



## **The Guide to Research Zen – a.k.a. How to avoid bashing your head against the lab bench in 8 easy steps**

**1. Don't be afraid to ask for help.** It took me a long time to get over this one. I had an experiment that kept failing, and a bloody-minded determination that somehow this was something I was going to fix \*myself\*. 7 months later, I'd lost all hope, gave in, and started asking anyone who would listen for advice. A number of people helped me, and my experiment started working in no time. If something is difficult, there may well be people around you who have come across the same problem, and might either be able to give you a solution, or at least point you in the right direction. However, these people can't read your mind – it's up to you to approach them.

**2. Understanding is crucial.** Understand what you're doing. Understand why you're doing it. Invest time into understanding things. My initial dislike of practical work stemmed mainly from a lack of understanding. Blindly following a set of steps in a protocol means that when things go wrong, you're powerless – if you don't know what the components do and why, you won't know what to change. On the other hand, doing something with understanding gives you control. If things do go wrong, you'll have an idea of why they've gone wrong and what to do about it. I found it also increased my appreciation of what I was doing – I would suddenly find a certain logic and elegance in what previously just seemed like mixing colourless liquids.

**3. Doing 5 things at once will slow you down, not speed you up.** I might have found this one harder to learn than most people... The temptation is certainly there, and it might seem like a good idea. You might want data fast, you might be dreaming of a quick-fix route to answers, publications, an awesome thesis, whatever turns you on. So it might seem sensible, even desirable, to run 5 experiments alongside one another - they all have breaks, you can fit them all in, right? I tried any number of times, and as a rule, they crashed and burned. It took me a while to accept it, but - good science takes time. I don't think there are any quick fix routes. At least none I've discovered that work. What does work is slow, careful focus. And you can only focus on so many things at once.

**4. Science doesn't run on luck.** Don't start complicated projects and expect to just stumble through them successfully without thinking about it. This dawned on me after one particular failed experiment. It was a long, complicated protocol that I'd only casually read through before diving into it. In a rush and on next to no sleep, just to make things worse. I accidentally skipped steps I didn't notice, I kept having to stop because I didn't have the right reagents prepared, it was a sloppy lab disaster all around. At the end I had to wonder why I would so easily waste days of work to try and cut down on a few hours of preparation time, while hoping I'd get lucky. The obvious and unfortunate conclusion was - luck and molecular biology don't mix.

**5. Love your lab book.** You'd be amazed at the sorts of things you end up forgetting a few months down the line. Write everything, write obsessively. Let it be your diary, your Facebook and your Twitter. Around thesis writing or paper writing time, you'll be wanting to hug your past self for having written down those little details that you weren't sure were relevant at the time, but it turns out you really need to remember now. Or you'll be hating them for omitting a number or losing a picture that means you have to repeat a whole big experiment from scratch. Your choice.

**6. Embrace the bizarre. But take care of yourself too.** Be warned - what you've signed up to is not a 9-5 job. You're almost bound to find yourself in the lab at strange hours, collecting embryos, taking fluorescent pictures, staring at brains down microscopes... Whatever your preferred corner of science requires you to do, really. Remember you're choosing to be there, and embrace it! Those 1am lab sessions with loud rock music to keep me awake are, oddly, experiences I'm very fond of. Let go of what you think is the norm, and enjoy what you do experience. In the same breath, however, I have to add - do take care of yourself while you're at it! Burnout hurts. If you find yourself cutting out breaks, cutting down on sleep, not seeing friends, thinking that "oh, there's just no time for exercise"? Red alert. Staying happy, productive, and above all sane, in the long run, requires you to take care of yourself even when you don't think you have the time to.

**7. If it doesn't work, try again. And again. And again. And see 1.** Don't get frustrated if an experiment fails. It's a part of research, and happens to anyone from us young apprentices to highly experienced researchers. Don't fall into thinking how it's all your fault and you'll never get it to work. Instead of beating yourself up about it - just keep trying. Slowly. Carefully. With understanding. And above all, remember that you are not alone.

**8. Don't panic. The world isn't ending.** Despite hard work and best intentions, there may still be times when you feel overwhelmed. Maybe an experiment has failed one too many times, or maybe it seems like there's just too much to do and you'll never get it all done. This might be hard to believe, but this too shall pass. Just stay calm, and remember you are not alone.

I wish you luck on your journey.