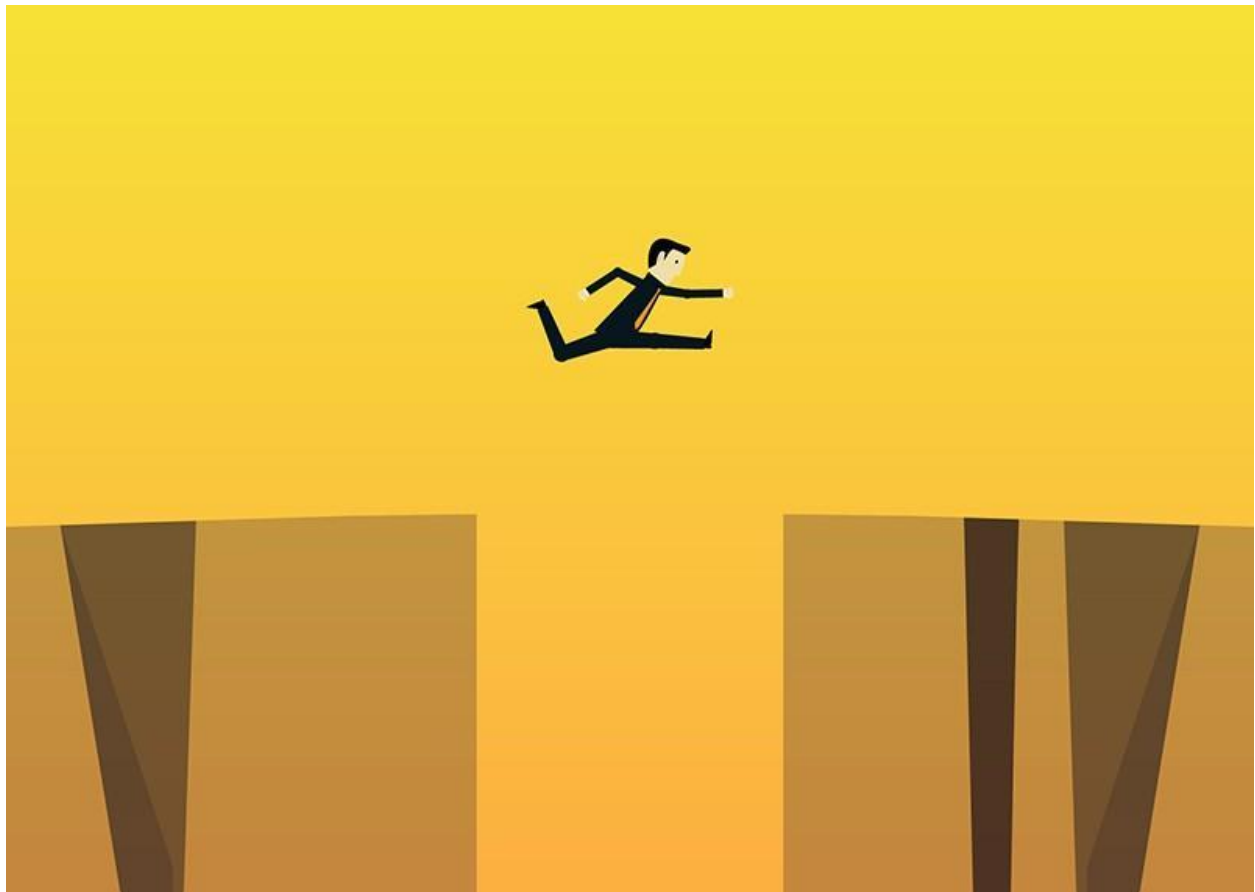


## Scientific progress is built on failure

Learning to handle failure is just part of scientific life, writes Eileen Parkes.



Good science can require a leap in the dark — and that leap might not be made if we're too afraid to fail. Credit: Getty

When I moved from medicine into research, the biggest shock to me was failure. I had spent years going home fairly satisfied at the end of the day — a clinic had been completed, treatments prescribed, patients reviewed. Now, I could do weeks of work and yet see no tangible success. I moved into research thinking that this was where the real progress would be made — [where I could make a difference](#). But at times, looking at the most-recent in a long and time-consuming line of failed experiments, I wasn't so sure.

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Failure is something that all scientists experience — but it's hard to tell, looking at our shiny conferences, polished presentations and glossy journals. Yet the whole point of science is that it is cutting edge. Comfortable science is an oxymoron. If we want to make new discoveries, that means taking a leap in the dark — a leap we might not take if we're too afraid to fail.

During my PhD, I was lucky to be in a group where failure was discussed and resilience encouraged. My supervisor offered opportunities that I often felt were beyond me from early in my PhD. He encouraged me to stretch my limits, to try new techniques and not to take 'no' for an answer easily. Others in my group shared how they had coped with setbacks — when I was disappointed in an experiment, a postdoc took me for coffee, and told me she had had nearly the exact same experience, but a failed experiment had eventually formed the basis of a paper. Another postdoc was persistent in encouraging and working with me on a tricky experiment until we got it optimized.

With perspective, I can see that my experiments weren't failures. I learnt a lot, including precision and the importance of clean technique. I learnt how to develop alternative approaches — how to make a plan B. Most importantly, I learnt persistence and resilience in the face of discouragement. These are skills I now rely on as an early-career researcher — to try again with a grant application, to summon the courage to contact a potential collaborator, to reformat my rejected manuscript for another journal.

Science is high-stakes. We all fail and experience rejection much more often than we do success. The realization that I'm far from alone in failing has been eye-opening for me. I find I now talk more openly with other postdocs and early-career researchers about the struggles of science, and how to deal so frequently with rejection. That's not to say I don't still get disgruntled when an experiment doesn't turn out as I hoped, or that I don't need to remind myself of the [24-hour rule](#) (giving myself 24 hours to wallow and recover, then moving on) when I absorb the feedback from my rejected grant. But being open about the fact that my grant was described as “underwhelming” takes the sting out of it, prompts others to open up about their rejections (see the

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Twitter hashtag [#GrantReviewGreatestHits](#) for some harsh yet hilarious feedback) and helps me to move on with a touch more grace.

I hope that, when I start my own group and a PhD student sighs at their western blot, I'll be able to help. Not just with the technique — I want to be able to share that failure is normal and expected in science. To share that just because an experiment failed, doesn't mean an individual is a failure. And to share a laugh about the sense of failure until it fades away.