

NIH Fellows Handbook

Mentoring

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Brilliance and mastery of scientific techniques will never be enough to ensure a successful scientific career. To be successful, a scientist must also become a recognized member of the scientific community.

Science is... a community, with its own customs, its own social contract. Members of that community pride themselves on their abstract languages and their tribal customs. Their tribal behavior is acquired largely by intellectual and cultural osmosis from their mentors and their peers, rather than from textbooks.

-- Carl Djerassi

Inventor of "The Pill" and author of *Cantor's Dilemma*

Study after study underscore the key role mentoring plays in career development. Mentors serve as sources of advice, information, encouragement, and support to junior colleagues. Mentors can be the first link to building a network with other scientists; they can provide constructive criticism and be an advocate for the junior colleague in professional activities. The mentor's role is often described as that of a trusted counselor.

Science works in large part because it is a communal activity: No one does research in a vacuum. Even the most brilliant and distinguished of scientists owe their success to the work of others -- not just the generations that sought out the pathway and eliminated the dead ends, but countless students, colleagues, technicians, editors, and administrators who support and collaborate, criticize and compete. Many of the traditions that govern the scientific community are implicit and not easily categorized by simple rules. How does one choose experimental questions most strategically? How best to respond to a reviewer's criticisms -- that you think are misguided -- of your manuscript? Who should and should not be a co-author on your scientific papers? What are the rules for first authorship? How freely should you talk about your work with your competitors? Ultimately these are questions about how to negotiate relationships within the scientific community and you will be well-advised to seek the counsel of a mentor in dealing with issues like these.

The most easily identified mentoring is the example of a strong, enduring relationship between a well-established professional and a more junior colleague. The established scientist nurtures the junior scientist, who is ushered into the inner circle of their field. The career of this well-favored junior scientist blossoms and ripens under the attentive tutelage of the mentor.

While this may be the ideal model, it is not the only model -- nor even the most common model. In fact, while many successful scientists have benefited from the attentions of a single individual who provided trusted counsel, it is more often the case that people have had many mentors and no single person to

whom they attribute their success.

As a postdoctoral fellow, you may benefit from the counsel of different people at different times and about different issues. Your supervisor will not necessarily be the ideal mentor for you. He or she may be able to help you with many issues, but not all. A mentoring relationship is a personal relationship and, to be effective, the mentor and protégé must have compatible styles of communication. This does not mean that they need to have similar backgrounds. Men can mentor women, African-Americans can mentor Caucasians. It may often be easier to communicate with someone of your own background, but if you are part of an underrepresented group, the odds are that you will have a supervisor with a different background than yours. This is not cause for despair. It does mean that you should be receptive to the guidance of those who you might feel do not fully understand all your experience.

As a potential protégé, you play a vital role in making a mentoring relationship work. A protégé must be willing to be mentored, show a desire to learn, and a demeanor that suggests receptivity to being directed and advised. A protégé must also be responsive to the mentor and must -- to some extent -- work within the mentor's needs as well their own.

Your supervisor does not necessarily know what form of mentoring will work best for you. It is up to you to do your best to communicate effectively with your supervisor. It is up to your supervisor to do their best to offer you guidance in your scientific work (although not necessarily technical guidance) and make sure that you understand their expectations of what you will be doing in the laboratory. There are so many facets to mentoring, that your supervisor may not be able to meet all your needs. You should expect to seek the counsel of other mentors, as well. After all, the scientific community is a network, not a simple lineage. It is the rare scientist who follows the same path led by their supervisor. A more common pattern is that a protégé initially follows the supervisor's lead, but then as the protégé becomes more independent their work will often take a markedly different turn.

How does one find a mentor? You do not wait for someone to choose you as their protégé. It is up to you. Ask the advice of those you respect and/or hope to emulate, watch them and be open to input. For some, this comes naturally. For others it is a learned tactic. It can be awkward at first, but it is easy enough to ask how someone else does a certain procedure that you use. Even when your technique is working, find out how other people do the same thing. You never know what tricks you might discover and it is an easy way to foster a mentoring relationship. Of course, you should make sure you are aware of what this potential mentor actually does. Do not ask your supervisor for tips on how best to trouble-shoot your *in situ* PCR if he or she has not worked at the bench for many years.

Another easy way to start up a mentoring relationship is ask for comments on a paper you are writing (or even advice on a paper you are thinking about writing). It is critical to learn how to take the criticism you have asked for. Do not take it personally. Most scientists -- until they have written a good number of papers -- are very defensive about criticism. It is very important to get past this and learn to be helped by constructive criticism.

Finding mentors at NIH is, in principle, similar to that of any other place: you need to seek and be

receptive to advice. The only tricky part about NIH is finding people outside your immediate laboratory -- since there are so many, so widely dispersed around the NIH campus. There are ways, however. Look for a Special Interest Group in your area. To find a listing of Special Interest Groups, you can contact the Office of the Director. Use the Internet to search CRISP (found under *Guide to NIH Grants and Contracts*) and find out who at NIH is working in your field.

In general, it is critical to develop good relations with other people in your immediate section or branch or lab since you are all mutually dependent -- whether it is sharing reagents, cell lines or critical information. It is also important to form connections with people outside your lab as well. This is critical to get a broader view of how things work at NIH -- the NIH bureaucracy is large and often unwieldy for newcomers -- and how comparable techniques are done by other people, which can be critically important should you be faced with unforeseen changes in your research group. Research groups are like families, in that they are all different and operate with many different unwritten codes of behavior. It can be disconcerting to the postdoctoral fellow who joins a new laboratory and finds unwritten rules that are seriously at odds with the laboratory they just left. Your lab mates are essential resources in helping you learn about a new laboratory's style, and in doing so, they will be acting as your mentors.

Mentors are everywhere and many people. For the most part they do not fit into the idealized image of the single senior scientist who offers the junior scientist wise counsel and entree into the inner circle. Ideally, a supervisor will be an effective mentor for the trainee and nurture them in the development of their scientific career and induction into the scientific community. A trainee should not expect to passively receive mentoring, but should instead play an active role in seeking and fostering such relationships.

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