@UIowaNeuro Notes

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We don't like to talk about it, but rejection and failure are a big part of scientific life. Our experiments don't work. Our papers receive scathing reviews. Our grants miss the payline. Everyone will experience failure at some point, but what matters is how you respond to setbacks.

I've been thinking about this as a topic for this monthly message for some time and recently gained some insights chatting with Kumar Narayanan. Here's a bit of our conversation:

KN: People look at you and see your grants and papers, but like all of us, you've experienced failure.

TA: You know, when I submit an R01, my goal is to get a 1 or a 9. If I'm failing, I'm going down swinging! I don't want a 3 or a 4. I want people to say "you're nuts" or "woah, that's cool." Obviously, I'd like to hear more "cool" from reviewers but there definitely have been some "nuts" along the way.

Back when I was a postdoc, my project was to make genetically modified mice with long-term memory deficits. I used a natural inhibitor of PKA and made a number of transgenic lines over the course of a year. They had no phenotype. I was two years into my postdoc and had nothing cooking.

So, two things happened. My wife saw an ad for auditions for the New York Choral Society and made me go. I started singing with a large group. This gave me a space and structure to step away from the lab. But when I was in the lab, I went back to the literature I knew, which was drosophila. I found a Neuron paper detailing the use of synthetic inhibitors in flies that led me to a new mouse model.

I stepped back into life and also into a field I was familiar with and used that as a springboard to move forward.

KN: In grad school I wanted to try to improve brain function through stimulation. I tried electrical, sound, nothing worked. Optogenetics hadn't been invented. We didn't know how to do deep brain stimulation. I logged every failure in detail and kept those records with me over the years.

Those failures were incredibly instructive to my career today, even though they were just crushing as a grad student. We didn't have the tools we needed. But the important thing was to keep trying and to reevaluate after each failure. To step back, keep thinking big and try again.

TA: Everybody wants to make a revolutionary advance, but high-quality data has value even if it's showing a negative.

KN: The only time I make progress is when I think about the problem with everything I've got—I become obsessed about the problem. I'm obsessed with the idea that you can enhance behavior by manipulating neural circuits.

TA: Right, but you're not obsessed with a specific technique. People who make progress are motivated by the larger conceptual problem, focused on developing new ideas.

KN: The goal of our enterprise is discovery. We have to keep looking, keep asking questions.

This conversation also veered through the history of science from Copernicus, Brahe, and Kepler to Watson and Crick and took a left turn into the poetry of William Carlos Williams. We won't get into all of that here, but to summarize, it is vital to learn to see failures as data points for future achievement. Keep focusing on ideas. Keep pushing against the forces that try to tell you you've reached the limit. Many of you have heard me quote Francis Crick: "It's true that by blundering about we stumbled on gold, but the fact remains that we were looking for gold."

You may stumble and blunder, but you need to keep looking!

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