GSBS Office of Career Development

Career Connections

A monthly newsletter highlighting career & funding opportunities

Madison Grayson

5th Year, Medical Physics PhD Program

1. Ruth L. Kirschstein Predoctoral Individual National Research Service Award (F31, PA-25-422)

Title: "*Dependence of radiosensitivity of lymphocyte subtypes on proton dose and LET and its impact on immune suppression.*"

Opportunity Details: The NIH F31 enables promising predoctoral students to obtain individualized mentored research training from faculty sponsors while conducting biomedical research.

Summer Research Transforms into Successful PhD Project

When Madison Grayson was selected for the American Association of Physicists in Medicine Summer Undergraduate Fellowship she anticipated she'd explore high impact, patient-centered research. She was placed in lab of Radhe Mohan, PhD, where she investigated adverse effects in patients following radiation therapy. This was her introduction to biological modeling of proton and photon therapies—a cross-disciplinary approach integrating physics, biology, and clinical practice. Grayson was so inspired by her summer research experience that she applied to the Graduate School to pursue her PhD in

the Medical Physics Program and continue her work with Dr. Mohan. As a member of Mohan's lab, she currently investigates the effects of radiotherapy on the immune system. Her project investigates the side effect of lymphopenia, a reduced level of white blood cells resulting from radiation therapy during cancer treatment. Severe lymphopenia is associated with reduced survival and poor response to immunotherapy. The goal of her research is to predict which patients have the greatest risk of developing severe lymphopenia after radiation therapy, and create better treatment plans to reduce that risk. Her long-term goal is to become a clinical medical physicist continuing to research proton therapy.

Mentorship the Key to Sharing Science

Grayson's fellowship project sits at the intersection of computational modeling, immunology, and radiobiology. The wide scope of applications for her work required her to surround herself with experts in multiple areas. The NIH F31 fellowship is a training grant, meaning she needed to identify practical mentorship and learning opportunities in multiple subjects to ensure her research success. Having multiple experts identified as mentors during her research also ensured that her proposal utilized correct language and approaches to satisfy scientific reviewers with a wide range of expertise. One of the most helpful aspects of Grayson's mentors was their genuine excitement for her project. Fellowships can be complicated and introduce many documents that are brand new for student writers. Grayson credits much of her success to her mentor's willingness to meet often during her writing process and the accessibility of subject matter experts who reviewed her work. For non-science documents, she found the NIH Fellowship Proposal Development course an invaluable resource. The course provided constructive feedback to tailor fellowship writing to NIH review criteria, especially for documents with which her advisor had less experience.

She has used the excellent mentorship she received as motivation to mentor her own peers and trainees. Both teaching and mentorship are long-held passions for Grayson. In addition to supporting students in the lab, she has served as a teaching assistant, peer mentor, and educational liaison for Medical Physics students. Helping students navigate the Medical Physics program has been incredibly rewarding for her.

> *"I have benefitted so much from having incredible mentors throughout my education and my goal is to pay that forward by helping other students. [...] Supporting other students has been one of the most rewarding parts of my time in graduate school."*

Fellowship Submission Leads to Future Grantsmanship Success

Grayson's biggest takeaway from her fellowship experience was discovering that she loves writing grants. Securing funding is a critical part of her future career as a clinical medical physicist. While she found the process intimidating at first, it was rewarding to explain her

vision for her research project. Grayson applied for her fellowship while also preparing for her PhD candidacy exam and completing the first of the American Board of Radiology certification exams. She learned the value of supportive peers and accessible mentorship, and she hopes to continue providing that support to others throughout her research career. She is excited to continue applying for future grants while achieving her research goals.

> *"[I am] more confident in my ability to pursue future funding opportunities. [This fellowship] has given me the confidence and experience to help navigate [the grant] process."*