

## **Imposter syndrome.**

One of the most common problems that people have in academia, perhaps from undergrad level but certainly from graduate school onwards, is imposter syndrome. This is a sneaking feeling that one is nowhere near bright/ skilful/ wise enough to have one's current position, that the appointment was a mistake, and that someone is bound to notice, at some time, that they have one colleague who should not be there. This is not just an affliction of the young: I know a very senior professor whose work has had a global impact on science, who occasionally suffers from imposter syndrome badly. The topic comes up in sessions on student welfare, and I was recently asked to address it in a 'surviving academia' Q&A session with students. I was clearly expected to assure them all that they were all very clever really.

That is not what I said, because if you tell someone who feels that they do not know what they are doing that you are confident that they do, you make things worse - make them feel the fall from false grace will be even harder when someone rumbles them.

Instead, I said something that felt more honest. For a young graduate student to feel that do not know what they are doing is entirely expected, because none of us in research really knows what we are doing. There are two aspects of this. The first is that nobody can know the scientific literature. It is vast - now too large to fit physically (rather than digitally) into any conceivable university library. We can each know only a tiny fraction of it, and if we are very lucky, we will know a rather different subset from what our colleagues know (so that between us, we know more than any one of us can know). Trying to know everything is doomed to failure: much better is becoming good at coping with not knowing everything, and developing good strategies for finding out if something is known by someone and, if so, learning from them (whether directly or through what they have written).

The second aspect of our not knowing what we are doing is inseparable from what we do. The job of researchers is to explore the unknown, and to try to understand what has never been understood before. As we grope in the darkness, and try to make a coherent picture from our data, we will of course make mistakes about how the pieces fit together. We will even make mistakes in designing the next experiment to find out, not (usually) because we are incompetent at experimental design, but because we have still not understood enough about the biological system on which the experiment will run. So we get a bizarre result, and are left with much head-scratching, and the need

to think again. Or, worse, we get one of the possible outcomes we were expecting but, because our mental model of the system was wrong, the result does not mean what we think it means and we are heading down a rabbit-hole of what will turn out to be science fiction. Blundering about and getting things wrong is, to me, inexorably linked with real discovery science. If someone always get things right, they are either absurdly lucky, or are staying in the twilight and not really reaching into the deep darkness where we have most to learn.

So my reply was probably the reverse of reassurance - not to tell the students they were brilliant after all, but to confess that those of us doing the teaching are also seldom in a position of knowing what is going on. As seasoned explorers of strange lands, we have learned to spend most of our time off the last proper map, making sketches and comparing them to the sketches made by others in our field. We know we don't know, so have no problem with young explorers who also don't know coming along to help and preparing to lead expeditions of their own. As strangers in these lands, we are all in a sense imposters. The trick is not to worry about it.

Jamie Davies, Edinburgh, October 2022