

Choosing the Right Graduate Advisor

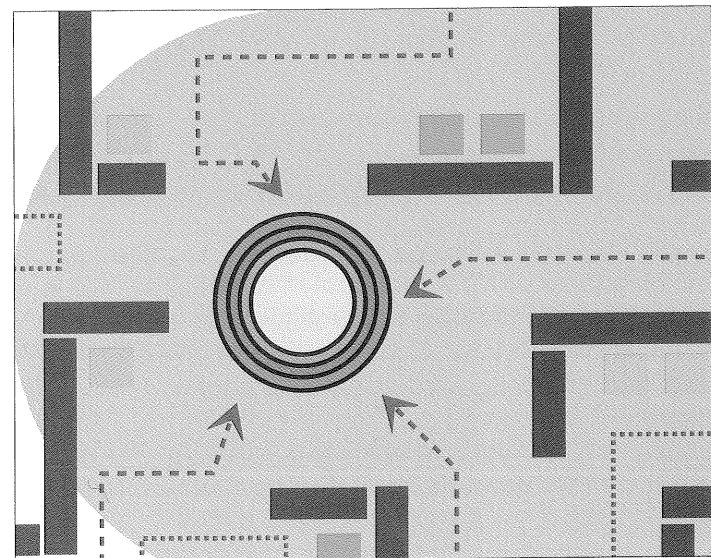
As an undergraduate you consumed research. As a successful graduate student, however, you will conceive, conduct and document research. To do this well, you will need an expert researcher who will serve as your major professor/advisor. Your advisor should provide timely and constructive feedback on your laboratory work, frank evaluations of other work conducted in your research area, and guidance on completing departmental requirements. An advisor with grant support can additionally finance much of your graduate education and all advisors can eventually help you land your first job. That's why selecting an advisor is among the most important decisions you can make in graduate school.

Searching for an Advisor

There are plenty of electronic databases and sources on the Internet for gaining information about potential advisors. There are some faculty members, however, who may not be ideal advisors.

Grant Swingers and Research Millers Do not equate grant support or the size of an institute or research laboratory with quality. Even without grant support, publishing may be more important than doing science when faculty members are paid merely in terms of articles published. Be aware of "research millers" who have many publications but describe only the outcome of one experiment. Even across such publications, such faculty members are unlikely to report replications and extensions of their work.

Absent at the Bench Avoid choosing an advisor who structures research through multiple layers of authority and who is rarely in the laboratory. Inadequate research supervision is so prevalent in cases of scientific fraud that a committee of the American Association of Universities recommended that "students be directed by experienced scientists. The director should supervise, teach and encourage in-depth scrutiny and interpretation of results, emphasizing respect for primary data. Routine audit and review of all primary data by the laboratory director is strongly recommended. It is inadvisable for the director to delegate these important functions."



The Perpetual Administrator

Unless you are only one of a few advisees, it's best to avoid a faculty advisor who repeatedly chooses to be an officer of professional societies, departmental chair or editor. These activities may reduce his or her availability to do scientific research and can substantially reduce supervision quality.

There are other faculty members, however, who may be ideal advisors.

Renowned Researchers Seek advisors who love doing science and document their work in respected journals. Their *invited* articles and convention presentations as well as competitive grant support from major foundations indicate their work is highly valued by other

scientists. These advisors, however, may not be available to reliably help you because they are preoccupied writing grant proposals, justifying and administering grants, and supervising post-doctoral students. Consider working with a research professor who has been granted a lifetime of research support by a university or a foundation. Publishing with a renowned researcher, however, could raise questions about whether you or your renowned advisor conceived your work.

Less Renowned Researchers

Though grant or other support may be absent, these researchers' achievements will resemble those of renowned researchers. When research costs are low, less renowned researchers can be among those who most reliably help. If you are in a larger graduate program,

you can benefit from both types of researchers. If there are renowned researchers in your department, seek their advice and include them on your research committee. If all goes well, you may eventually ask for letters of recommendation and be able to network using their connections.

Researchers You Respect

Certainly, it is beneficial to work with a faculty member who is honest and ethical, loves doing science and is reasonably successful. Moreover, it would also be ideal if you liked this faculty member (and vice versa). Still, choosing or keeping an advisor primarily because he or she is nice is a mistake. A nice person may withhold frank evaluation of your skills and progress. Remember, it is important to respect your advisor!

Researchers with Similar or Compatible Interests Of course, seek an advisor with interests similar to yours. Your shared interests can help you to master complex equipment and techniques and work hard to complete projects. If an

How to Research Potential Advisors

Getting Started

- Have three or four potential advisors in mind by your last undergraduate semester.
- Become a research assistant in a laboratory where you can consult with the faculty and postdoctoral staff.
- Discuss potential advisors with your undergraduate advisor and faculty who teach courses in the areas that most interest you.
- Talk to other faculty members in the potential advisor's department.

Reach Out to Potential Advisors

- Check out the Web and CV to become more familiar with the prospective advisors.

- Correspond with potential advisors. Describe your background, training, GPA, research experience and interest in their work.
- Request copies of their articles. Ask about what led them to the field.

Talk with Their Current Graduate Students

- Most advisors list their graduate students on their websites. If not, ask for their names and contact information to learn more about the laboratory and the graduate program.
- Call the students at home to discuss what it is like working with their advisor. Consider asking:
 - *What proportion of this professor's advisees earns a Ph.D.?*

- *How much time is typically required to earn the Ph.D. in this laboratory?*
- *Do individuals continue working in the area upon graduation?*
- *If the potential advisors are assistant professors, what are their chances of gaining tenure? (It is unwise to select an advisor who may not be re-hired and leave you stranded.)*

Interact with Prospective Advisors

- Enroll in their classes or attend their lectures.
- Observe how they interact with graduate students and colleagues.
- Interview them and their students at professional conferences.
- Work on a summer project in their laboratories.

discussed above, you are bound to increase your chances at success. ■



Editor's note:

A version of this article along with sources appeared in the *Journal of Chemical Education*, 1993, 70, 303-306. The article can be located at www.jce.divched.org as well on Internet sites devoted to helping graduate students in various disciplines such as botany, computer science, the health sciences, biochemistry, physics, engineering and psychology. Marshall Dermer is a behavior analyst. He specializes at developing software geared toward making writing more graceful and helping native English speakers learn aspects of second languages such as declining articles in German and conjugating Spanish verbs.

advisor with similar interests is unavailable, consider an advisor with compatible interests.

Basically, your advisor should be an expert at conceiving, conducting and documenting programmatic research. This type of research often addresses a problem through a series of interlocking experiments, each of which replicates and extends earlier work conducted in your advisor's laboratory. Indeed, replicating and extending research is the productive strategy that such an advisor would likely recommend for your research.


Changing an Advisor

Much like entering marriage, you should carefully consider whether there is a match between your personality and that of your advisor, as well as between your expected work rates. Even with the best intentions, the relationship may sour, and you may want to change advisors. This is a delicate matter, particularly if your advisor has invested much time in your education. Also, once you have started a research project, another professor may feel unqualified to supervise your work.

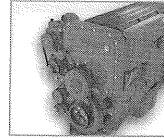
There may be serious reasons for changing your advisor. For example, if you believe your advisor engaged in scientific misconduct or sexual harassment you should immediately and carefully document your findings and seek out a new advisor. More common reasons for changing an advisor include changing interests, inaccessibility of the advisor or incompatible communication styles. Whatever the case, it is generally best to first have an honest conversation with your current advisor to discuss your concerns and explore the possibility of changing the nature of the relationship.

Of course, you don't need your advisor's permission to switch advisors. Most advisors will graciously accept the change, particularly if it enhances your progress through graduate school. If you decide to switch, give your current advisor enough notice; at least a month or two should be adequate if research is in progress. Be careful to follow the "golden rule," for you might want to work with your original advisor again in the future.

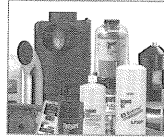
There is, of course, no magic



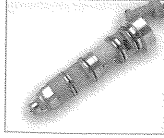
Seeking Qualified and Capable Leaders of Tomorrow



Engines



Filtration



Fuel Systems

Over five hundred entry level positions available in 2008!

Join our global team of 34,500, providing products that fuel world economies. You'll help an \$11 billion international leader create innovative solutions to environmental challenges, unleashing your own potential as you make people's lives better.

For opportunities, please visit
www.cummins.com