

By Tenaya K. Vallery

## Growth from failure

**O**ur task as scientists is to ask difficult questions until we uncover the truth—which means learning from failed experiments and trying again, undaunted. Yet, after years of honing my type A tendencies to succeed academically, I began graduate school with a fear of failure. As I searched for the truths related to my project, I struggled with failing at the bench and became frustrated and defensive. I have only recently come to respect the critical role of failure in research, and I have learned to be open when I encounter it.

In the beginning of my fifth year of grad school, I hit a rough patch in my studies—the most recent in a series of setbacks—and was not navigating the situation well. I had switched to a new project in the spring of my fourth year, but it was progressing slowly and hitting roadblocks. After 1513 days as a Ph.D. student, I could not generate the materials that I needed for my experiments. The RNA I was trying to extract from cancer cells was degrading before I could analyze it, and the virus that I once could propagate would not cooperate. I was unsure when I would publish my work and graduate, and I was feeling purposeless after 4 years of little progress.

But instead of asking my labmates and principal investigator (PI) for help, I adopted a defensive attitude, becoming closed to suggestions and hiding the extent of my difficulties. I feared that if I acknowledged my lack of progress, I would lose the respect of my PI and colleagues. At the same time, I berated myself for continual failure.

One Friday afternoon, my PI approached me about my research struggles. It was a challenging conversation. She asked how she could help, but I did not know what to tell her. Overwhelmed, I asked whether we could meet again on Monday morning. She agreed.

Coping with my shame and the criticism from my PI was difficult. After 24 hours of feeling overwhelmed with embarrassment and frustration, I finally reached out to my mom. She urged me to regain my mental focus by tackling a 1000-piece jigsaw puzzle over the weekend—which I now see as a corny but honest metaphor for piecing myself back together. Having a concrete objective helped me turn my thoughts outward in a productive way, toward what I could do to move forward. Midway through the puzzle, I decided to address my PI's concerns by making an outline of my current progress and a definitive plan for the next month.



***“My role as a grad student is to learn from others—and from my mistakes.”***

new approach to reconstituting the virus.

Looking back at that meeting with my PI, I am thankful that she approached me privately, in a direct and constructive manner. Even though her feedback was difficult to process at the time, I learned from that experience to be more open with my colleagues about my research setbacks. I have found that open discussion helps me organize my thoughts, forcing me to face my obstacles. It's still a challenge, but one thing that helps is to remind myself that my colleagues and PI only want to help, and that my role as a grad student is to learn from others—and from my mistakes.

Being a scientist requires resilience, and it always will. The open, supportive lab atmosphere my PI fosters has helped me cope with my fear of failure and become a more mature scientist. Quoting a friend, I now strive to be “type lowercase-a” instead of type A. ■

*Tenaya K. Vallery is a Ph.D. candidate in the Department of Molecular Biophysics and Biochemistry at Yale University. Send your story to [SciCareerEditor@aaas.org](mailto:SciCareerEditor@aaas.org).*

On Monday morning, I presented the plan to my PI. I emphasized my commitment to continuing my research in spite of the failures I had experienced. In response, she implored me to ask more often for help on technical matters. When I left her office, I knew that a long path of hard work lay ahead, not only to produce results but to overcome my fear of failure. I promised myself that I would start communicating my struggles to others, asking for help more—and accepting it when it is offered.

Now, at the end of my fifth year, my research is progressing. Following a recommendation from a labmate, I overcame my RNA degradation problem by wearing smaller gloves, which reduces contamination. I am also working on a

# Science

## Growth from failure

Tenaya K. Vallery

*Science* **353** (6298), 514.

DOI: 10.1126/science.353.6298.514

### ARTICLE TOOLS

<http://science.sciencemag.org/content/353/6298/514>

### PERMISSIONS

<http://www.sciencemag.org/help/reprints-and-permissions>

Use of this article is subject to the [Terms of Service](#)

---

*Science* (print ISSN 0036-8075; online ISSN 1095-9203) is published by the American Association for the Advancement of Science, 1200 New York Avenue NW, Washington, DC 20005. The title *Science* is a registered trademark of AAAS.

Copyright © 2016, American Association for the Advancement of Science