

What Happens Now?

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Picture a large gymnasium, filled with the whirring, syncopated rhythm of treadmills in motion. Upon these treadmills, sweat pouring and lungs gasping, stride all manner of graduate students who first embarked on their rotating conveyor belts of success years ago. Look closely, and you will spot me within this crowd, chugging along quietly, determined to do my part to make discoveries that benefit the world.

Suddenly, the lights go out, the whirring stops, and silence envelops the room. As backup lights flicker to life, whispers spread – there has been a crisis, and the gym will be out of service for the foreseeable future. Nobody knows when we will be back. As we aimlessly filter outside, there is one question on everybody’s mind:

“What happens now?”

When I returned home to North Carolina at the start of the pandemic, for the first time I felt the disillusionment and confusion that comes with stepping off the treadmill. I had just joined a lab as a first-year Ph.D. student, I had a hands-on project given to me by my advisor that I loved, and I was hopeful that by the end of the year, I could even have a publication.

Suddenly, I had no lab, no project, and no ideas. I was adrift, and I began to feel daunted by the weight of everything I felt I should be doing but somehow couldn’t. Thankfully, my advisor offered me sage advice that turned what might have been a depressing year into a time of great personal and intellectual discovery: “Slow down, and use this time to learn.” So I did.

For several months, all I did was read. I started broad; I was interested in investigating new ways to read out signals from the brain, so I studied the mechanisms by which neurons generate spikes and the existing methods by which we measure them. I then went deeper; I identified magnetic fields as an interesting and useful signal source that could provide new insights into neural activity. I read books on electromagnetism, watched lecture videos, and devoured papers on all of the ways researchers had used magnetic fields to interface with neural tissue. I essentially developed a curriculum for myself, but the only reason I had the time to survey the field, identify an area of interest, and learn so much about it was because I no longer felt pressure to be conventionally “productive”; I was free to slow down, breathe, and chart my own way forward.

As my journey of discovery continued and I settled upon a specific topic that I hoped to pursue, a new fear began to gnaw at me. I was entering unfamiliar territory – the topic I’d chosen was of great interest to me and my advisor, but neither of us had much experience with it. I felt both deeply passionate and deeply uncertain, and I began to seriously consider whether I should abandon this new line of inquiry and return to my previous project.

Around this time, news of the COVID vaccine trials started emerging, and I was shocked to read that the major candidates would be the first ever mRNA vaccines licensed for human use. Banking on such unproven technology, with the entire world depending on it, seemed to me an enormous gamble. And yet, not only have the vaccines worked, but they've surpassed everyone's expectations.

From this experience I learned my second pandemic lesson: the importance of bravery in research. All treadmill runners know how tempting it is to accept the problems handed to us that already have well-defined solutions in sight. However, while I have nothing but respect for researchers who choose this path, I realized that I felt more fulfilled tackling challenges with less certainty and greater risk, but also the potential for higher reward.

Learning to face uncertainty head on and to be courageous in the pursuit of knowledge has produced a momentous shift in my research trajectory. Whereas I was previously contributing to existing projects, I am now leading a new collaboration between researchers in the engineering and medical schools. My ability to do this work is a direct result of a global pandemic that forced me to slow down, take stock of my situation, and commit myself to learning. Furthermore, while moving into this new role has brought its own share of self-doubt and fear, I am consistently reminded of the brave actions taken by the scientists who staked their careers and the lives of millions on a promising but unfounded technology. If they can choose to be courageous with so much at stake, then I can choose to emulate their example throughout my research career, whether by choosing risky and creative projects for myself or by giving my future students the freedom to learn, explore, and fail in a supportive environment.