

By Jeffrey McDonnell



The ebbs and flows of creativity

As a Ph.D. student, I spent many days and nights standing on a steep forested slope in the rain, measuring how water drops move into the soil. I loved the outdoors, and it was more like play than work. Many nights, I would dream about my research. I was endlessly curious about what I saw in the field and thrilled when I could connect it to what I read. My ideas seemed to flow like the stream I was trying to understand. But when I became a professor, I was inundated with responsibilities and my creative stream slowed to a trickle. It took me decades to figure out how to revive it.

When I started my first faculty position, I no longer had the freedom to focus solely on research or think deeply about any given topic. I was consumed by pressing demands—staying one class ahead in my teaching, completing reviews for journals, the constant drum beat of proposal writing. As my lab grew, I became more of a research manager than a researcher. I let grant opportunities guide decisions about what research to pursue. I was like a scientific dilettante—flitting from one project to the next.

A decade later, I moved to a new university where I didn't have to chase as much funding. I was able to return to the topic I studied for my Ph.D. research. I took on graduate students and postdocs who were interested in “my” questions. During meetings with them, I learned how to be a sounding board as they considered new ideas and new ways of looking at our science. I found that if I could exist in the moment with them—and not be distracted by my midcareer responsibilities—then I could play a part in their creative thought process.

Creativity crept back into my work life, but I hadn't yet found a way to spur my own deep thinking. I was at best a creativity manager. Another decade passed before I learned how to get my own creative stream flowing again.

After accepting a position that allowed me to move from the United States back to my home country—Canada—I had a few months between jobs, which meant I could accompany my wife to South Carolina on an assignment for her work. I was free as a bird. And that's when my first real post-Ph.D. eureka moment struck—of all places, while I was at a gym walking on a treadmill, watching the rain fall onto a lawn outside. As I saw puddles form and coalesce, I was able to visualize similar processes that I had been trying to understand belowground for decades. It was a small mental lightning bolt in my tiny slice of the scientific world. But it was



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exhilarating because it was a type of thought I worried had permanently dried up. It was clear I needed to slow down and experience the rain more often!

In my new job, I tried to heed this epiphany. I made a point to think and write a little bit at home each morning, in a room overlooking the large river that runs through town. After that, I'd cycle to work along the banks of that river, an activity that helped me process those ideas and remember my daily goal to be curious. Fun drove what I worked on. And soon enough, I had new ideas to bring to the table with my Ph.D. students and postdocs.

As I begin a gradual ramp down to retirement, I have begun to reflect on the ebbs and flows of my scientific creativity and how to help early-career scientists avoid some of the traps I fell into. I am certainly no creativity guru or role model. And I know that the environments that spark creativity for one person might not work for someone else. But one key lesson I learned was that being hyperbusy in the first half of my faculty career was antithetical to creative thought.

I now encourage my graduate students and postdocs to disconnect and take time out to think, to play, to have fun with their research. And to make these things a permanent habit in their lives—even if measured in only small fragments of each day. I also tell them to pay attention to the conditions and places that foster their curiosity and ability to think deeply. Creativity is the lifeblood of our scientific work. By openly discussing it, I hope we can help the next generation of scientists avoid losing it along the way, as I did. ■

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