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receiving the mentorship you need

Have you asked yourself recently what you are going to do next? For some of you, the next step is already in perspective and you will most likely stick to your plans, but for others, it is still a bit fuzzy. No one else can make those decisions for you, but some can definitely advise you, open up your vision, broaden your thinking, and ultimately help you with your decision making. This, in fact, may be one definition of a great mentor: someone you look up to, have admired throughout your training career, and feel comfortable knocking on his/her door and asking for advice. After all, that's who mentors really are!

What Is Mentoring?

From an academic viewpoint, mentoring is usually perceived as a relationship between established scientists and junior researchers or trainees. Mentoring relationships often develop across a broad experience gap. You as a trainee need guidance and encouragement for your future professional career development, and, since neither you nor your peers have that experience, you turn to your superiors or senior collaborators for professional development and career advice. Although it may seem that this mentoring relationship primarily benefits you as a trainee, your mentor also experiences personal satisfaction from shaping the next generation of scientists. Trainees carry forward their mentors' achievements, and, as their professional horizons expand, so do their mentors' professional networks. In fact, mentoring is a symbiotic relationship in which you as a trainee open up your world of opportunities and give back to the community that helped you rise.

Traits of a Good Mentor

Before you go out and seek a mentor, you should first put together a list of

qualities you would like to find in a mentor. You should probably look for someone who is available and willing to dedicate his/her time even to spontaneous discussions. Find someone whose door is wide open all the time and someone you feel comfortable talking to and in whom you can confide. You may need to share your personal insights with regard to what you are experiencing, and you don't want to feel awkward engaging in such conversations. A real mentor

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possesses a well-established system of moral values, acts consistently according to his stated principles on a regular basis, and is able to communicate the hard truths about the real world out there and not give you false hopes in vain. Lastly, a mentor needs to show patience and awareness: Some trainees make mistakes, as different people mature at their own rate. Ultimately, you should look up to your mentor and show your respect rather than perceiving him/her as just

another friend. You are not looking for another pal, so don't let the relationship become too relaxed; reciprocal respect is a key element for successful mentoring.

Mentoring Needs: What Are You Looking For?

While all students may be classified as trainees, their expectations and needs are different. For example, if you are an undergraduate student interested in bio-engineering research, you should seek the opportunity to take an active role in such a research environment. As your experience is limited, you should aim for a team where you can receive sufficient guidance. Typically, most laboratories will give you a summer student research position and pair you up with a senior graduate student or postdoctoral fellow. In an ideal laboratory, however, the lead researcher will take your work seriously, set high standards for you, maintain a strong role in overseeing your research progress, and assist you with your career-related decisions—all in all, fulfilling his/her role as a real mentor.

As a junior graduate student, you may be seeking similar mentoring traits to the undergraduates, and, as you become more senior and gain more experience in your laboratory, you will find yourself more knowledgeable, capable of tackling scientific problems on your own, and sharing information with your colleagues. While you no longer need the direct supervision from the lead researcher, you should aim for mentorship in the context of what's coming next: Try to get involved in writing grants with your supervisor as you will need to apply for your own funding soon enough, and get him/her involved in your search for a postdoctoral position, faculty appointment, or private sector employment. Look back and remind yourself of the main reasons that determined you to join this particular laboratory or research group in the first place

and take with you as much expertise as you can from this environment: how to set up your own team, how to manage your group, how to be successful at getting the funding you need, and how to disseminate your research to the appropriate audience. Soon enough, you will be on your own and solely responsible for most of the traits mentioned earlier.

Establishing Mentoring Relationships

In just a few words, the end product of good mentorship results in you being part of a well-connected network, knowing who to go to for help, receiving and accepting the professional advice you need, and maintaining long-term personal and professional relationships.

During your undergraduate and graduate career, you have come across and impressed several professors and supervisors who you don't want to let go. Stay in touch with them, let them know of your whereabouts, and keep them up to date with your professional development! Sooner or later, you will need to provide a list of referees for your next job application and even if they are not directly involved in your current career stage, they will support you and help you put your future environment in perspective.

Once you immerse yourself into a new environment, try to establish relationships with the individuals who can become your official mentors. Often times, as a newcomer, you may already be assigned a mentoring committee, which you should slowly cultivate and treat with respect, as they will be the ones supporting you for upcoming promotions. After you have established good professional relationships in your nearby vicinity, it is time to broaden your perspective and seek out other mentors, who may or may not be part of your immediate niche. These individuals may be experienced scientists or employees you noticed at a recent scientific confer-

ence or staff meeting, with whom you are not directly collaborating with but appreciate for their view on science or company

politics. Their experience in the current environment will help you see a bigger picture, and, at the same time, they will



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After connecting yourself to key individuals around you, you need to ensure that you maintain these relationships and carefully utilize them for your needs. Identify a particular trait in each mentor that you would like to cultivate in yourself, meet them regularly, keep them updated of your progress, and if progress is slow, engage them early and ask for their support. Don't forget to keep meetings professional, respect their constraints and time commitment, and be specific toward achieving your goals. Show them that you are well prepared, clear and concise in your plans, and keen on what you want to achieve.

What If You Fall Out with Your Mentor?

You may find yourself in a position where you don't feel that you're getting what you need and what you initially expected from your mentor. Also, while you may perceive the situation as a problem, it may be just a simple matter of personal style or a different vision of a mentor's role. The best approach is to have a conversation with your mentor and rediscuss your needs and expectations. If you really find that he/she is clearly and consistently uninterested in you, undervalues your abilities, or displays any signs of undermining the relationship, you should reconsider the relationship and start looking for other mentors. However, you need to proceed with care, as you don't want to burn any bridges, especially if the mentor is a leading figure in the field. You don't want to offend someone unnecessarily, as you don't want any bad blood following you in your career, especially from someone who may be a potential employer or a reviewer of your research papers or funding applications. Thank him/her for the mentorship he/she has provided you so far and seek other mentors, keeping in mind the traits of a good mentor. There is no need to end one mentoring relationship before engaging in other ones, as the advice and insight one mentor shares with you may complement what you receive from another one.

Ten Tips to Getting Mentored Well

As this column was intended to provide general tips on getting the mentorship one needs, let's end with a brief list of qualities you should cultivate in yourself as you seek to be mentored:

- 1) *Foresight*: Plan your future early and look up to whom you want to become.
- 2) *Be Proactive*: Go after what you want and don't let yourself be overlooked in the competition.

A real mentor possesses a well-established system of moral values, acts consistently according to his stated principles on a regular basis, and is able to communicate the hard truths about the real world out there and not give you false hopes in vain.

- 3) *Test the Grounds*: Ask tough questions and learn from your predecessors about a tentative mentor.
- 4) *Show Respect*: Establish and maintain professional relationships and don't overstay your welcome.
- 5) *Be Grateful*: Thank your mentors for their advice and support.

- 6) *Be Humble*: Accept critical feedback, be open to learning, and accept new ways of thinking.
- 7) *Look Out for New Learning Opportunities*: Think of being mentored as taking a new course, one in which you choose the instructor and the topics.
- 8) *Think Strategically*: Set your goals, work creatively toward your aims, and measure your accomplishments.
- 9) *Adhere to Professional Standards*: State your expectations, identify your weaknesses, and take criticism constructively.
- 10) *Stay Connected*: You can never have too many supporters.

It is not easy to find good mentors! If you think you've come across someone who can provide you with the mentorship you need, nurture that relationship, maintain it, inherit those good mentoring traits, and pass them along to your future mentees!

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References

- [1] American Association for Advancement of Science. Available: <http://sciencecareers.sciencemag.org>
- [2] K. Barker, *At a Helm: A Laboratory Navigator*. Cold Spring Harbor, NY: Cold Spring Harbor Lab, 2002.
- [3] Council of Graduate Schools, *A Conversation About Mentoring: Trends and Models*. Washington, DC: Council of Graduate Schools, 2003.
- [4] National Institutes of Health, Office of the Director. (2002). *A Guide to Training and Mentoring in the Intramural Research Program at NIH*. National Institutes of Health, Bethesda, MD [Online]. Available: http://www.nih.gov/oir/sourcebook/ethic-conduct/TrainingMentoringGuide_7.3.02.pdf
- [5] J. D. Nyquist and D. H. Wulff, *Working Efficiently with Graduate Assistants*. Thousand Oaks, CA: Sage, 1996.
- [6] R. M. Reis, *Tomorrow's Professor: Preparing for Academic Careers in Science and Engineering*. New York: IEEE Press, 1997.
- [7] University of Michigan School of Graduate Studies, *How to Mentor Graduate Students: A Guide for Faculty at a Diverse University*. Univ. of Michigan, Ann Arbor, MI [Online]. Available: <http://www.rackham.umich.edu/StudentInfo/Publications/FacultyMentoring/contents.html>
- [8] Howard Hughes Medical Institute, *Making the Right Moves: A Practical Guide to Scientific Management for Postdocs and New Faculty*. Chevy Chase, MD: Howard Hughes Medical Inst., 2009.