

Means and myths of mentoring

A strong relationship between mentor and mentee is a crucial part of the training and professional development of scientists. Here, we discuss the means of successful mentorship and debunk some myths surrounding mentoring.

According to the Merriam-Webster dictionary, a mentor is a trusted counsellor or guide, a tutor or coach. But the word is something of a misnomer. It originates in *The Odyssey*, Homer's epic poem of the return of Odysseus, king of Ithaca, to his beloved island after the Trojan War. Mentor was Odysseus' friend, entrusted with the care of Odysseus' household and young son Telemachus when the king set off for Troy. Considering that under Mentor's guardianship a host of suitors took residence in the palace, squandering the absent king's fortune and trying to persuade his wife to marry one of them, Mentor did a less than stellar job taking care of his friend's affairs. But Odysseus was favoured by Athena, the goddess of wisdom, who after ten long years of her protégé's failed efforts to find his way home, decided to step in. Taking the guise of Mentor, Athena appeared to Telemachus to guide him in standing up against the suitors and in the search for his father — thus putting the name of Odysseus' ineffectual friend in the modern lexicon.

Remaining in the shadow of Athena, the Homeric Mentor is a simulacrum of mentors as we perceive them today. However, the modern use of the word can be discerned in Athena's interactions with Telemachus — she supported him through challenging times, guided him in his decisions, inspired him to action, and provided a solid presence he could trust and count on. Budding researchers entering a laboratory environment as graduate students would benefit immensely by such a guiding hand. Indeed, in a 2017 *Nature* survey of PhD students (<http://go.nature.com/2qWSyFX>), respondents noted that the guidance and recognition given by their adviser contributed the most to their overall satisfaction with their PhD programme. Do PhD students find the mentorship they need? Not always — ~18% lamented the lack of useful career discussions with their advisors, with ~30% responding that their supervisor did not encourage them to attend career events and training, or discuss broader career options beyond academia. A sobering fact is that ~23%, almost a quarter of respondents, said that given the choice they would change PhD advisers.

The truth is that mentoring is not something that comes naturally to all. Most

group leaders are supervisors, but not all are true mentors. Beyond overseeing a trainee's education in research practices and progress in a particular project, a mentor guides the mentee in laboratory conduct, collaboration and science communication, and provides a framework for understanding research ethics and the responsibilities of researchers towards the community. Mentors also encourage mentees to develop their own interests, and give them opportunities to gain experience and skills, for example by involving them in the peer-review process and grant writing. Moreover, a mentor helps the mentee see the bigger picture of his/her contributions by providing honest, constructive feedback, and offers open-minded advice on career development and options depending on the individual's skills and inclinations. In fact, good mentors adapt their approach to the needs of each mentee and strive to strike the right balance between offering guidance and fostering independence.

Just as being a supervisor does not equate to being a mentor, age and a lengthy research career do not necessitate strong mentoring skills. What matters most is the willingness to share one's knowledge and to nurture talent, the openness to listen, and the thoughtfulness to create a collaborative, interactive lab culture in which scientists of different skills and personalities can thrive. Another misconception is that mentorship is a one-way street, with mentees reaping the benefits at the expense of their advisors' time. Mentoring does require a level of availability and structured interactions, but the time commitment depends on the needs of the mentee and the strength of the mentor–mentee relationship. Importantly, mentors have a lot to gain from the process as they acquire leadership and management experience, and learn from their mentees when — as in every healthy relationship — their ideas are challenged. Supporting independent thinking and creativity, as well as building strong bonds with one's lab members, can also have positive effects on research output. Finally, the personal satisfaction of helping someone progress and flourish professionally should not be underestimated.

It should be noted that mentoring does not only refer to the interactions between supervisor and trainee. Collaborators, senior

postdocs and research associates often step into a mentor's role in an informal manner, with many of the same benefits described above for both parties. Peer mentoring at the postdoc or student level, for example through buddy schemes for new starters, is also a valuable source of advice and a unique opportunity to develop leadership skills. Although informal approaches are important in complementing traditional mentorship schemes, they cannot fully substitute the efforts of one's direct supervisor, who remains best placed for effective counsel. The perception that mentorship ends with graduation or research independence is also misplaced. The guidance of senior faculty can be helpful to many junior group leaders, who have to learn how to navigate the complexities of setting up and running their newly minted lab, securing funding, taking on teaching and administrative responsibilities, while also achieving their research goals. Recognizing the crucial role of mentors in the development of the next generation of scientists, *Nature* has held an annual mentorship awards event since 2005 to reward outstanding scientific mentors from a particular geographical region each year (<http://go.nature.com/2ms70HX>). Over 13 years, these awards have honoured scientists across five continents.

Successful mentorship means balancing the strong independent streak of researchers against the benefits of sharing the experience of others to help people develop their full potential. Despite being a core aspect of lab life, mentoring ability often does not factor into group-leader hiring criteria, which are usually restricted to scientific merit and vision. Nevertheless, research organizations, including the National Institutes of Health in the USA and European Molecular Biology Organization in Europe, offer workshops and training courses that touch on mentorship to help scientists recognize and develop the necessary qualities. But mentoring is a subtle art that cannot be learned theoretically. The best route remains to engage with colleagues with sincerity and openness, and with the willingness to listen and guide rather than direct. □

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