GSBS Office of Career Development

Career Connections

A monthly newsletter highlighting career & funding opportunities

Emma England

1st Year, Genetics & Epigenetics Program

PhD Student

Fellowship Name: National Science Foundation Graduate Research Fellowship Program (NSF GRFP)

Fellowship Title: "*Characterizing biosynthetic gene clusters and secondary metabolites in Neocallimastigomycota"*

Opportunity Details: The NSF GRFP recognizes and supports outstanding graduate students who are pursuing full-time research-based master's and doctoral degrees in science, technology, engineering, and mathematics (STEM) or in STEM education. The GRFP provides three years of support over a five-year fellowship period for the graduate education of individuals who have demonstrated their potential for significant research achievements in STEM or STEM education.

"They Fund You As a Scientist": Navigating Fellowship Applications Before a Thesis Lab

Emma England was drawn to biomedical research from an early age. Her grandmother passed from stage IV glioblastoma while she was completing high school. Initially planning to attend medical school, England

discovered that advancing discoveries through research was a true passion during her undergraduate research experiences. She found satisfaction in working at the bench and mentoring other students.

As part of her research development, her undergraduate research mentor encouraged her to apply for the NSF GRFP which is open to undergraduate seniors and first-year graduate students. As a senior undergraduate she had just one challenge: the NSF GRFP emphasizes basic research, and her ultimate goal was to shift into biomedical and translational research with an emphasis on glioblastoma. After discussion with her mentors, though, she realized that it wasn't her exact thesis project but her ability to intelligently propose feasible science that underpins successful NSF GRFP applications. In England's case, she wrote her proposal on her undergraduate research in which she studied metabolites produced by anaerobic gut fungi through gene mapping. Utilizing computational tools, she sought to identify gene clusters that she could later utilize to produce and study metabolites produced by the fungi. The health implications of her project were clear: metabolites can be repurposed as antimicrobials to fight antibiotic resistance. To stay within the non-biomedical scope of the NSF GRFP, however, she focused on understanding the evolution of these metabolite-producing gene clusters and how these genes promote survival and communication within the fungi.

England encourages other students interested in the NSF GRFP to focus on what they can contribute to the scientific community, and to think deeply about the background of the area of science they may pursue in their rotation labs during graduate school. Nearly any translational or biomedical project can be examined from the building blocks of basic science. Students should emphasize a research question posed about the processes underpinning their biomedical research. A feasible scientific question and approach combined with a strong research motivation and willingness to give back to the scientific community are all aspects of England's proposal she knows were critical to her fellowship being funded.

> *"They award [the NSF GRFP] to you as an individual, not to your project or your lab. My advice to early PhD students applying to this fellowship is to write what you know. Even if your application is written on [a project] slightly different than what you end up doing in graduate school, that is okay. The application is trying to measure your ability to craft a compelling proposal."*

Although England recognized that not yet being in a thesis lab made writing her proposal more challenging, she noted that crafting the NSF GRFP submission early in her graduate career improved the novelty of her application's scientific question.

> *"[Not having yet joined a thesis lab] during this process also helped me approach the application from a much broader perspective, because I was not yet bogged down in the technicalities of a [thesis] project."*

Building Confidence Through Fellowship Writing

While England knew she wanted to pursue a research career, writing down her scientific motivations and accomplishments solidified the "why" underpinning her graduate career path.

> *"In order to write my personal statement and present the most complete picture of what I am aspiring toward, I spent many days just staring at my computer, thinking about my life and what had led me to this point."*

England has found the self-reflection aspect of the application helpful to maintain her "why" through the challenges of the first year of graduate school.

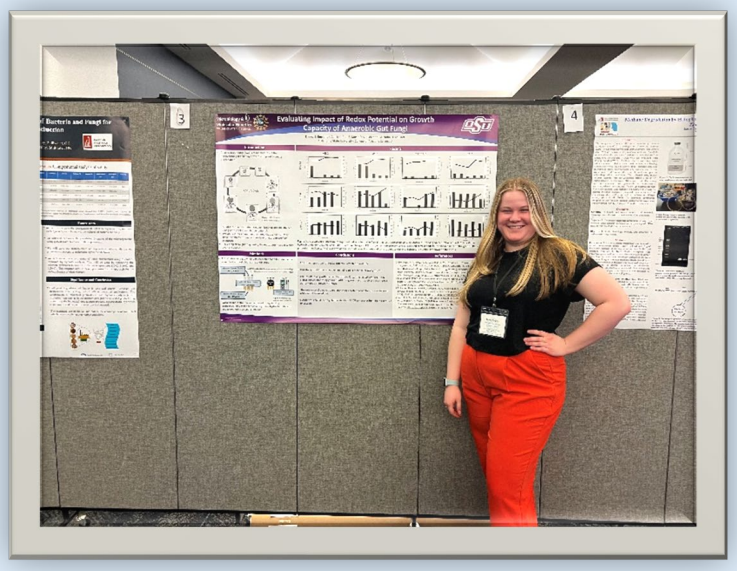
Receiving the NSF GRFP opened several doors for England throughout her rotation and research journey at the Graduate School. In a time with funding uncertainty, receiving a fellowship added an extra level of confidence in her ability to propose science as she navigated challenging coursework and lab selection. **She emphasizes that while the first year of graduate school is challenging, taking the time to apply is a win-win situation: in the best-case scenario, applicants receive multiple years of research funding support, and in the worst-case scenario, they receive invaluable experience in scientific writing.** England also emphasized that the fellowship process solidified her scientific support system. Working with research mentors and peers, she received extensive feedback on her application, leading her to think more critically about science and how she presented herself in writing. The faculty and peers around her ensured she brought her application to the finish line through thoughtful edits and encouragement. She received feedback not only from her past research mentors and lab members, but also from additional faculty in her field to ensure the application was competitive and well written.

> *"Don't let yourself miss out on an experience just because you aren't sure. […] The support system at [the Graduate School] is excellent, and the faculty and staff here want to help us reach our goals in any way they can. Do not be afraid to ask for help!"*

England's ultimate career goal is to become a professor at a research university, splitting her time between cutting edge discoveries and teaching courses to aspiring scientists pursuing their undergraduate degree. She is passionate about outreach and science communication in the broader community, especially at the elementary, middle and high school levels. She believes one of the critical aspects of her career is to introduce younger students to careers in science.

Students interested in applying to the GRFP in the fall of their first year in the PhD or MS programs at the Graduate School are encouraged to reach out to the Office of Career Development. Fellowship advising is available to assist you in strategizing for the NSF GRFP fellowship and revising your application documents.

For more information on fellowship advising/resources and to fill out our Intent to Apply for an External Fellowship survey see the Graduate School's External Funding Opportunities page.



England shows off her science via poster session.

England celebrates her entrance to the Graduate School by posing with the Mitchell Research Building sign.

England (second from right, front row) poses with the Graduate School's 2025 Academy program.

England (second from left, front row) poses with her Graduate School peers.