

Role rehearsal

There is more to becoming a successful scientist than just developing good experimental technique.

A principle investigator, a head of a genetics start-up and a journal editor were on a panel at a symposium. This isn't the set up to a joke, it really happened. The panel was a session for early career researchers, and the panellists were there to talk about the diversity of opportunities available to young scientists and offer advice on how to seize them. Such panels are not uncommon and used to be labelled something like 'alternative careers in science', a huge misnomer given that the majority of postgraduate researchers are not destined to follow the standard career track of one day heading their own lab. As the PI said, "academic research IS the alternative career".

Most of the questions raised in the session boiled down to, "what can I do to prepare myself for a career in...?" or "what additional skills do I need to do your job?". Two things rapidly became clear. Firstly, that there was a step change between being a postdoc researcher and whatever comes next. The hard-learned skills of experimentation and the art of getting meaningful data out of recalcitrant biological systems, both so highly prized up to this point, become secondary with seniority. Secondly, what becomes far more valuable are softer skills associated with dealing with people; to be able to guide, to persuade and to inspire.

It also became clear that both the PI and the entrepreneur on the career panel had essentially the same job. Both had assembled a team and both provide the team members with the environment and the means needed to carry out their roles. Both were constantly in the process of hiring new staff, if for no other reason than to service the churn of individuals moving on to other jobs, both spent much of their time trying to secure finance to pay for everything and neither had realized what being in charge actually entailed.

There is no one right way to manage a team, and there are a multitude of wrong ways. But successful and productive labs tend to have a good lab culture in which everyone feels valued and supported. Such a culture cannot be imposed, it can only be nurtured, which involves as much care and encouragement as keeping precious but delicate mutant plants alive.

Persuasion must be employed facing outwards as much as it is employed inwards. Perhaps the biggest challenge for the leader of a lab is obtaining the finances to keep the research running. Grant writing is a never-ending cycle, requiring a clear presentation of the 'what?' and 'why?' of a research project. It also requires realistic costing and planning so that the members of a grant-awarding panel are not only convinced of the worth of a research program but also that it has a realistic hope of completion within the proposed budget and anticipated timescale.

Along with this come the problems of scarce resource allocation, and the balancing of short-term and long-term goals. The spreadsheet is as invaluable a tool to a university professor as it is to an accountant in a finance office. Estimating the full cost of a research project is a task that is rarely faced by a postdoc; its complexity can come as a shock to any scientist establishing a lab for the first time.

None of the skills needed to manage a successful research group are unique to science. They are just as vital for small business owners, for middle managers in large corporations, for coaches of sports teams and for any number of other jobs involving the organizing of a group of individuals towards a common goal. However, few if any scientists took up a career in research because they wanted to become managers.

The plant science community has for many years been active in supporting young researchers. The Frontiers and Techniques in Plant Biology course run by the Cold Spring Harbor Laboratory each July has been instrumental in introducing several generations of scientists to the cutting-edge techniques of plant research (and possibly, more importantly, to each other). The Gatsby Trust in the UK runs a summer school every year with similar aims. In recent years The New Phytologist Trust has established a regular meeting specifically for young career scientists; this year it is being held in Tartu, Estonia. While in the virtual arena, the [American Association of Plant Biologists' Plantae website](#) provides excellent information and support, especially for scientists of the social media generation.

Such endeavours tend to concentrate on the techniques of scientific research, rather than the techniques of research management. Support for scientists making the transition from group member to group leader is much sparser on the ground. With luck, new PIs can find a good mentor to help them as they become established. Frequently, this is a previous boss or collaborator, however some institutions run specific mentoring schemes. Plantae also has a specific mentoring service, "designed to connect early career scientists with mentors pursuing careers in a variety of sectors and organizations". Whoever they are and however they are found, a good mentor can be invaluable at any stage of a scientific career.

And the main piece of advice that emerged from the careers panel: it's never too soon to get experience in the business of science. □

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