

The engineering design process is a creative problem-solving process that optimizes within the boundary conditions of a system in order to address user needs. It requires a keen understanding of system constraints and the available levers. In my doctoral work, I worked within the constraints of biomechanics and physiology, designing soft robotic elements to interact with the body. I developed a novel robotic system aimed at improving the quality of life for end-of-life patients, however, I concluded that the laboratory is not how I want to use my skills to serve society. From my clinical ICU training, I saw that many of the issues that affect human health are far more upstream than the levers of change available via research. One of our patients was a teenager in a diabetic crisis because her insulin pump broke and insurance hadn't approved a new one yet. We cared for her with the best of ICU care, but, in that moment, she didn't need a more advanced research technology. She needed a healthcare system that gave her access to technology that was already available. Medical advancements are necessary, but are only impactful if they are widely accessible, and the upstream levers to drive this are ultimately policy based. Through the AAAS STPF Legislative Branch Fellowship, I aim to use my creative problem-solving skills to understand and affect policy levers towards building equitable health systems and access.

*Memorable hook that differentiates the applicant and their experiences.*

*Goal is clear*

*Claim of the CER format clearly stated*

The interdisciplinary nature of my research has equipped me with a wide array of transferable skills to working in science policy. Because I conducted literature research in fields spanning from medical robotics to patient quality of life, I am well versed in navigating unfamiliar research areas. I interviewed clinicians that manage the care of end-of-life patients, and I used their insight to guide the design process and to cater to the needs of the different stakeholders. My clinical experience also brings an on-the-ground perspective of the delivery of care. It informed the design of my research project, but also taught me critical skills in communicating with different audiences. I learned to work with an interdisciplinary care team to develop a comprehensive care plan, brief the attending physician, and communicate the final plan to patients and their families in clear, accessible language. I learned to adjust the appropriate level of detail, jargon, and analysis to these different audiences. As the medical student on the team, I was the person with the most direct interaction with the patients; it became clear how my role of communicating information between the team and the patient was critical for patient comfort and agency. It was an honor to serve this role of keeping the patients and their families informed and assuring them that they were being cared for. This dual engineering and medical training taught me a wealth of skills applicable beyond the laboratory.

*Mirror program criteria: communication*

*Credentials as a clear communicator*

*Evidence and Reasoning*

*Mirror program criteria: leadership*

Through advocacy, I developed experience in working to update existing academic policies to drive change. In my department-level advocacy, I co-founded an effort to push for departmental change towards diversity, equity, inclusion, and justice (DEIJ) starting in 2017. Our years of work secured changes to the mandatory curriculum, requiring integration of topics on health disparities. I was recruited as a teaching assistant to design a "Disparities in Clinical Medicine" curriculum, because I was one of the only students in the department with an academic understanding of health disparities. I taught other research trainees how to make connections between health research and broader economic and social issues, including topics such as inequities

*Reiterates their own understanding that policymaking process is complex*

in access to telemedicine in rural areas and the effects on quality of care. These topics reveal the role of policy levers in addressing economic and social determinants of health.

*Mirror program criteria: flexibility and openness to*

My technical training and advocacy experience has shown me how different policies and systems interact to influence people's quality of life. As a legislative fellow, I am interested in a wide breadth of issues, spanning from health to education to labor policy. From both my clinical experience and my teaching work on health disparities, I am passionate about addressing issues surrounding health systems and access to health care. From my research work in emerging health technologies, I am interested in issues surrounding health science and innovation. Beyond the space of explicit health policy, my interdisciplinary scientific perspective and ability to navigate conversations with a diverse set of fields would allow me thrive in connecting issues in seemingly different legislative portfolios, such as climate related legislation and its downstream effects on society and human health. Additionally, my experience in graduate student advocacy has highlighted how policies surrounding science and academic research ultimately become workforce development issues, and this personal experience leads to my interest in covering issues in both education and labor policy.

*Technical competency is only vaguely described here. This is an area of potential improvement in the application statement*

I imagine my scientific expertise will be widely applicable to this broad portfolio of topics as a legislative fellow. My technical expertise will allow me to consider intersecting technologies and scientific consequences. From my interdisciplinary background, I bring the ability to understand new fields beyond my area of expertise quickly, which will allow me to respond rapidly to urgent current events and brief Members of Congress on relevant scientific and technical topics. My experience translating between fields will enable me to understand technical reports and translate them to relevant briefing information, talking points, and speeches appropriate to different audiences. The creative skills from my engineering design training will facilitate designing legislative text that accounts for the constraints of the political landscape and how to optimize for intended outcomes. My technical training and advocacy work have laid the foundational skillset for applying my expertise towards a career in public service.

*Answers the question: Why AAAS STPF? Demonstrates openness to growth.*

The AAAS S&T Policy Fellowship in the Legislative Branch would be a critical opportunity to begin my career in public service. Through this fellowship, I look forward to the opportunity to witness how the legislative branch works, how coalitions of common interest are formed, and how successful legislation is crafted. In my advocacy work, I've seen the power of what can be accomplished via groups of passionate and talented people, and I envision that the network of AAAS STP fellows to be a critical resource for assembling such groups to advance science policy. In the future, I see myself working in a broad array of science policy spaces, such as a local department of public health or a patient advocacy organization, and I am interested in running for office. Ultimately, I want to build a career affecting these upstream levers that affect health and quality-of-life by improving government policies and services.

*Policy making process is understood as complex (even if not fully articulated)*

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My technical training has equipped me to navigate the worlds of engineering and medicine, but it is through my advocacy experience that has taught me the leadership and interpersonal skills that I would love to leverage in the world of policy. During my time at [REDACTED], I have been involved in various efforts towards establishing better working conditions for graduate students. These stressors are often systemic problems outside of individual graduate student control—such as funding insecurity, harassment and discrimination, student visa uncertainties—that can take a large toll on mental health. My experience as a graduate student at [REDACTED] has highlighted how the mental health crisis of scientific trainees is critically a STEM education and workforce development problem that is best addressed through policy.

In my legislative advocacy efforts, I have participated in (##) advocacy trips through both the Science Policy Initiative (SPP) and the Graduate Student [REDACTED] External Affairs Board. Working with other student advocates, I developed policy positions representative of graduate student interests, including steady federal science funding, fair student visa conditions, and combatting sexual harassment in STEM. In these constituent meetings, we focused on telling the human stories that underline the need for our asks: stories of censored research presentations when financed by private funding, international students forced to miss family events due to discriminatory visa policies, and the attrition of promising young scientists to a toxic culture of harassment and discrimination. We coupled these human stories with relevant asks relating to proposed or pending legislation. We related our asks to the relevant interests of a member's district or state, connecting our individual stories to a bigger picture of the landscape of how scientific research is conducted across the country. After participating in (##) advocacy trips, I served as the co-chair of SPI's annual Congressional Visit Days for 20[REDACTED] and 20[REDACTED]. I took on the role of training other graduate students in how to craft pitches and leave behinds to have successful constituent advocacy meetings.

As a legislative fellow, I would love to understand the other side of a constituent meeting and how these concerns and asks are passed forward.

Through my work with the [REDACTED] Graduate Student Union, I collaborated with student advocates across campus to affect institutional levers to improve graduate student working conditions. I have experience building consensus and coalitional buy-in to student demands, such as centralized funding for DEIJ officers. I led an effort to write a letter to the Provost calling for this centralized funding, collecting the signatures of (##) professors and (##) student groups across (##) departments. Through 1-on-1 conversations, I have engaged graduate students of diverse backgrounds by listening to their concerns and connected folks to a collective space to advocate for shared issues such as affordable housing, dental insurance, and protections for international students.

Through both legislative advocacy and union organizing, I have collected 4 years of experience in building coalitions and consensus among diverse groups in many different contexts. In a legislative branch fellowship, these leadership and interpersonal skills will allow me to leverage my technical expertise towards addressing a wide variety of issues that ultimately affect people's day-to-day lives.

*Demonstrates baseline understanding of how congressional policies are informed*

*Mirror program criteria: leadership*

*Emphasizes their ability to engage diverse "constituency" – connects to the goal of working in a congressional office*