

And in September, the University of Michigan Medical School in Ann Arbor established a computational-medicine and bioinformatics department to help attract new faculty members and trainees. In June, Emory University School of Medicine in Atlanta, Georgia, launched a biomedical-informatics department with the goal of combining expertise in imaging, computer science and biology to improve patient care. It will recruit four or five researchers over the next few years. "Our particular strength is training computer scientists who want to transition into biomedical informatics, and bringing them together with clinicians to use informatics to treat disease," says department chair Joel Saltz.

Qualified postdocs remain in demand. "It can be very difficult for individual investigators to hire a postdoc in bioinformatics," says Tom Tullius, interim chair of the bioinformatics programme at Boston University in Massachusetts. He attributes the paucity of candidates in part to efforts over the past several years to build large teams at high-powered institutes — such as the Broad Institute in Cambridge, Massachusetts, or the Wellcome Trust Sanger Institute in Cambridge, UK

— leaving smaller labs struggling to find talent. The growth of training programmes could ease this.

Now sequencing centres won't be the sole providers of data, individual researchers, particularly at medical centres, will have ample data to fuel research and training. "We've passed out of the period of genome projects where

there were amazing public data raining down from the heavens; it's now possible to do exciting work without being associated with data-generating centres," says Lee.

Sczyrba, who begins a junior faculty position in metagenomics at the University of Bielefeld Center for Biotechnology in Germany this autumn, says that unpredictability is what makes the discipline so exciting. "We don't know where we will be in ten years because the technologies and ideas are moving so fast," he says. As Cleaver notes: "Perhaps the best career strategy is to stay flexible and curious." ■

Virginia Gewin is a freelance writer in Portland, Oregon.



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The human touch

A little empathy goes a long way in the competitive confines of a laboratory, argues **Lydia Soraya Murray**.

As almost every scientist knows, a person's first year in research is an emotional minefield. One minute you're flying high. The next, you're banging your head against the wall, resisting the urge to draw in results with a marker pen. Forget the F-word; in science, it's the O-word that generates dread. I sometimes think that 'optimizing' should be spelled 'r.e.p.e.a.t.e.d.f.a.i.l.u.r.e.s'.

After a stimulating yet often soul-destroying start to my PhD, I have decided that coming to terms with the lows is one of the most important things that you can take away from your first year. Never mind the dreaded literature review; this is unquestionably more important.

Because scientists do incredibly specialized and often misunderstood work, it can be hard for people outside our particular fields to empathize with our attachment to our projects. I have a close friend who is a physician. After several weeks of my hard work culminated in what can be described only as 'diddly squat', my friend offered these consoling words: "It's not as if someone has died". To this day, I don't think he realizes how close he came to getting stabbed in the eye with a pipette. Instead of taking bloody revenge, I pointed out that if researchers didn't care so much, he would still be treating head colds with leeches — a less satisfying but more legal response.

Unfortunately, voicing frustrations to colleagues can be just as futile, and prompt the short and not so sweet response: "That's science". To be sure, cultivating a career in the frighteningly competitive world of research leaves no room for hand-holding or mollycoddling, and I truly believe that principal investigators need full-body elephant-hide transplants to achieve the thick skin required for the job. However, we are all human and

everyone needs some sort of coping mechanism. Losing this mechanism is always a disaster.

In truth, there is no magic answer for how to deal with a disappointment rate of 90%. Some people build up walls to protect themselves, but this can result in suppression of all emotion. And let's be honest: given the hours that scientists work and the wages we earn, it is mostly our passion that keeps us chained to the lab bench. Dulling the rare moments of true toe-tingling excitement when things work and we discover something for the first time would be far too big a sacrifice. But others might have quite a different attitude and feel the disappointment so acutely that it destroys their confidence and paralyses them. Channeling your emotion into something manageable is truly important. I suggest that anyone new to research should find healthy ways to deal with their frustrations. Some people read or play a sport; others go out dancing. My coping mechanism is a large glass of red wine and a fantastic group of friends who put up with my rants, then shut me up with a good dose of perspective and insight.

Humans are social animals, and sometimes solitude enhances the feeling of ineptitude and makes dealing with a disappointment even harder. Maybe next time someone wanders past you gazing forlornly at their lab book with that oh-so-familiar look of puzzlement and frustration, a wee pat on the back and a bit of camaraderie might help. Yes, 'that's science'. But perhaps they'll see that success is possible despite repeated failures.

Lydia Soraya Murray is a PhD student in molecular genetics and cell biology at the University of Glasgow, UK.



"We want to train the tool shapers as well as the people more into applying the tools."

Celia van Gelder