

An occasional column, in which Mole and other characters share their views on various aspects of life-science research. Correspondence for Mole and his friends can be sent to mole@biologists.com, and may be published in forthcoming issues.



Nurturing the F1

My mother always used to say that if you can't say something nice, don't say anything at all. So it's little wonder that, when our lab is recruiting PhD students – wide-eyed, fresh-faced, full of a crazy mix of bravado and uncertainty – I tend to clam up.

This is a bit of an exaggeration, I'll admit: getting me to shut up completely is like trying to keep the lid on a homemade dry-ice Eppendorf-tube rocket. But sometimes as we're all sitting around politely drinking tea and assessing the talent, it's very difficult to stop myself from blurting out, "Don't do it! Turn around, run while you still can – go to

medical school and get a guaranteed, high-paying job at the other end! Go into finance, or patent law! Or anything more safe and stable than academia – like auditioning for a national reality pop-star competition, or free-climbing skyscrapers in Dubai! Run as fast as you can and don't look back!"

Of course I don't say anything of the kind: Dr Keen would never forgive me for scaring off a potential slave – sorry, I meant a *new colleague*, lovingly nurtured into full-fledged maturity by a caring and attentive lab head and his angst-ridden drones – beg your pardon, I meant *well-adjusted scientific team*. And of course, it would be blatantly hypocritical for me to say *do as I say, not as I do* (another one of

mother's favorites). Because here I am: despite the long odds of ultimately securing the professorship I dream of one day, I'm still going for a career in academia with all pipettes blazing. And naïve or not, I really think I will succeed.

Speaking of naïveté, though, I haven't always been this suave, confident and worldly wise. I see the doubt in your eyes. But it's true: I was the greenest, silliest, most annoying newbie who ever graced the tea rooms of all my scientific heroes and heroines in my search to find the perfect PhD position, all those umpety-ump years ago. I stumbled across my standard cover letter from those days recently, and it was so over-the-top nauseating, self-important and sycophantic that I could feel the blush spread across my face like a plate of migrating keratinocytes racing to see whose lamellipodium would be first to high-five the other side of the Petri dish. Phrases like "I pride myself on my critical acumen," and "your sterling work in this area is an inspiration to us all" were so excruciating that I couldn't even bring myself to read the rest of the sentence.

And then I got to wondering, down at the pub with Golgi Gal the other night, whether such youthful gaffes were inevitable. She opined that only by making these mistakes and feeling like a goose afterwards could we learn what pitfalls to avoid. And isn't such fumbling somewhat charming? At least you've got your youthful vigor and fresh-as-a-daisy skin tone.

But I'm not so sure – maybe it's truly possible to give useful advice to those starting out, and hopefully prevent some of the worst mishaps.

So in that spirit, I've decided to give you my top tips for someone planning a career in academia. So sit up straight and pay attention, my younger self: I'm talking to *you*.

1. Choose your PhD supervisor with incredible care

We once entertained a prospective student here who ultimately chose another lab because – get this – she thought *the interior of the building was much more attractive*. I swear I am not making this up. Never mind the project was dull, the lab head wasn't publishing well and the university didn't have the best reputation; she took a fancy to the modern décor. Needless to say it did not end well, and she abandoned her PhD soon after starting.

You don't have to work for a celebrity big shot, but you do need to narrow your

shortlist to lab heads with a good reputation in the field; even if that person is young, is she up-and-coming? Does she get invited to chair conference sessions, publish well and fairly frequently? Do her PhD students end up getting good post-docs; do her post-docs score faculty positions? Is there enough intellectual territory in her scientific niche to make room for your project? Will you get the resources and supervision you need? Is the institute well-regarded and well-connected?

If you don't know the answer to some or all of these questions, don't be afraid to ask people in her lab frank questions at the interview – and be on the alert for awkward silences preceding a grudgingly positive reply.

2. Have a second project on the back burner

This point might be a bit controversial, as it's never a good idea to spread yourself too thin. On the other hand, however, Mother Nature is not always compliant with your favored hypothesis. You could be the most talented and hard-working PhD student in the world, putting in 70-hour weeks, but if the reality of your project turns out to be, two years down the line, a dull negative result instead of a Nobel-winning nugget of knowledge, you could be in serious trouble. So if you stumble over an intriguing offshoot, why not nurture it a little bit in your spare time? Your lab head (*Dr Keen, if you're reading this, please look away now*) doesn't even need to be informed, until you've got something truly interesting. You never know: it just might morph from cool side-project to the main viva breadwinner.

3. Network, network and network

I cannot emphasize this one enough, and I've ranted on about it in previous essays too, I know. But seriously, young aspiring scientists – and scientists of all ages: *get out there and meet people*. Your faithful Gilsons can only help you so much – and they make lousy conversation. Get to know all the people in your building, even the slightly weird ones who avoid eye contact and work on esoteric computer models or obscure lipid signaling pathways you've never heard of. Attend events on campus where you can meet scientists from other departments. When you go to conferences, talk to people, no matter how shy you are – your peers as well as your famous heroes. Go to seminars at other institutes on occasion and strike up a conversation

with the speaker, or at the wine and cheese afterwards. You seriously never know when lightning will strike: a helpful tip. A useful algorithm or antibody. News about a new funding stream. Gossip about a person you were considering asking for a postdoc position one day. A rumor that your project might be about to be scooped.

You might even meet a kindred spirit. Which can often lead directly into...

4. Collaborate whenever you can – but do it wisely

Formal collaborations are a trade-off: you have to work extra on something that will not be entirely your own. So you might be expending valuable energy only to secure a minor authorship on someone else's paper. On the other hand, if you don't have many papers in your CV, a minor authorship might be worth far more than the string of weekends you spend putting together the data for a small figure. If your paper list is longer, though, you may decide it's not worth the effort. Equally, letting someone else do some work for you will dilute the authorship of your own paper – but provided you're still the lead author, having an expert contribute a figure to your paper, with a technique you know nothing about, can often boost it to the next level.

The trickiest collaborations, of course, involve two different labs with one young scientist from each lab doing equal, or nearly equal, work. Here you are in dangerous territory: will you still be first author? Will you be co-first, listed first, or co-first, listed second? Meanwhile, a battle of egos is probably raging on the other end of the list, too: will your boss, or the other boss, be senior author? It's always best to make an agreement *before the project starts*, ideally in writing (a simple email exchange between the two bosses will suffice), about authorship decisions. But this has to be flexible: imagine, for example, that you agree to be co-first and you end up doing 80% of the work; there has to be a contingency plan in place to ensure you get due credit in the form of sole-first authorship. Keep the lines of communication open and don't let petty disagreements mar a friendly and collegial effort.

5. Don't be afraid to choose another path

You see it time and time again: people who don't really like scientific research, or are just not very good at it, clinging on to an academic career out of a sense of

misplaced loyalty, or fear of the unknown, or embarrassment because they don't want to appear to be a failure in the eyes of their lab head or academic colleagues. You really do need to know when to hold 'em, and know when to fold 'em. If it's clearly an unsuitable career, or if you find yourself longing for another path – scientific publishing, public engagement, industry, starting your own llama farm business – then by all means just get on

with it. Consider finishing your PhD first, if you can bear it, because this will boost your salary, transferable skills and prospects in many other lines of work, but don't if it really will kill your soul. And please don't go on to do a post-doc just because you want to postpone the inevitable. If you change your mind, you can always return to the fold – there are ways and means to do this. In the meantime, be bold, be assertive and get

on with your life. Because you've only got one of them.

Anything I've missed? I'd love to hear your own top tips for a young scientist starting out. Email me at xgal@biologists.com.

X-Gal

Journal of Cell Science 126, 5525–5527

doi: 10.1242/jcs.144824

© 2013. Published by The Company of Biologists Ltd.