A memo to graduate students and postdocs

Dear students, employees and co-workers,

I’m sorry to be unhelpful, but I am not your mother! If your experiments aren’t working, try and find out why before coming and asking me to think it through for you. If an essential piece of equipment is broken and you need it for your work, try fixing it. Failing that, you could even have a look through the instruction manual and see what needs doing. And if (God forbid) you can’t think of the next experiment you ought to be doing, go away, read a few papers, discuss it with another graduate student or postdoc, and try and think your own way through it. Your mother’s job was to wipe up the food you spilled and clean up your grazes when you fell over. Mine is to help you become a scientist, and to make sure you have enough money to buy those enzymes you seem to drink by the gallon (according to the last budget report). If you’re really stuck, I’m here to help, but that doesn’t mean I should interpret every little piece of data and plan out every experiment. Even your mother can’t help with that. That’s your job.

I shouldn’t really have to say this, but by Crikey I do. The trouble is that people’s idea of what constitutes an education has changed, and science (like much of the rest of society) never caught up. The concept that graduate students are adults, capable of ploughing their own furrows and making their own mistakes, has gone the way of the dodo. Nowadays we fill out forms to show how well our students are mentored and count the talks that people attend. Before anyone will give us a position for a new student, we have to prove that all previous victims have been well looked after, changed their underclothes and taken plenty of exercise. Nobody, however, checks whether the newly fledged PhDs from our labs are scientists or automata; so there can seem to be no future in encouraging anyone to think. The prospect of a student failing to get a PhD at the end of their program is too appalling for a university to countenance. The supervisor of a failed student (however dreadful they were) will be lucky to get funding for another; so there’s plenty of pressure to make sure people perform, and little encouragement to let people stand on their own feet.

The current science-funding regime
doesn’t help anyone very much either. Competition is fierce, and the main criterion for success remains simply the amount of stuff. Whether it’s papers, discoveries or money, more is better. Obviously enough, people work much more efficiently if they don’t have to think too hard; so a big lab with dozens of students each doing a single experiment can be a goldmine for its leader. It isn’t pretty, but then Darwin gave creatures ugly spines, fangs and stings to help them compete, and science today seems to work in much the same way.

So what are we trying to train people to do? Why do governments wish to spend all this money on training up people for PhDs? Obviously, it’s important that every country has trained scientists. But a trained scientist isn’t somebody who can do one experiment over and over again in the minimum of time. That’s a technician. The whole point (or so I think anyway) in training someone for a PhD is to get people who can think, understand, interpret and handle data. I understand how important it is to provide nurturing, counselling, mentoring and what have you, but it isn’t the point. You can be the happiest, most fulfilled graduate student in the world, but it won’t help when someday you try and start a lab of your own.

So, go and do your own thing. See whether you can find what’s wrong or whether you can think up a whole new project to do, or whatever. You’ll probably completely mess it up. This doesn’t mean I think you’re incompetent or stupid; it’s just that experiments are difficult, and you do mess them up when you’re inexperienced. Maybe next week you’ll mess up a little less comprehensively - and then, in a year or two, not at all. If I tell you every little thing you need, look at the results, then tuck you up safe in bed, you won’t mess up nearly as much, but you won’t be a scientist. Whereas if you work it out yourself, who knows? Maybe it’ll be you writing patronizing articles about me in a year or two.

Sabretooth the lab head