

CURRENT SCIENCE

Volume 116 Number 10

25 May 2019

EDITORIAL

Formal structures of mentorship in universities and research institutions will benefit both science and scientists

As the number of science researchers grows in India, existing science academics need to consider how they can contribute meaningfully to support this growth of younger colleagues working in a range of academic environments. The introduction of formal mentorship mechanisms for academics at all steps of their career is currently insufficiently appreciated and could be transformative in a broad sense. Formal mentoring structures that permeate widely across all nature of academic and research organizations are infrequent, patchy and more often than not missing altogether. These would be beneficial for several reasons. In science especially, mentoring at appropriate stages can help the mentee take good decisions on a range of issues that affect their own careers and importantly, also of younger colleagues working with them. In addition to providing support mechanisms related to career progression, mentoring can help emphasize the importance of following correct ethical practices in the organization and in interactions with students and other laboratory personnel. If done thoroughly at the individual level and at sufficient scale across institutions, the existence of a good mentoring culture will increase scientifically meaningful success stories. Over time this will also help improve the general perception of why public money needs to be spent on teaching and research.

A question that might come up is at what stage of a scientist's career should formal mentoring start and when is it no longer required? To have a lasting impact on our scientific culture, it is best for formal mentoring to start early – even as early as at the level of a Ph D programme. It is true that a Ph D student works with a supervisor who is considered responsible for the student's progress. However, if there are issues with the research project, a Ph D student may be hesitant to communicate this easily to his/her supervisor. A formally constituted thesis advisory committee, with members that include 2–3 scientists chosen jointly by the student and his/her supervisor, is a great source of potential mentors. They provide the student with a set of experienced people (other than the supervisor) who are familiar with ongoing work. Unlike the supervisor, however, thesis committee members can advise the student impartially on how to deal with prob-

lems – both professional and personal – that inevitably come up in a fair number of thesis projects. They can also help with making key decisions related to publications and future prospects. For example, when applying for postdoctoral positions, students can have unrealistic expectations of their own ability to do well in a postdoctoral research group and can benefit from inputs about the nature of research groups to which they should be applying. Even in a Ph D programme that is progressing smoothly, members of the thesis committee can mentor the student regarding the steps to be taken on completion of his/her Ph D. Not all science Ph Ds necessarily need to progress towards a postdoc and, based on the student's inclination and ability, a good mentor can help steer the student in the right direction at this stage.

The postdoctoral culture is in its infancy in India, and a good mentoring system at this level is essential for its growth. The general perception among scientists is that a successful postdoc, generally considered seriously for research and teaching positions, is one with a series of good publications in reliable journals. This idea needs to be challenged when universities and institutions are hiring new faculty. While strong publications are certainly an asset, a postdoctoral tenure that includes realistic training for functioning as an independent scientist with accompanying responsibilities should be considered as an equal asset. Postdoctoral mentoring programmes for scientists who plan to take up independent faculty positions need to formally include a range of skills such as grant writing, supervising research projects of trainees and graduate students, learning how to write research papers and communicating with journal editors. Communicating scientific progress through effective seminars is another essential skill that needs to be developed with constructive feedback from good mentors. Institutions and universities that put in place programmes for mentoring along these lines are likely to attract more postdoctoral candidates, whose subsequent independent research careers should progress more smoothly.

As scientists move up the career ladder, the choices as well responsibilities they face grow more complex. Mentorship at these levels is therefore even more essential,

but at the same time requires mentors with the ability to discuss and analyse a range of issues. Introducing a mentoring process from early on in a scientist's career is likely to have the biggest impact. Younger colleagues at the initial stages of their independent scientific careers can benefit from mentorship at multiple levels. To begin with, good mentors can interact with them formally and help them understand better the goals of the institution they have joined. Research publications maybe one such goal, but different institutions may value different goals to different extents. For example, in certain institutions the teaching and training of undergraduates may be given equal importance, and it may not be always clear to newly joined lecturers/assistant professors regarding how to achieve an optimal balance between their own research projects and their expected teaching and training duties in the early years of their career.

The challenges for a fresh independent investigator in a research-only environment are no less. As the pressure on publicly funded research grants grows in the country, younger investigators need to plan carefully when and how many new grants to write. This is in turn frequently related to the number of research students that they may consider supervising at a given time. In our education system, graduate students join laboratories with relatively little research experience. While there is no hard and fast rule as to how many students an investigator should optimally have in laboratory at any given stage his/her career, early investigators can benefit by discussing this number with mentors. Other questions that arise are related to publications; for example, the level of completion that a project should reach before sending it out for publication, and to which kind of journals should the first publications go. Even seemingly trivial decisions like how many scientific meetings must one attend annually

need to be thought through so that the benefit of attending a specific meeting versus spending more time in the laboratory or teaching is clearly understood. The value of attending national versus international meetings is also not obvious to early career academics often freshly returned from abroad. Good mentors with experience can help negotiate all of these issues smoothly. For scientists at the mid-level, mentorship committees can formally advise on when and how to apply for awards and fellowships, or for selection on national committees. The nature and extent of science mentorship does change as one moves from one level to the next – but its impact in helping scientists make good career decisions is likely to be felt at all levels.

For formal mentorship mechanisms to impact overall scientific output, it must happen in a uniform and efficient way across all academic organizations. This in turn requires that more mid-level and senior scientists appreciate and are willing to act as mentors to their younger colleagues. Informal mentoring has always existed, but an important issue with such mentoring is that it does not reach everyone and often does not reach the people who need it most. One way of incentivizing this among existing institutions is to constitute awards for good mentors, just as we do for teaching and research. The criteria for such awards already exist in the international domain (*Nature*, 2017, **552**, 5). It is up to our scientific community to institute these broadly across the ecosphere of Indian science.

Gaiti Hasan

National Centre for Biological Sciences,
TIFR, Bellary Road,
Bengaluru 560 065, India
e-mail: gaiti@ncbs.res.in