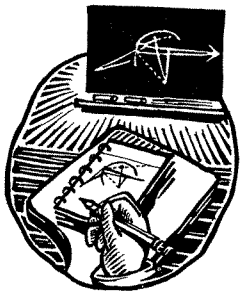

Professional Development

Selecting An Advisor: Twenty-Five Questions to Ask

BY J. PAUL CALLAN

Choosing a good faculty advisor is critical to getting the most from graduate school or a post-doctoral position. It is important to find an advisor whose interests match yours and whose mentoring style is suited to your style of learning and research. After graduate school, your advisor can play a crucial role in your professional development and in launching your career, whatever path you choose. To help new students make good choices, a group of physics graduate students at Harvard University prepared a list of questions to ask about potential advisors. Many of these questions are also relevant when selecting a post-doctoral advisor or an employer.

Different questions are best asked of different people, as labeled below (**A** = potential advisor, **S** = current and former students, **OF** = other faculty, such as your assigned first year advisor, **OS** = other students and postdocs). It's important to be diplomatic; many of these questions touch on the student-advisor relationship and research group dynamics, both of which are delicate issues. Listen carefully to the answers you are given. Everyone (advisors and students) has a point of view and their own communication style. Your task is to choose an advisor with whom you can work well.

In any case, *make sure you talk to other students.* Talk to as many as you can; the more time spent chatting with other students, the more accurate the picture of the advisor and the group "culture" you will get. After all, in most (but not all) cases, your interactions with other scientists will be mainly with the other students and postdocs in the group—not with your advisor.

The questions...

General

1. What are the advisor's current/future research and scholarly interests? How well do they match your interests? [**A, S**]

2. Why did current students choose this advisor? Did they get what they expected? [**S**]

3. Have people switched from this advisor? If so, how many and why? [**S, OF, OS**]

4. Is this advisor looking for/accepting students? If there are more students interested in the group than there are open positions, how does the advisor determine which students to take? [**A, S**]

Advising style

5. What is the person's advising and mentoring style? How often does he/she meet with students to talk about their work? How often do they meet informally? Are there group meetings, and are they useful? (Be quantitative, *e.g.*, hours per week or month.) [**S, A**]

6. Will the advisor provide you with the right level of assistance in pursuing your research? (Think about what will be right for you!) How closely does he/she work with students on research? How much freedom do students have in choosing research topics, designing experiments or selecting methodologies? Does this change over the course of the student's career? [**S**]

7. How much feedback does the advisor give students on the quality of their work? What is the advisor's style of criticism, both positive and negative? Does the advisor consistently treat students in a professional and courteous manner? [**S**]

8. Would you fit well into the group? Do the advisor's students work together on the same experiments, on related projects or operate independently? [**A, S**]

9. Is there collaboration with other groups, faculty and/or students? Does the advisor encourage such collaboration? [**A, S**]

10. Do students of different gender, race, cultural background, sexual orientation, religion, feel equally comfortable working with the advisor? [**S, OF, OS**]

Time & work requirements

11. How much do students work? What does the advisor expect? Does the advisor ask students to work on projects other than their thesis work? [**S**]

12. Will the research require long periods away from the university? If so, is this a good/bad thing for you? [**A, S**]

13. Is the advisor supportive of students who spend time on unrelated work, on raising a family or on extracurricular activities? [**S**]

Financial & facilities support

14. What financial support, if any, can the advisor provide? Consider both stipends and support for going to conferences. [**A, S**]

15. How good are the work facilities and space—laboratories, equipment, computers, offices, library, etc.? Look at them for yourself.

Reliability

16. Does the advisor fulfill his/her promises and commitments? Does he/she support students in dealing with administrative matters, etc., when needed? [**S**]

17 How well organized is the advisor in arranging meetings with students, reading draft papers, dealing with administrative issues? [S]

Career/Professional Development

18 Where have former students gone to work after graduation? What job offers did they receive after the Ph.D.? [A, S]

19 How much help does the advisor give students in finding jobs after graduation? Does he/she call potential employers, ask about possible positions, write letters? Does he/she believe students should follow academic career paths? Support those seeking non-academic careers? [S, A]

20 Request and look over papers published by the advisor's group over the past few years. [A, S]

21 Does the advisor actively introduce his/her students to colleagues in the academic community? Does the advisor give fair credit to students, *e.g.*, through authorship of publications or in conference presentations? (This issue will probably come up if other students have had difficulties; it may not be necessary to raise the question directly.) [S, OF, OS]

22 How does the advisor help with the development of professional skills such as writing, presentations, and preparing grant and fellowship applications? [S]

Time to Complete Program

23 How long have previous students taken to complete the Ph.D. degree? [A, S]

24 If the advisor is untenured, what will happen to you if he/she is denied tenure before you finish your thesis work? [A]

... And Most Important...

25 Are the advisor's students happy? Are they satisfied with their research and graduate student experience? [S, OF, OS]

J. Paul Callan is a graduate student at Harvard University.

"Legal Lens," continued from page 11

issuance, just as foreign inventors are able to see U.S. inventions filed abroad prior to issuance. This allows for the state of the art to be gleaned earlier, and should assist companies and individuals in making quicker and more informed decisions about how to proceed with research and development.

If applicants for a U.S. patent do not want their application published, they need to state when filing the application that no foreign application or PCT application will be subsequently filed on the invention. If the applicant later decides to file a PCT or foreign application, he or she must let the USPTO know within 45 days of the PCT or foreign filing. Provisional rights are available to patentees to obtain reasonable royalties if others make, use, sell, or import the invention during the period between publication and issuance of the patent. Provisional applications will not be published. In addition, timely abandonment of the application will preclude publication of the application. Also, if the foreign-filed application is less extensive than the application filed in the USPTO, the applicant may submit and request publication of a redacted version.

The USPTO will recover the costs associated with the 18-month publication of patent applications by charging a publication fee (non-optional, of course) after a Notice of Allowance of the patent. This section of the Act also provides for a study of the prior art effect of the published patent applications. The provisions of this title are to take effect November 29, 2000, and apply to patent applications filed on or after that date.

Optional Inter Partes Re-examination Procedure Act

Prior to the Act, a third party (*i.e.*, a person or entity other than the patent owner) could request that a patent be re-examined by the USPTO. However, the re-examination procedure allowed for minimal involvement of the third party. This section of the Act establishes a re-examination alternative that expands the scope of participation of third-party requesters by permitting those parties to submit a written response each time the patent owner files a response to the USPTO. Third-party requesters who choose to use the optional procedure, however, will not be able to appeal adverse decisions beyond the Board of Patent Appeals and Interferences. In addition, they will not be able to challenge, in any subsequent civil action, factual determinations. This section applies to any patent issuing from a patent application filed on or after November 29,1999.

Patent and Trademark Office Efficiency Act

This section of the Act establishes a "new" USPTO as an agency within the Department of Commerce, subject to the policy direction of the Secretary of Commerce. The USPTO is now headed by an undersecretary of commerce for intellectual property and director of the USPTO, appointed by the President with the advice and consent of the Senate. The Act makes the USPTO a performance-based organization (PBO), only the second federal agency to be so ordained (the other is the Education Department Office of Student Financial Assistance). The plan is to have two separate offices: the Patent Office and the Trademark Office. The new structure and PBO status should provide more flexibility for the USPTO to act like a business, with more autonomy over its budget, hiring, procurement and the like.

Conclusion

The above-described changes to the patent laws are significant and should have a positive impact on the U.S. inventor community. With the ever-increasing number of patent applications being filed, and the new publication requirement for patent applications, the USPTO has its work cut out for it. Time will tell whether the provisions of the Act will serve their intended purpose.

Joseph E. Gortych is an intellectual property attorney and optical engineer. He is with Venture Info Capital, an intellectual property consulting firm, and can be reached at jgortych@venture-info-capital.com.

(FTPed from csd4.csd.uwm.edu::pub/Advice.For.Grad.Students/Insider's Guide)

Dermer, M.L. (1993). An insider's guide to choosing a graduate adviser and research projects in the sciences. Journal of Chemical Education, 70, 303-306.

An Insider's Guide to Choosing a Graduate Advisor and Research Projects in Laboratory Sciences

Marshall Lev Dermer
Department of Psychology
University of Wisconsin--Milwaukee
Milwaukee, WI 53201

dermer@convex.csd.uwm.edu

A slightly revised version of this manuscript appears in the _Journal of Chemical Education_, 1993, _70_, 303-306. As the author of this work I have the right to distribute it provided "all such use is for . . . personal noncommercial benefit." So, I offer it to interested readers. I look forward to your comments but please don't send money!

An Insider's Guide to Choosing a Graduate Advisor and Research Projects in Laboratory Sciences

Where can new and prospective graduate students obtain candid advice to enhance success in graduate school? Not from most college science teaching journals which have almost exclusively published advice for professors regarding teaching undergraduates. Not from national organizations, graduate schools, and university departments; for "official" advice is rarely frank advice. And not from all faculty and senior graduate students as laboratory lore, unless one is a select "insider." Elsewhere (_1_), I have asserted that faculty ought to provide new and prospective graduate students frank advice about becoming scientists and doing science; here I present such advice.

As a new graduate student you will be making the transition from consuming knowledge to generating and disseminating knowledge. Although you were selected for your excellent performance in undergraduate courses, what counts most in graduate school is conceiving, conducting, and documenting research. This essay is concerned, therefore, with two issues: (1) selecting an advisor who can best train you, and (2) selecting a research project that can be completed in a reasonable length of time.

If you are not yet in graduate school, it is easier to appreciate the importance of timely progress than the importance of a research advisor (_2, 3_). Consider, however, that you will become a researcher as an apprentice to your advisor who should provide timely, constructive feedback regarding your attempts to understand nature. Your advisor may also provide various resources like space, equipment, supplies, an assistantship, and summer employment. On earning your degree, your advisor will also write vital letters of recommendation. Your advisor may indirectly also determine who will become your close friends and who will become your spouse.

CRITERIA FOR EVALUATING POTENTIAL ADVISORS

I discuss below, some of the most important factors for evaluating potential advisors.

Whom to Avoid

Grant Swingers and Research Millers. Do not equate grant support or the size of an institute or research laboratory with quality (_4, 5_). Even without grant support, publishing may become more important than doing science when faculty salaries are determined merely by the number of publications. Avoid faculty who submit many short reports in which replication of findings is absent.

Those Not at the Bench. Avoid faculty who structure research so that there are multiple layers of authority and who are rarely at the laboratory "bench" (_6, 7_). I could not find any studies of the supervision of research but often "the professional message to students and colleagues is that intellectual responsibility and seniority is tantamount to removal from the tedium of data collection" (_8_). Inadequate research supervision is so prevalent in cases of scientific fraud that the American Association of Universities recommends that "students must 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" (_9_).

The Perpetual Administrator. Avoid faculty who repeatedly choose to be officers of professional societies, departmental chairs, or editors. These are important activities that contribute to others doing science (_10_) and that substantially reduce supervision quality, unless you are only one of a few advisees.

Whom to Look For

Someone with Similar Interests. Seek someone with whom you share research interests; otherwise, you may undertake a project that you do not value and never complete it. But you may not know your interests. A senior doctoral student in chemistry wisely noted:

> It is not possible for even the most motivated and successful undergraduates to have a clear understanding of their research interests. The projects are way too complex for college seniors to comprehend. The technology will almost always involve equipment and approaches never seen or imagined before. Students at best understand their inclinations: "I like computers," or "I've always enjoyed mathematics." More than that is probably rare. The search for common ground is usually a case of a research director convincing a willing subject of the compatibility of their interests. It is not the same thing as genuine mutual interests. There is simply too great a disparity between their respective scientific sophistication and their degree of understanding of the entire graduate study process. (_11_)

Someone with Compatible Interests. All organizations offer people common means to diverse ends. Even if you cannot work in a laboratory in which the research goals are similar to your own, the laboratory procedures may be relevant to your goals. It is quite possible, of course, that as you work in this "second best" laboratory you may become interested in the research problems there. Consider the experiences that determined your current research interests.

Scholars: Renowned Researchers. Seek people who love science and are obsessive about research. They will document their work in articles, published in respected journals, that often describe a series of inter-locking experiments concerned with a single problem. When researchers value their work and others agree, others will extend the work. _Invited_ articles and presentations to professional societies suggest that a researcher's work is well-received.

Grant support from major research foundations, for example, the National Science Foundation, indicates that other scientists judge this person to have made significant contributions. Such grant support is allocated competitively; more competitively than is space in major journals. A history of grant support from major foundations is, therefore, very impressive. Most impressive is a researcher who holds a special position where a university or a foundation has granted the person a lifetime of research support.

There are potential problems working with renowned researchers. In areas where research costs require grant support, such advisors may be unable to offer help because they are busy writing grant proposals, justifying grants, administering grants, and supervising post-doctoral students.^1^ Another problem is that others will wonder whether you or your advisor conceived jointly authored work and even your dissertation! Complicating all this is the possibility that post-doctoral students may be your actual mentors.

Scholars: Less-Renowned Researchers. These researchers' records will have many of the attributes discussed above; often a record of grant support will be absent. Where research costs are small, such faculty can also be excellent advisors. Seek an advisor who knows quite a bit about your area, is enthusiastic about research, and, of course, readily offers help.

It is possible to have the best of both research types! If there are renowned researchers in your department include them on your research committee (with your advisor's consent), seek their advice and eventually, if all goes well, seek their letters of recommendation and "connections" without the potential liabilities of having one serve as your advisor (_12_). This option, of course, is only available to students in large graduate programs.

Someone You Can Respect. If your advisor is honest, ethical, loves doing science and is reasonably successful, it would also be nice if you liked your advisor (and vice versa)! But choosing or keeping an advisor primarily because he or she is nice is a mistake. A nice person may withhold frank evaluations of your knowledge, skills, and progress. If you have an excellent advisor, your feelings toward your advisor might best be labeled as respect.

ACQUIRING INFORMATION ABOUT POTENTIAL ADVISORS

Having outlined criteria for evaluating potential advisors, it is appropriate to discuss acquiring relevant information.

Getting Started

It is best to decide on potential research areas and three or four potential advisors by your last semester in college (_13_). You can best make these decisions by working as an assistant in a research laboratory where you can consult with the faculty and post-doctoral staff. Alternatively, discuss selecting potential research advisors with your undergraduate advisor and the faculty who teach courses in

the areas that most interest you.

Correspond with Potential Advisors

Corresponding with a few potential advisors can be very helpful, after you are familiar with their work. In your initial letter be sure to describe your background, training, grade point average, research experience, and your interest in the researcher's work. Write carefully; writing is public thinking. Ask for recent reprints and copies of manuscripts in press. You might also casually mention your interest in where this potential advisor studied and a list of his or her publications. Potential advisors may send you their vitas, saving you much detective work!

Talk with Graduate Students

If you have exchanged letters with a potential advisor, ask for the names and telephone numbers of senior graduate students, so that you might learn more about the laboratory and the graduate program. Call the students at their homes where they are most likely to have a private telephone. Items not covered above include determining: what proportion of this professor's advisees earn the Ph.D., how much time is typically required to earn the Ph.D. in this laboratory, and do graduates continue working in the area upon graduation? For researchers who are assistant professors ask about their chances of being granted tenure. It is unwise to study with a person who will not be re-hired in a few years and may leave you stranded!

Discovering Publications and Grants Sans Vita

The _Science Citation Index_ and the _Social Science Citation Index_ can help you locate a researcher's publications and the extent they have stimulated other scientists. Grant support and whether an article was "invited" are usually indicated in an article's first footnote.

Face-to-Face Interaction with Your Prospective Advisor

Meeting potential advisors may be scary; but you _must_ develop strong, positive, self-presentation skills if you are to succeed. You can meet potential advisors and their students at professional conferences. A too-little exercised but most useful option is working on a summer project in a laboratory. If you arrive at graduate school without an advisor, then do interview all potential advisors. You will learn quite a bit about the work in your new department and, consequently, have a good idea about whom to select for your research committee.

When the Search is Not Over

The advisor-graduate student relationship is much like a marriage. It is important, for example, to consider carefully whether there is a good match between your personalities, and the expected pace of work. Some marriages, of course, sour. Accordingly, you always have the right to change advisors. Once you have started a research project, however, no other professor may feel qualified to supervise your work.

Changing advisors is a delicate matter, particularly if your advisor has invested much time in your education. When considering changing advisors, it is best to have an honest discussion (_14_). Perhaps working conditions or your relationship can be changed. If you

do change advisors, it is courteous to give your advisor adequate time, perhaps a month or two if research is in progress, to plan for the change. Remember, just as some divorced couples remarry there is always the possibility that you might want to work with your original advisor, so follow the "golden rule."

If you believe your advisor is unethical then you should definitely find another one. If some serious instance of your advisor behaving inappropriately is discovered, for example, fraudulent treatment of data, your reputation will suffer too.

By the way, if if you believe your advisor has intentionally engaged in serious, inappropriate behavior then it is most important that you immediately and carefully document it. Have the date of documentation certified by a notary public. The notary where you bank will most likely do this gratis. The next step depends on many factors. "Dealing with Sexual Harrassment" (15) provides excellent advice appropriate to many kinds of complaints. Other help can be found under the Library of Congress subject heading "Grievance procedures--United States."

SELECTING A RESEARCH PROJECT

I believe that the best scientists (and potential advisors) replicate and extend their research. Below, I outline the approach and describe the consequences of your adopting it or other approaches when selecting research projects.

_Replication and Extension

Pavlov's laboratory best illustrates the replication and extension approach (_16_). As a new student, you would have replicated the last dissertation conducted there. This tested your ability to follow a write-up, and motivated Pavlov's senior students to work most carefully. Your dissertation would have been some logical extension of this preliminary work. You neither had to to survey the entire research literature nor wonder if the equipment could be constructed. The work had just been completed in your laboratory. Consequently, the duration and other costs of new research could be estimated well.

Unlike Pavlov, your advisor may not be very active and you may be unable work with a better one. In this case, you can search journals and attend conferences to locate a procedure and problem that _currently_ is important to you and other researchers. A portion of your research can be a fairly literal replication of a recently published work, whereas the remainder can be an extension that contributes to the solution of the problem. After consulting with your advisor, you may want to outline your interests in a letter to the original investigator and ask if you can visit his or her laboratory. If the procedure is very valuable, the investigator will still be using it. While visiting you will be able to see the procedure in action and talk with knowledgeable laboratory members.

If you replicate work in another laboratory, it is likely that when you submit your report for publication that the original researcher (or one or more collaborators) will be a reviewer. This reviewer will, of course, be quite happy to see his or her recent work independently replicated and extended. If you picked an important procedure and problem, then other reviewers will be similarly impressed.

Other Approaches for Selecting a Project

Another conservative approach is to select a problem for which _any_ answer is interesting; it is difficult, however, to specify the defining features of such problems. One possibility is that for some problems there may only be a finite number of possible solutions. Even if a study does not solve the problem, a well-done study will rule-out one or more such possible solutions (_17_).

If you are ambitious, of course, you may want to develop an entirely new procedure (_18_). You should discuss the ensuing risks and benefits with your research committee _before_ you begin the work. A six-question test has been proposed for faculty to assess the quality of a student's research idea (_19_); these questions may help with your research.

FURTHER READING AND DISCUSSION

Essentially my conservative advice is to select an advisor who successfully uses the replication and extension approach to understand important problems and do likewise for your dissertation and other research.

There is, of course, no magic formula that will provide personal satisfaction, profesnsional success, or enhance the quality of science. Furthermore, there are plenty of important issues I have avoided like "Should you attend graduate school in the same department in which you earned your undergraduate degree (_20-22_)?"^2^ It is important, therefore, that you discuss the issues raised here with students and faculty.

As first noted, advice is available from "official" sources including professional associations, graduate schools, and departments. Frank advice, of course, is more likely found in "unofficial" sources including: texts (_23-32_), biographies (_33_), and a few journal articles (_34-36_). Library of Congress subject headings for locating more recent texts are available (_37_). Frank advice is also exchanged on the USENET conferences: "soc.college.grad," "sci.edu," "sci.physics," etc.

Finally, you might propose that an upper-level, undergraduate/graduate seminar be created to discuss these important issues. A molecular biophysicist put the matter this way: "Beginning graduate students must make what may well be the most important choice of their careers advisor and research topic at a time when they are most lacking the knowledge to choose well" (_38_). I, of course, consider providing frank advice a professional obligation. I believe that other scientists would agree and would enjoy discussing these issues in a seminar (_39_).^3^

ACKNOWLEDGEMENT

Thanks are due: my colleagues Alan Baron, Robert S. Baron, Frank Dane, Fred Helmstetter, Alex Hill, and Jay Moore; the readers of the science conferences of USENET including: Ann Miller Baker, Richard Batt, Scott Barvian, Scott Buckley, Bart Frank, Jeff Frelinger, Josh Hayes, Barbara Peterson, Walter Rolandi, and Susan Scheck; and an anonymous journal reviewer. Finally, special thanks are due Ellen S. Berscheid my graduate advisor.

LITERATURE CITED

1. Dermer, M. L. _J. Coll. Sci. Teach._, !1992!, _21_, 200-201.
2. But see, Jacks, P.; Chubin, D. E.; Porter, A. L.; Connolly, T. _Improv. Coll. & Univ. Teach._, !1983!, _31_, 74-81.
3. But see, Mohrig, J. R. _J. of Chem. Educ_. !1988!, _65_, 588-590.
4. Ravetz, J. R. _Scientific Knowledge & Its Problems_; Oxford: London, 1971; p. 46.
5. Smith, R. J. _Science_, !1985!, _228_, 1292-1293.
6. Fox, C. H. _Science_, !1991!, _253_, 1075.
7. Medawar, P. B. _Advice to a Young Scientist_; Harper: New
8. Cairns, R. B. In _The Individual Subject and Scientific Psychology_; Valsiner, J., Ed.; Plenum: New York, 1986; pp. 97-111.
9. _Report of the Association of American Universities Committee on the Integrity of Research_; Association of American Universities: Washington, DC, 1983.
10. Ref. _7_, pp. 56-58.
11. Alston, R. University North Carolina, personal communication, 1990.
12. Scheiner, S. Northern Illinois University, personal communication, 1990.
13. Ref. _3_, p. 589.
14. Cohen, H. _You Can Negotiate Anything_; Bantam: New York, 1982.
15. Rowe, M. P. _Harv. Bus. Rev._, !1981!, _59_, 42-44, 46.
16. Babkin, B. P. _Pavlov: A Biography_; University of Chicago: Chicago, 1949. See Ref. _1_ for other benefits of this approach.
17. See e.g., Bliss, M. _The Discovery of Insulin_; University of Chicago: Chicago, 1982.
18. Spriestersbach, D. C.; Henry, L. D., Jr. _Improv. Coll. & Univ. Teach._, !1978!, _26_, 52-55, 60.
19. Zanna, M. P.; Darley, J. M. In _The Compleat Academic_, Zanna, M. P.; Darley, J. M. Eds; Erlbaum: Hillsdale, N.J., 1987; Chapter 6.
20. Campbell, D. T. In _Interdisciplinary Relationships in the Social Sciences_; Sherif, M.; Sherif, C. W., Eds.; Aldine: Chicago, 1969; Chapter 19.
21. Crick, F. _What Mad Pursuit_; Basic Books: New York, 1988, p. 150.
22. Feynman, R. P. _Surely You're Joking, Mr. Feynman!_ Norton: New York, 1985; pp. 59-63.
23. Ref. _7_; Zanna & Darley Eds. _ibid_.
24. Balian, E. S. _How to Design, Analyze, and Write Doctoral Research_; University Press of America: Lanham, MD, 1982.
25. Dukelow, W. R. _Graduate Student Survival_; Thomas: Springfield, IL: 1980.
26. Mahoney, M. J. _Scientist as Subject: The Psychological Imperative_; Ballinger: Cambridge, MA, 1976.
27. Moore, R. W. _Winning the Ph.D. Game_; Dodd, Mead: New York, 1985.
28. (a) Sindermann, C. J. _Winning the Games Scientists Play_; Plenum: New York, 1982; (b)Sindermann, C. J. _The Joy of Science: Excellence and Its Rewards_; Plenum: New York, 1985; (c) Sindermann, C. J. _Survival Strategies for New Scientists._ Plenum: New York, 1987.
29. Stock, M. _A Practical Guide to Graduate Research_; McGraw-Hill: New York, 1985.
30. Smith, R. V. _Graduate Research: A Guide for Students in

the Sciences_, 2nd ed.; Plenum: New York, 1990.
31. Vartuli, S. Ed. _The Ph.D. Experience: A Woman's Point of View_. Praeger: New York, 1982.
32. Ref. _21_.
33. See e.g., Refs. _16_, _21_.
34. Stearns, S. C. _Ecol. Soc. Amer. Bull._ !1987!, _68_, 145-150.
35. Huey, R. B. _Ecol. Soc. Amer. Bull._, !1987!, _68_, 150-153.
36. Binkley, D. _Ecol. Soc. Amer. Bull._, !1988!, _69_, 10-13.
37. Ref. _1_.
38. Bashford, D. Research Institute of Scripps Clinic, La Jolla, personal communication, 1990.
39. (a) Sawyer, D. J. _J. of Chem. Educ_. !1991!, _68_, 211-214; (b) Ref. _1_.

Footnotes

^1^ Still, such advisors may offer the very best advice and they certainly have the best "connections" to help place you on earning your Ph.D.

^2^ I do not discuss selecting a graduate school because I consider this far less important than finding a first-rate advisor.

^3^ I would appreciate receiving advice from readers about how this "open letter" could be further improved. My INTERNET address is: dermer@convex.csd.uwm.edu.