

## Biomedical Careers In Academia Panel Discussion

Boston University's Broadening Experience in Scientific Training (BU's BEST) program provides opportunities for doctoral and post-doctoral trainees to enable their professional development and to expose them to the host of career paths available to them with a PhD in the biomedical sciences. On March 20, 2024, BU's BEST hosted a panel discussion with field experts on academic careers in biomedical sciences. This was the second in a series of four panels aimed at educating PhD students on career opportunities available after graduation. The panelists, all pre-doctoral and post-doctoral alumni, included Dr. Karen Bottenfield, Senior Academic Program Manager, Oral Health Sciences Master's Program, BU Chobanian & Avedisian School of Medicine; Dr. Matthew Gagne, Postdoctoral Research Fellow, National Institute of Allergy and Infectious Disease (NIAID); Dr. Sarah Mazzilli, Assistant Professor of Medicine, BU Chobanian & Avedisian School of Medicine; Dr. Elizabeth Zulick, Vice Chancellor, Northeastern University. Dr. Barbara Schreiber, Associate Professor of Biochemistry & Cell Biology, BU Chobanian & Avedisian School of Medicine moderated the discussion. The panelists were first asked to describe their career paths to date.

Dr. Mazzilli studied biology and chemistry at Bridgewater State University, then completed her PhD at the University at Buffalo. She did her postdoctoral work at BU with Dr. Avi Spira, where she studied the development of lung cancer from smoking using a transcriptomic approach in non-squamous cell mouse models. She collaborated with Johnson and Johnson, after which she established her own research laboratory at BU. Dr. Bottenfield earned her master's degree in forensic anthropology before completing her PhD in Anatomy and Neurobiology at BU, studying with Dr. Tara Moore. Her research focused on investigating potential therapeutics for enhanced recovery after stroke in rhesus monkey models. She remained in her PhD lab for her postdoctoral research until she accepted her current role. Dr. Gagne completed his PhD at BU, studying with Dr. Andrew Henderson before starting his postdoc at the NIH, where he conducts HIV and COVID-19 vaccine research. Dr. Zulick went straight from undergrad at Union College to BU's School of Public Health, where she completed her master's degree. Her PhD in Molecular and Translational Medicine and postdoctoral research were both completed at BU under the direction of Dr. David Sherr and Dr. George Murphy, respectively. She has worked in the BU Center for Regenerative Medicine and taught at BU Metropolitan College. Since then, she has been at Northeastern University, first as a teaching faculty member, then in several dean positions, and now as Vice Chancellor.

The panelists described their plans for the next stage in their careers. Drs. Mazzilli and Bottenfield indicated an interest in staying at BU and continuing their research with the goal of being promoted. Dr. Gagne has begun his search for an academic faculty position in a teaching environment where he can spend most of his time conducting research. He hopes to continue his research in immunology and infectious diseases. Dr. Zulick feels that on some level, she has already reached her dream job, so she is at a point where she is trying to figure out what her next steps are. Her current position has less of a focus on students and more of a focus on administration, but she is looking to fill her cup on both levels, which makes it challenging to decide on next steps. Her long term goal is to increase access to STEM education.

Dr. Schreiber next asked what recommendations the panelists have for trainees looking to pursue their career paths and what skills they think are most important to develop. Dr. Mazzilli advised that an academic role requires the desire to do hard work, the drive to get grants, and strong scientific communication skills. Dr. Bottenfield also highlighted the necessity of skillful verbal and written communication. She said that professionalism, detail orientation, maturity, and good people skills are critical, since "you never know who you might need to write a letter of recommendation." Dr. Gagne emphasized that he is junior in his career, but he still had useful advice for trainees. He said that working hard is what sets people apart and that the people who end up becoming PIs are often both the hardest working and easiest to work with individuals. He advocated for trainees to always "be present", excited to be there, and willing to put in long hours when needed. Dr. Zulick said that it is important to say yes to opportunities, even ones that don't seem interesting, to explore and stay curious about what is happening in science. She reiterated the importance of communicating and building a network, since professional connections may be a support system or a path to a future job opportunity. She pointed attendees toward the BU's BEST alumni mentoring network, which allows trainees to network with BU alumni based on their career paths.

The panelists were then asked if they would do anything differently if they had the opportunity to redo their paths to their current career. Dr. Mazzilli said that she wouldn't change her academic course; however, she regrets only taking two days between the end of her PhD and the beginning of her postdoc rather than having a break. She suggested that PhDs who will be stepping into postdoc roles give themselves at least a week off! This will provide time to tie up graduate work, showing the ability to finish projects. She also noted that once a new position has been started, it may be a long time before the opportunity to take another break arises. Dr. Bottenfield is happy with the way her career path unfolded, regardless of it not being the path she expected. Despite being presented with many challenges, she was afforded many unique experiences.

She said that she was a non-traditional student and that it would have been nice to finish her PhD when she was younger since balancing graduate school with having a child was difficult. She concluded by noting that her mentors helped her greatly, both in academic ways and in "life". Dr. Gagne is happy with his career path but wished that he had sent out his resume earlier than just before his defense. In general, he said that he has never ended up regretting getting things done ahead of time. He urged panel attendees not to wait until the last minute to start thinking about career steps. Like Dr. Bottenfield, he emphasized the value of having diverse mentors, noting that they helped him in ways he wouldn't have expected. For example, he has a one-year-old child, but many of his mentors were senior men in leadership roles who didn't have expectations of men taking paternity leave or being involved in their child's infant months. It was helpful for him to have female mentors as well, who understood his situation better. Dr. Zulick regrets that she did not have any women on her dissertation advisory committee. She struggled to find a female mentor with a successful career and family since there were not many female PIs she could turn to at the time. "Having women mentors and sponsors who can lift you up and elevate you is important," she said. "You can go back to your mentors at different points in your life, so be strategic about your committee and who you go to in terms of mentorship."

Finally, the discussion concluded with the panelists giving their advice on managing work-life balance, a notoriously difficult task in academic careers. Dr. Mazzilli noted that work-life balance is hard to maintain. This is exacerbated by academic cycles, such as grant application timelines and university class calendars. She recommended being consistent with personal time and being sure to schedule some for the weekend. Maintaining a very clear schedule has been helpful to her, allowing her to juggle many different aspects of her job. She suggested taking breaks, vacations, and being deliberate in scheduling time for personal life. Dr. Bottenfield said that work-life balance is a work in progress for her. When not working, she tries to be in the moment, although she does have to take work home at times. She also said that it helps her to be organized and plan ahead so that she can designate blocks of time for personal things, including parenthood. Dr. Zulick said that exercise, such as working out on a Peloton, has helped her greatly. She said that although she doesn't have a great handle on work-life balance, she tries to give herself grace, recognizing that raising 3 children and managing a senior-level position is not easy. She suggested building a community that is flexible and supportive, including friends, mentors, and family. She encouraged everyone to make decisions that work for them, even if they don't work the best for other people.

We would like to thank the panelists for sharing their insights on careers for PhD-trained scientists in academia. The breadth of their roles is a tribute to the host of options open to our graduate students and post-doctoral researchers.

**Summary by PhD students, Bahar Bakhshi, Jillian Grassia and Madeline Labott**