To Be or Not To Be a PhD Candidate, That Is the Question

By Katie Mitzelfelt, PhD, Lecturer, University of Washington Tacoma
AWIS Member since 2020

Choosing whether or not to work toward a PhD, and then whether or not to finish it, can be very difficult decisions—and there are no right or wrong answers.

Obtaining a PhD is a prestigious accomplishment, and the training allows you to develop your critical-thinking and innovation skills, to conduct research into solving specialized problems, and to learn to troubleshoot when things don't go as expected. You develop a sense of resilience and a commitment to perseverance—skills which are rewarded when that one experiment finally works or when the answer to your long-sought-after question becomes clear. However, finishing a PhD involves a lot of work, time, and stress. It is mentally, physically, and psychologically exhausting.

There are other ways to hone critical thinking and problem-solving skills and many careers that do not require a PhD such as teaching, science policy, communications, technical writing, quality control, and technician work. Opportunities exist in industries from forensics to food science and everywhere in between.

Countering the Stigma of Perceived Failure

Often we mistakenly view a student's decision not to pursue a PhD, or to leave a PhD program, as giving up. Many academics view non-PhDs as not smart enough or strong enough to make it. But this is simply not true. In April 2021 Niba Audrey Nirmal produced a vulnerable and inspiring video on the topic of leaving graduate school, titled 10 Stories on Leaving Grad School + Why I Left, on her YouTube channel, NotesByNiba.

> **"Everyone is going to have an opinion about whay you do with your life. They'll have an opinion if you finish your PhD; they'll have an opinion if you don't finish your PhD. You have to realize what is best for you."**

In making the video, she hoped to change people's minds by naming the stigma, shame, and guilty feelings that come with leaving a PhD program. She highlights ten stories from others who either completed their PhD programs or chose to leave, and she goes on to openly share her personal reasons for ending her own doctoral studies in plant genetics at Duke University.

The people showcased in the film share the reasons behind their respective decisions to leave or to stay, as well as heartfelt advice encouraging viewers to make the decision best for them. Participant Sara Whitlock shares, "I decided to leave [my Ph.D. program]... but I still had to kind of disentangle myself from that piece of my identity that was all tied up in science research, and that took a long time, but once I did, I was a lot happier."

Another participant, Dr. Sarah Derouin, states, "Everyone is going to have an opinion about what you do with your life. They'll have an opinion if you finish your PhD; they'll have an opinion if you don't finish your PhD. At the end of the day, you have to realize what is best for you . . . and then make decisions based on that, not on what you think other people will think of you." In her film, Nirmal recommends the nonprofit organization PhD Balance as a welcoming space for learning about others' shared experiences.

A Personal Choice

So, do you need a PhD? It depends on what you want to do in your career and in your life. It also depends on your priorities—money, family, free time, fame, advancing science, curiosity, creating cures, saving the planet, etc. (Note that what you value now may shift throughout your life. Your journey will

not be a straight line: every step you take will provide an experience that will shape who you are and how you view the world.)

Your decision whether or not to pursue a PhD should be based on your specific goals. Whether or not you obtain a PhD, remember that your journey is unique. The breadth of our experiences as scientists is what yields the diverse perspectives necessary to tackle the world's difficult problems, now and in the years ahead.

The stories below, based on my own interviews, provide examples of the personal experiences and career choices of some amazing and inspiring scientists. Some of them decided to skip further graduate studies; some chose to go the whole distance on the PhD route; and still others left their doctoral programs behind.

Mai Thao, PhD, Medical Affairs, Medtronic

Dr. Mai Thao learned what a PhD might entail during a summer research stint at the University of Wisconsin–Madison, when she was an undergraduate. "Being a first-generation immigrant and first-generation college student, my knowledge of working/professional life was limited to assembly lines and retail. The autonomy I had that summer appealed to me. I also learned about the economics of a bachelor's degree versus those for a master's degree and PhD. I ended my research summer knowing that I would pursue a graduate degree, perhaps later in life," she says.

After completing her undergraduate degree, Dr. Thao worked in a private sector lab. She shared "work was physically exhausting, with little reward. I had no autonomy; instead, I entered a production line similar to the ones that my own parents had endured to provide a living for my family." While the studies she was working on were important, Dr. Thao felt her contributions to those studies, were minimal. She asserts, "Being naive and a bit arrogant, I thought at that time that I was clearly made for better and greater things, so I quit right in the middle of the Great Recession [2007–2009]." She then pursued a master's degree in chemistry from California State University, Sacramento, and went on to complete her doctorate in chemistry and biochemistry at Northern Illinois University. Dr. Thao reflects, "In retrospect, I knew that having a PhD would offer me better opportunities and ones with true autonomy."

When asked how satisfied she is with her decision to complete the doctoral program, Dr. Thao says, "I go back and forth about being satisfied with my decision . . . I was clueless about financing college and even declined multiple schools that offered me full academic scholarships. Today I slowly chip away at my financial error. On the other side, I do have a PhD and can afford to chip away at my mountain of student loan debt. I am also fortunate to be able to really live in the present, to save for the future, and to give."

Today, Dr. Thao is a scientific resource consultant for internal partners and external key stakeholders at Medtronic. She says, "My day-to-day can range from providing evidence from the literature to supporting scientific claims for marketing purposes. My favorite part of my job is being able to add scientific value to the projects I support. It's always so rewarding to see how the ideas of engineers and scientists materialize and then to see how the commercial team takes it to market to make a great impact on patients, and I get to see the entire process."

Tam'ra-Kay Francis, PhD, Department of Chemistry, University of Washington

Dr. Tam'ra-Kay Francis received a master's in chemistry from Fisk University, after which she began teaching undergraduate introductory chemistry courses at her alma mater. While contemplating whether or not to pursue a doctorate, she identified her enthusiasm for teaching and mentoring underrepresented students. A friend observed that she could teach thirty students at a time with a master's degree, but a PhD might allow her to design educational programs which would reduce barriers and expand access for greater numbers of underrepresented students. Dr. Francis went on to complete a PhD in Education from the University of Tennessee, Knoxville. "No regrets," says Dr. Francis, referring to her decision to complete a doctorate.

Dr. Francis currently works as a postdoctoral scholar in the chemistry department at the University of Washington. Her research examines "pedagogies and other interventions in higher education that support underrepresented students in STEM. [My] efforts engage both faculty and students in the development of equity-based environments." She is currently investigating the impact of active learning interventions in the Chemistry Department.

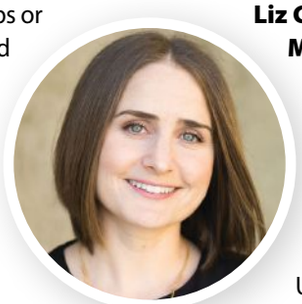
Dr. Francis acknowledges that deciding to pursue a doctorate is a very personal

decision. "There are so many things to consider— time, finances, focus area, committee expertise and support, and next steps," she says. "Not every job requires a PhD, so it is important to stay informed about the expertise required for a career that you are considering."

She provides advice to prospective graduate students, telling them to do their due diligence when seeking out programs that are right for them. "When interviewing with potential advisers, don't be afraid to ask specific questions about things that are important to your success. Ask them about their expectations (for example, their philosophies on mentoring and work-life balance) and about the types of support they provide (for example, help with research funding, mental health, and professional development)."

She also suggests reaching out to graduate students in the groups or departments you are interested in. "Ask them directly about what the culture is like and about how they are being supported." She wants to remind students that they do have a voice and a say in their graduate career. "Your needs will change throughout graduate school, so it is important that you find advocates, both within and outside of your institution, to champion you to the finish line. It is very important that you build your network of support as early as possible," says Dr. Francis. She credits her adviser, mentors, committee, and former supervisors as being crucial supports in her journey.

"In the first year of my doctoral program, I found an amazing community of scholars from a research interest group (CADASE) within the National Association of Research in Science Teaching. It was a great space to find mentors and build connections in a large professional organization," said Dr. Francis. At the institutional level, Dr. Francis served as vice president of the Graduate Student Senate and was a member of the Multicultural Graduate Student Organization. For Dr. Francis, her participation in these groups and organizations contributed to her professional growth, sense of community, and success in graduate school.



Liz Goossen, MS, Senior Marketing Specialist at Adaptive Biotechnologies

Liz Goossen received her master's in oncological sciences from the University of Utah. She has worked in marketing for molecular diagnostic companies during the past four years and remarks that "the skills [she] gained in research, data analysis, and perseverance while in graduate school have served [her] very well." Goossen shares, "All of my roles have included collaboration with the lab and medical sides of the companies, and I believe my scientific background has facilitated more trust and better communication with these groups."

Reflecting on her decision not to pursue a doctorate, Goossen acknowledges, "I spent a lot of time in graduate school researching potential career paths one could do with a PhD, [and even organized] a career day featuring a dozen speakers from across the country in a variety of scientific fields. By the end, I felt that none of these career options would be a good fit for me (or at least not a good enough fit to warrant five or more years in my program). I worried about going through all of my twenties without starting a 401(k) or having normal working hours, and [I also worried about] all of the other trade-offs there are between finishing a PhD and joining the workforce. I lived in Salt Lake City at the time, and the job market was flooded with PhDs who were overqualified for many of the available positions. By leaving [school] with a master's, I had more options."

When asked if she is satisfied with her decision, Goossen says she is 99% satisfied. "There are times I encounter jobs requiring a PhD that look enticing, and [that's when] I wonder if it may have been nice to have one, but those moments are rare."

"Your needs will change throughout graduate school, so it is important that you find advocates, both within and outside of your institution, to champion you to the finish line. It is very important that you build your network of support as early as possible,"

"[A doctorate] is a long-term commitment. If your goal (or passion!) is a lifetime of leading independent research (with or without teaching), a PhD will help to broaden your available opportunities and will open doors for you [but it can also] delay your career trajectory and salary growth."

Maureen Kennedy, PhD, Assistant Professor, University of Washington Tacoma

Dr. Maureen Kennedy earned a master's and a doctorate in Quantitative Ecology and Resource Management, an interdisciplinary graduate program at the University of Washington. In collaboration with researchers in the Fire and Environmental Research Applications team (U.S. Forest Service, Pacific Northwest Research Station) and with an interdisciplinary team at the University of California, Santa Barbara, she utilizes an array of quantitative methods to help advance our understanding of landscape fire ecology, fuel treatment effectiveness, fire-spread modeling, and interactions among hydrology, fire, carbon, and climate change.

Dr. Kennedy shares that a major factor in her decision to complete a doctorate was the financial support she received. She says, "I was able to maintain funding through research agreements and occasional teaching opportunities that I loved! This consistent funding allowed me to enjoy the freedom of pursuing my PhD on research I found very fulfilling, while also gaining valuable teaching experience. I always felt at home in an academic setting and was happy to stay there while being supported."

Dr. Kennedy reports being very satisfied with her decision to pursue a doctorate and attributes this satisfaction to knowing that she is making "an impact, both through teaching new generations of students and through being able to continue to pursue [her] favored research topics." She reflects on some of the positive and negative impacts of her decision:

"As a PhD, I am able to direct my own research agenda with relative independence. One major trade-off is that by pursuing an academic career, my salary is likely less than I could get in the private sector with the same skills. My lifetime cumulative salary will also likely be less, due to the years living off of research and teaching stipends, rather than [benefiting from] full-time employment and salary. Also, my years spent as a research scientist funded by soft money, or periodic research grants, were often uncertain; when one grant was winding down, [I had to pursue] new grants."

Dr. Kennedy remarks that as a tenure-track professor, she has diverse daily activities, which she finds appealing. She shares, "Some days are focused on teaching (particularly during the academic year), some days on research (particularly during the summer), and some days I am able to do both. Before the pandemic, I would come to campus several days a week, but I was also able to work from home on other days. Days are often filled with lectures and office hours, or meetings with research collaborators. I carve out times to focus on reading and writing when I can and when deadlines are approaching. It is definitely a balancing act of time management and of planning, to ensure I am able to fulfill my teaching and research commitments."

Dr. Kennedy advises that a doctorate "is a long-term commitment. If your goal (or passion!) is a lifetime of leading independent research (with or without teaching), a PhD will help to broaden your available opportunities and will open doors for you." She cautions that a PhD can "delay your career trajectory and salary growth," and so she suggests that you carefully research career opportunities and requirements to see if a doctorate makes sense for you.

Olivia Shan, BS, Restoration Coordinator at Palouse–Clearwater Environmental Institute

Olivia Shan has a bachelor's degree in natural resource conservation science and is a Restoration Coordinator at Palouse–Clearwater Environmental Institute. Shan shares her typical day as follows: "I start the day out by watering our 3,500 plants and observing them for any pests/diseases. I then do some light landscaping work for [members of] the public, who take strolls through our nature center. Next, over my second cup of coffee, I explain the tasks for the day to our AmeriCorps participants and then assist them. My tasks vary greatly: one day I will be meeting with the Idaho Department of Environmental Quality to discuss water quality, and the next day I will be explaining the benefits of beavers to fifth graders!" She heads many riparian restoration projects in the region, work that requires her to collaborate with landowners, the Forest Service, and Conservation Districts.

Shan attributes her decision not to pursue a graduate degree to cost, lack of time, and uncertainty about what to focus on. She remarks that at some point, she may decide to continue her education, but only if she receives full funding to pay for it. She says she is very satisfied with her decision to enter the workforce right after finishing her undergraduate studies. "After earning my bachelor's, I worked as a wildland firefighter [and] did [other] jobs I found fun," says Shan. "Not having any debt after college gave me the flexibility to do what I desired and to explore options. I am all for taking a break from academia and for actually trying out jobs before [narrowing your] focus too far. It would have been a real bummer to spend years on [graduate work I thought I was interested in pursuing] and then later to realize that [this] was not at all what I wanted to do."

"After earning my bachelor's, I worked as a wildland firefighter [and] did [other] jobs I found fun," says Shan. "Not having any debt after college gave me the flexibility to do what I desired and to explore options."

Shan shares that she "adore[s] the diversity of [her] job, and the feeling that [she] is truly helping the environment [and her] community." She encourages others: "Follow your heart, because you can make a difference no matter your education level. It all comes down to passion, drive, and work ethic!"

Morgan Heinz, MS, Assistant Teaching Professor, University of Washington Tacoma

Morgan Heinz completed his bachelor's degree, taught English in Japan for two years, and then applied to study in master's-degree-only programs. He says, "[I was] very specifically look[ing] for institutions that didn't grant PhDs, because I didn't want to be pushed to the side [while advisers spent] more time on the doctoral candidates."

After completing his master's degree, Heinz began applying to PhD programs, using the network and interests he had already developed in his previous graduate studies. He could not yet see any other paths for himself. He also wanted to teach college courses and saw the doctorate as the only way to accomplish this goal.

He called and emailed students in the lab to ask them what the environment is like. He received very candid responses and ruled out some labs as a result.

Once he started the PhD program, Heinz found that his doctoral adviser was much more hands-off than his master's adviser had been and required an unexpected level of independence. This less-directed environment was difficult for Heinz to thrive in. He acknowledges, "I did not have the skill of looking at where the science is, looking for gaps, and seeing how I could contribute."

These early stages of the PhD process helped him crystallize his passions. He realized that he loves learning and teaching, but he didn't like synthesizing the literature and determining the next question to ask.

Heinz ultimately decided to take a short hiatus from the doctoral program and taught classes. This interlude reaffirmed his passion for teaching and helped him decide to leave his graduate studies behind.

When he first decided to leave the program, he felt like he was giving up, was worthless, and was a failure. Through continued reflection, he realized, "the side routes that I have taken have actually made me stronger as an instructor."

After leaving the PhD program, Heinz participated in a community college faculty training program and was hired before even finishing it. He says that the community college allowed anyone to enroll, which was philosophically satisfying and emotionally fulfilling, enabling him to offer an education to any student who wanted it.

Heinz tries to impress upon his students that there are a lot of different paths in life. He states, "I don't have a PhD, and I am exactly where I want to be."

If you are considering a PhD or masters program, Heinz suggests looking to see if they offer health insurance and mental health services -- because graduate school can be stressful and depressing. Many programs may even pay a stipend for you to attend. Heinz also advises, "Don't be afraid to change your mind. Draw some boundaries."

Finally, Heinz adds, "Don't be apologetic about the things that you're interested in and are excited about, even when people tell you that that's not an arena for you, because of how you look or who you are. If you're interested in it, then that's yours, and you can own it. You don't need a PhD to validate that interest. You don't need a PhD to prove your worth in that field. Life is too short to not pursue the things that excite you."

There Are No Wrong Answers

Whatever decision you make, know that it is the right one for you in the here and now. You may grapple with disappointment or frustration along the way, but regret will not help move you forward. Be grateful for your journey and for how it helps you grow.

Listen to stories and advice, but make the choices that feel right for you. Your story is not the same as anyone else's. What is right for them, may not be right for you. Be the author of your own life. Your story is beautiful, and you are worthy of living it.

Acknowledgments

A special thank you to Niba Audrey Nirmal, Multimedia Producer & Science Communicator, NotesByNiba, and to Brianna Barbu, Assistant Editor, C&EN, for their thoughtful edits and suggestions on this article.

Dr. Katie Mitzelfelt *is currently a biology lecturer at the University of Washington Tacoma. She received her PhD in biochemistry from the University of Utah and researched cardiac regeneration as a postdoctoral fellow at the University of Washington Seattle, prior to transitioning to teaching. She identifies as an educator, content designer, writer, scientist, small business owner, and mom.*

"Don't be apologetic about the things that you're interested in and are excited about, even when people tell you that that's not an arena for you, because of how you look or who you are. If you're interested in it, then that's yours, and you can own it."