Researcher Spotlight: Emily Thompson, Ph.D.

ALS doesn't stop and neither do we. The reality is, people with ALS can't wait for treatments and a cure, and just as importantly, the tireless researchers working together around the world can't wait to make the next breakthrough. Researchers like our 2019 Milton Safenowitz Postdoctoral Fellowship Program recipients.

Our Milton Safenowitz Postdoctoral Fellowship Program continues to support young scientists and is the only program of its kind specifically funding early ALS postdoctoral fellows eagerly searching for a cure.

The awards were founded in memory of Mr. Safenowitz by the Safenowitz family – through The ALS Association Greater New York Chapter. The program encourages young scientists to enter and, importantly, to remain in the ALS field.

We are proud that 76 percent of the postdoctoral fellows we fund go on to start their own labs to continue studying ALS and mentor other young ALS researchers. The rest of our Safenowitz fellowship program graduates go on to careers in the biomedical industry, nonprofits, and medical writing, with many still staying in the ALS space.

This year, we are supporting six new postdoctoral fellows out of a highly competitive applicant pool. Over the next few weeks, we will highlight each fellow, their dedication and unique contributions to ALS research, as well as their interests outside of the lab.

We recently talked with Dr. Emily Thompson from the Rothstein Lab at Johns Hopkins University to learn about her unique research project focused on how the loss of a cortical astroglia subpopulation exacerbates dendritic and synaptic defects of upper motor neurons in ALS.

Emily Thompson, Ph.D.
Rothstein Lab at Johns Hopkins University
Project: Investigating the hypothesis that loss of astroglial Norrin support contributes to the structural alterations of neurons observed in ALS.

Can you briefly describe your academic background?
I received a Bachelor of Science in Biochemistry from the University of Tennessee and then went on to earn my Doctorate at the University of Alabama at Birmingham with a focus in Neurobiology.

It is said that every 90 minutes, someone is diagnosed with ALS and every 90 minutes someone dies from the disease. Time is not on the side of those who are diagnosed, and no matter what issues we are all currently facing in the world, ALS won't stop, so neither will we. What are you doing to address the urgency our ALS community is feeling? What are the goals of your funded research project?
My project is focused on understanding the role of the astroglial-derived protein Norrin on synapses during development, adulthood, and disease. Synaptic communication between neurons in the brain is essential for proper brain function, with disturbances contributing to many neurodevelopmental and neurodegenerative disorders. ALS is no exception, where structural abnormalities in neuronal synapses have been reported in upper motor neurons from the motor cortex, as well as lower motor neurons in the brainstem and spinal cord. Recently, progressive decreases in synaptic dendrite length and spine density in upper motor neurons were reported to precede significant neuronal death in ALS mouse models. Given our lab's previous findings detailing Norrin's role in regulating dendritic growth and spine density, my project will investigate the hypothesize that loss of astroglial Norrin support contributes to the structural alterations of neurons observed in ALS.

How might your work impact the ALS community?
Although my project is not directly relatable to patients in the short term, I expect to impact the ALS community in several ways. 1. My project will offer new insights into aspects of neuronal communication that are disturbed in ALS. 2. Determine the role of Norrin signaling in ALS neuronal pathology. 3. Investigate the therapeutic potential of Norrin in ALS mouse models.

What do you like about working in the ALS research field? Why did you decide to study ALS over other diseases?
I have had the privilege of working in several other fields previously, but I have found the ALS research field to be the most energetic and collaborative. There is a great energy in the ALS field that I feel is driven by interactions between researchers, funding organizations, and patients. As a new member of the ALS scientific community I have felt incredibly welcomed and look forward to making progress in my project and collaborating with other ALS researchers.

Why did you decide to study ALS over other diseases?
I have always had a strong interest in the interactions between neurons and the other major cell type in the brain, astroglia, and in particular when these interactions are dysfunctional. While prior to my current postdoctoral position I had not had any exposure to the ALS research field, I become immediately fascinated by the disturbances in neuronal-astroglial communication that occur in ALS. Moreover, my project in ALS research allows me to combine aspects of my previous expertise in basic science with my aspirations to make my work more translatable to patients in a disease setting such as ALS.

Where can people get more details about your research project?
More information can be found at our lab's website: https://neurodegenlab.org/. I'm happy to answer and look forward to questions from the ALS community.

It is often said that ALS is one of the most complex diseases to understand. Yet, you go to work every day to tackle the challenges of your research. What gives you hope that there will someday be a world without ALS?
The ALS research field is remarkably translationally minded. I think this has really pushed the understanding of this disease and continues to enhance the potential to provide therapeutic interventions in the near future. The collaboration that is happening in the ALS field also gives me hope, as I think the melding of different research disciplines and perspectives will bring forward innovative ideas to cure ALS. Moreover, the efforts of organizations such as The ALS Association have made a huge contribution in the continued efforts to understand, treat, and hopefully the eventual eradication of this devastating disease.

What do you like to do when you aren't in the lab?
I am an avid runner and outdoor sports enthusiast, so I spend a lot of my free time out on a run or exploring national and state parks. I hope to eventually visit all 62 national parks and run several of the major marathon races held in the US and abroad. I also recently took up baking and gardening and have really enjoyed the fun challenges that these hobbies bring.

Is there anything else you'd like to add?
I am extremely grateful for the support of The ALS Association and Safenowitz family. Your support plays an integral role in the overall progress of my work, thank you! I would also like to thank ALS patients for their essential contributions to the ALS research field, your bravery is truly inspiring.