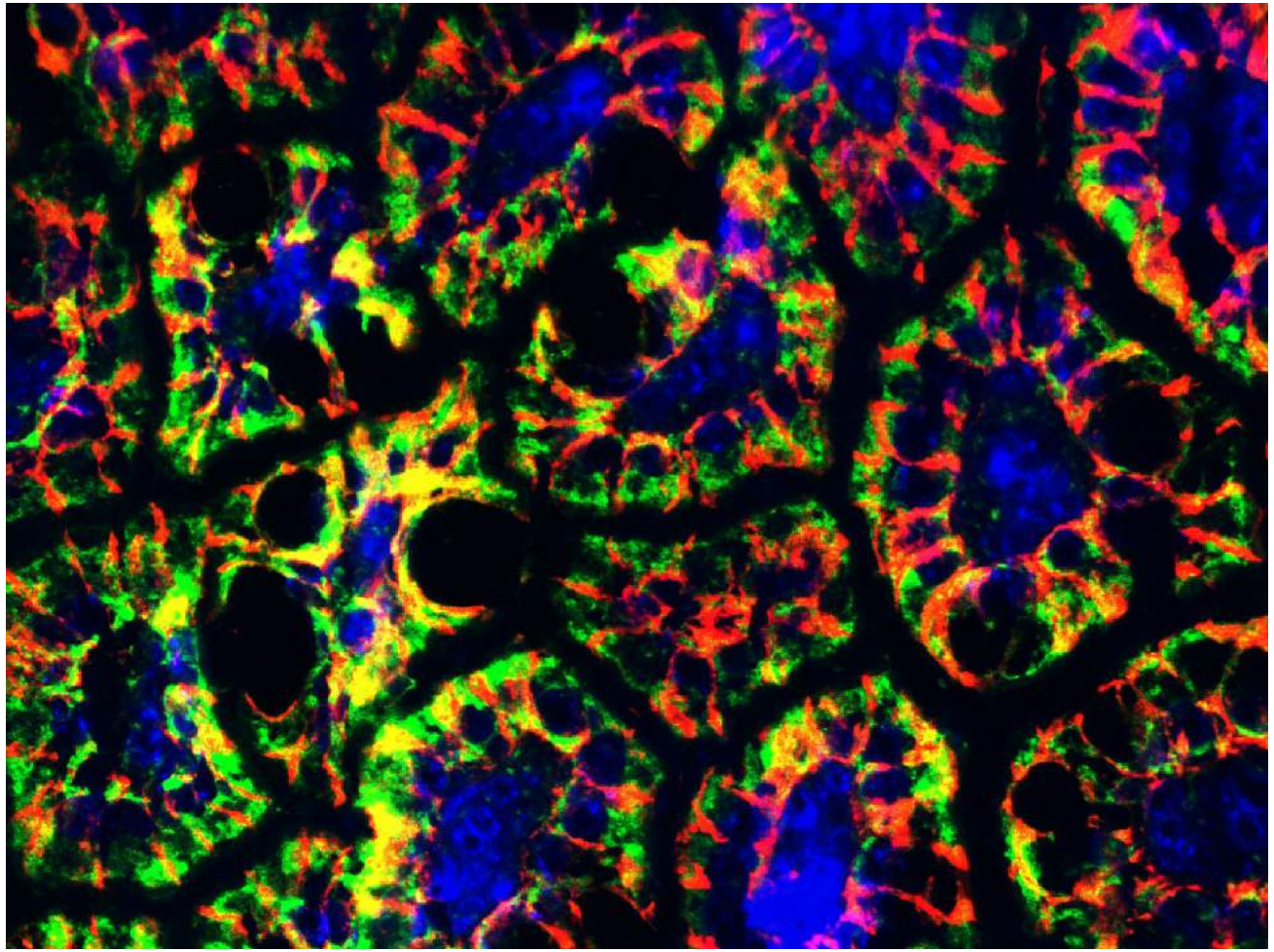


Honorable Mention: Peter Kann

The piercing eyes and gaping jaws of this Margined Tiger Beetle (*Ellipsoptera marginata*) are the last thing that many small beach-dwelling creatures will ever see. A series of serrated mandibles, sharp bristles, and gripping appendages make short work of anything incapable of outrunning this insect. Tiger beetles are incredibly fast and active hunters, able to travel approximately 125 times the length of their body in a single second. To put that in perspective, that would be equivalent to a human running at a sustained speed of 480 miles per hour. It seems that this beetle may have more in common with a cheetah than a tiger!

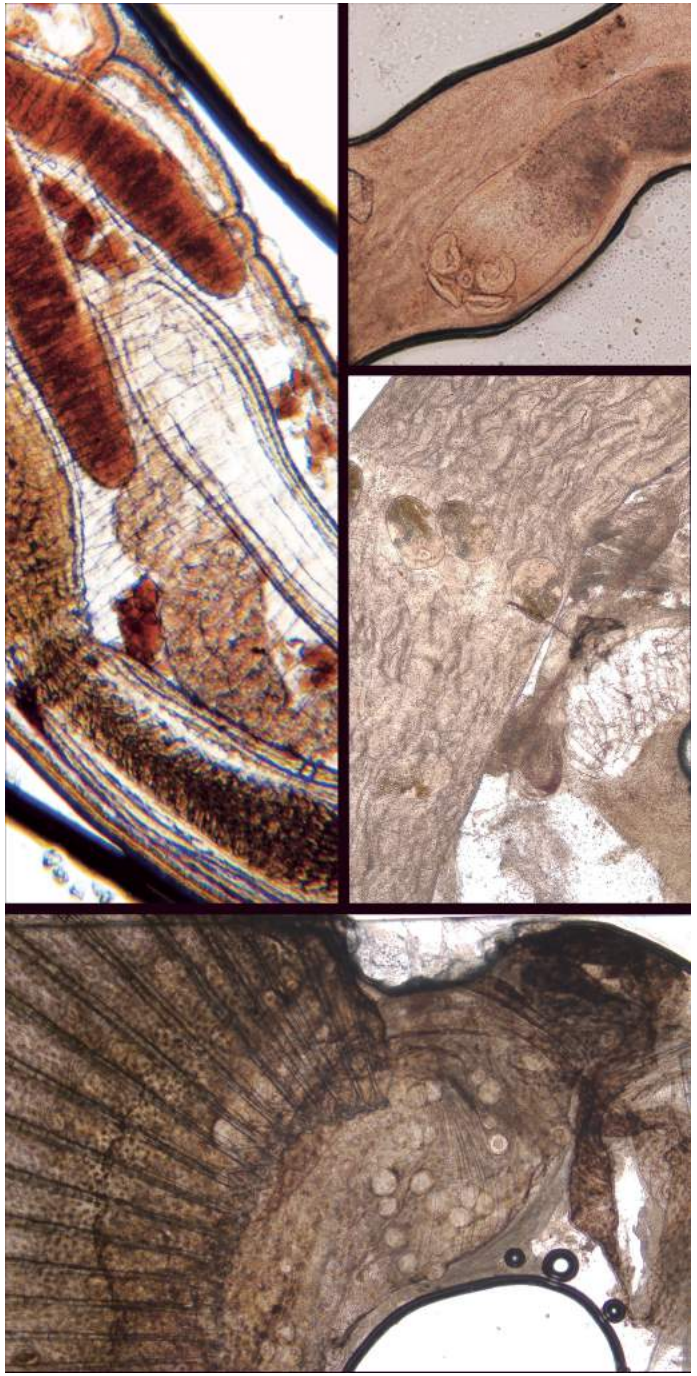
Honorable Mention: Amna Naser

This is mouse small intestinal tissue. I use it in my lab to study tight junction proteins such as claudin-7. This image is an immunofluorescent stain depicting claudin-7 in red and integrin a2 in green illustrating the colocalization of these proteins in a unique location in the cell (the basolateral membrane).



Honorable Mention: Christopher Moore

In coastal North Carolina, fish like the naked goby (*Gobiosoma bosc*) are often infected with multiple types of parasites at different developmental stages. Clockwise from left-to-right: an adult acanthocephalan; a larval cestode; adult trematodes; and larval trematode cysts embedded in *G. bosc* muscle tissue. Because these parasites typically require multiple invertebrate and vertebrate hosts to complete their lifecycles, parasite diversity in naked gobies can indicate overall biodiversity in the surrounding landscape, as these parasites won't appear in gobies if the other hosts needed by the parasite are not present in the system.

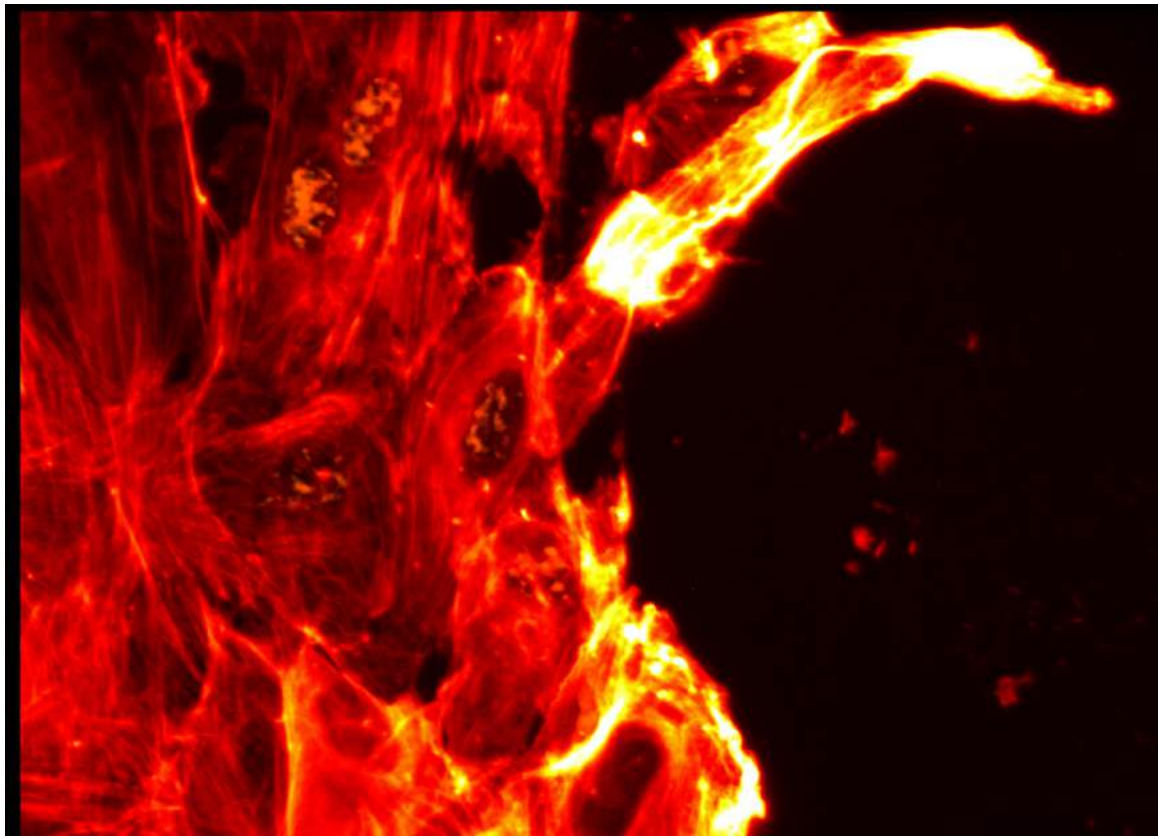


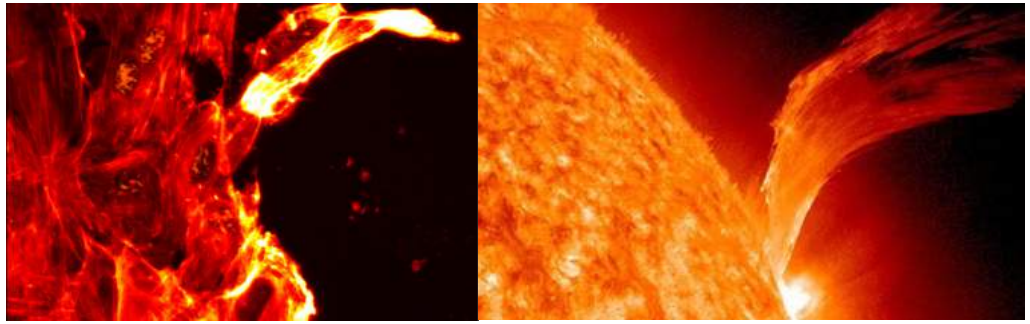
Honorable Mention: Fatema Salem

Human Cell Flares

High lactate levels in the serum and the inability to normalize those levels has been strongly correlated with unfavorable outcomes in cancer patient care. Recently, lactate is no longer considered a waste product of anerobic glycolysis, studies showed the crucial role of molecule in cells' migration, angiogenesis, and cancer cells' metastasis. In this project, I am investigating the effect of Lactate on HUVEC, melanoma and colorectal cancer cells under different acidic conditions. **Image A (Left)**: Actin filaments (stress fibers) of endothelial cells overexpressing the pH- sensing G- Protein Coupled Receptor 4 (GPR4), treated with pH 6.9 EGM-2 medium that has no Lactate, stained with Rhodamine-Phalloidin. **Image B (right)**: An image for a sun flare. Source (Neutrinos and solar storms - And now, the space-weather forecast | Babbage | The Economist)

Project Title: The Effect of Lactate and Protons on Endothelial and Cancer Cells Migration





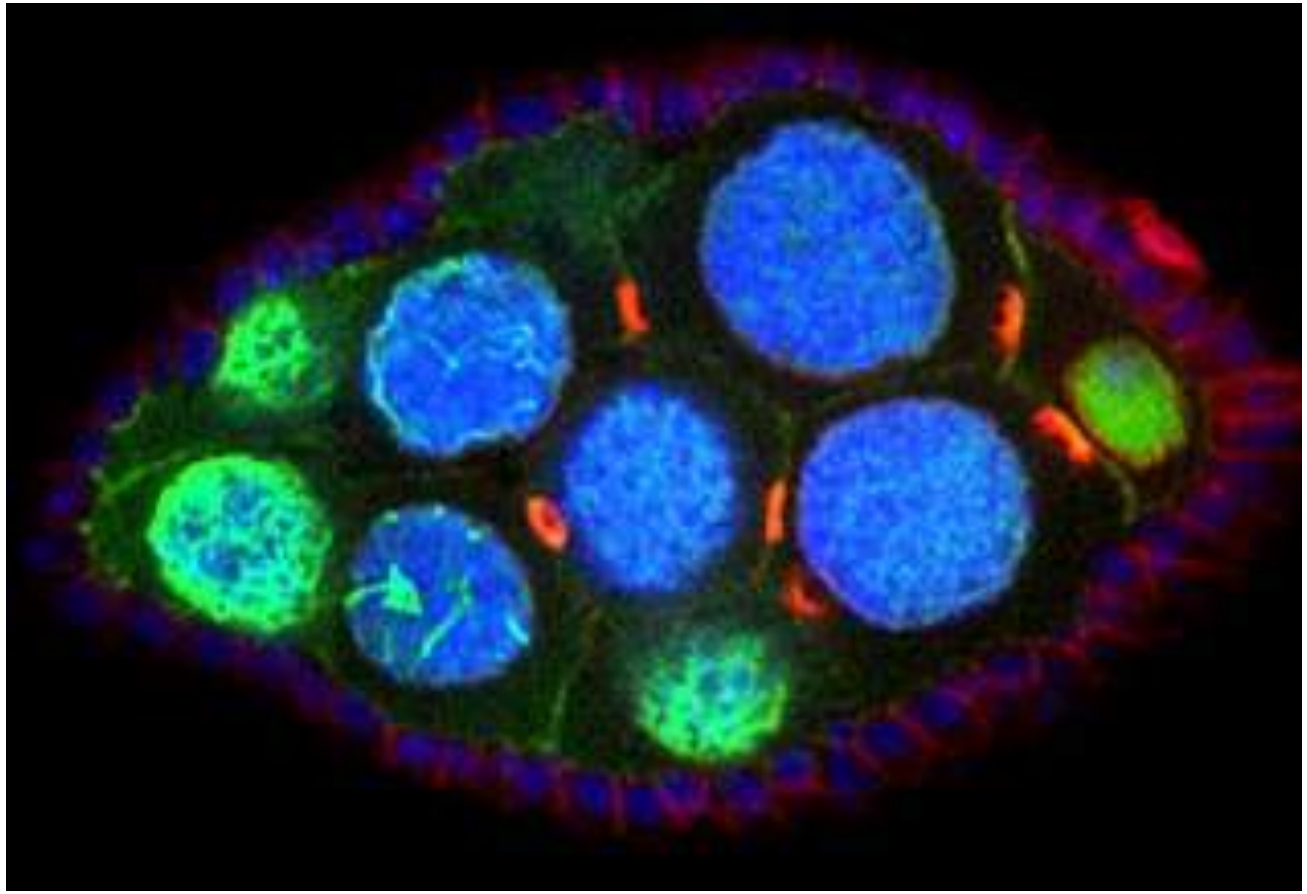
Honorable Mention: Samantha Dowiarz

Hickory Shad Scale

One goal of my research is to determine the age structure of Hickory Shad throughout their spawning range, and scales are one of the structures used to age fish. Scales allow researchers to age fish by counting annuli, or yearly rings that form on the scale and are visible under a microscope. Those annuli are the light grey circles that you can follow around the scale past the baseline, or the horizonal line that separates the light and dark grey portions of the scale. An interesting fact that few people know is that the baseline also separates what we see versus what is within the fish's skin; the light grey portion is visible when we look at a fish, but the dark grey portion is lodged inside their body, allowing these annuli to form.

Honorable Mention: Amanda Powell

The term ‘it takes a village’ is often used when describing how to best raise a child from infancy. But what many people don’t know is that this ‘village’ starts even before an embryo is created. My work in the ovary of the fruit fly, *Drosophila melanogaster,* allows me to visualize that it takes multiple cells and proteins in all shapes and sizes to help the maturing oocyte (egg) develop. In this image, large nurse cell nuclei (blue and green) provide nutrients, and information to the oocyte (green, at far right). Nutrients are transported between cells by large open ring canals (red), and the entire oocyte is enveloped by follicle cells which secrete eggshell proteins.



Many Thanks to Our Judges!

- Michael Crane (Associate Dean of Research, Marketing and Outreach for ECU's College of Fine Arts and Communication)
- Emily Jarvis (Executive Director of A Time for Science)
- Sharon Paynter (Assistant Vice Chancellor for Economic and Community Engagement)
- Trista Reis Porter (Executive Director of Greenville Museum of Art)
- BJ Smith (artist at the The Art Lab)