Laboratory research is now a major component of most universities with large portions of resources dedicated to the creation of new laboratory space and the operation of existing research facilities. In addition to generating new knowledge, research conducted in university laboratories serves to educate new generations of students interested in the scientific disciplines. For a student enrolling in a doctoral program, research in a laboratory will encompass the majority of activities necessary for completion of the Ph.D. degree. Starting off on the right foot is therefore a good means of ensuring that the time spent in graduate school is both productive and enjoyable.

Choosing a laboratory

With the exception of disciplines that require a great deal of field research, the majority of a student’s time during his or her graduate study in the sciences will be spent in a laboratory. Given this fact, choosing the right laboratory is a major determinant in the happiness and success of a student during the Ph.D. process. The laboratory is more than simply a workspace. Fellow students, postdocs, the research advisor, support staff, and the facilities/equipment are all important components of the laboratory as a whole. And while it is possible to change laboratories midway through a course of study, choosing the right laboratory at the outset is usually the first step in a successful Ph.D.

Where to begin

Approaching the choice of research lab from an informed standpoint is critically important to making the best possible decision. Hopefully by the time you enter graduate school you will have developed an interest in a certain area of science. In any one department, there may be several professors that conduct research in this general area. Therefore, finding out more about their specific research interests and, perhaps more importantly, the culture within their research group will help you decide which lab offers the best fit for you. Formal information about different research groups is readily available through university websites, graduate brochures, and departmental newsletters. Additionally, publications from different laboratories can always be found online or in the university library. These materials will provide more of an official view of the laboratory but also give an honest account of the nature of the research conducted in the lab and the productivity of the research group. To obtain more candid information about a particular lab it is often best to talk directly with members of the research group including both current students, past group members, and of course, the research advisor. Some possible questions may be:
To current students

- How long is the typical Ph.D. program for members of the group?
- What is the culture of the lab? Do group members get along well with one another?
- Is the climate in the lab very competitive or are group members generally willing to help out one another without seeking something in return?
- How available is the research advisor? Do group members train one another or does the mentor participate directly in training new students?
- How frequently do group members publish? Are they intimately involved in the writing process?
- What is the funding situation in the lab?
- How much freedom do group members have in determining the course of their research?
- Are interactions with the research advisor generally positive? What is the students’ opinion of the advisor’s mentoring style? Is the mentor a micromanager or very hands-off?
- Do students get to travel to conferences frequently?
- Is the laboratory well equipped and maintained? Are there bulwarks to accomplishing work?
- How are responsibilities within the group delegated?
- If the research advisor is untenured, does the group feel confident that he or she will get promoted?

To former group members

- What types of jobs do alumni of the group hold?
- How many total publications can one expect to have?
- Has the advisor helped your career after leaving the lab?
- Looking back on the experience, do you find it a favorable one?

To the research advisor

- What are your general expectations of students?
- Are there formal or written guidelines specifying work hours, vacation time, and travel to conferences?
- How often are you on campus and in the lab?
- Does the laboratory participate in collaborations with other research groups?
- How regularly do you meet with students (one-on-one) and the group as a whole?
Things to keep in mind when choosing an advisor

Depending on what stage of their career the research advisor is in, his or her mentoring style may be very different. Keep in mind that young professors are not as experienced as their older colleagues and may not be as adept at ushering students through the Ph.D. process. At the same time, however, young professors bring a youthful exuberance to their work and may be more available and willing to work directly with new students. Whatever the case may be, choosing a research advisor that matches your training goals and long-term career aspirations is the most important criteria.

Developing a rapport your fellow labmates

Once a research group is chosen, it is important to start developing healthy relationships with members of the lab. These are people you will see everyday so positive interactions will go a long way in promoting collegiality within the group. Do not be taken in by existing prejudices or negative opinions of other group members. Instead, get to know each group member with an open mind and seek to learn from what they are willing to offer. Fellow members of a laboratory can be a tremendous resource during graduate school and these relationships can last throughout your future career.

Starting work

Before beginning research in the lab, you will likely discuss project ideas with your research advisor. As an initial project you may begin something completely new or help complete work started by another group member. In either event, make sure that you are well versed in the appropriate scientific literature pertaining to your project. There is nothing more frustrating than spending time on something that you later come to realize has already been done. Also, try to keep things in perspective. You have several years in which to complete your Ph.D. so do not feel like you need to produce Nobel Prize quality research within the first month. Typically, the first year or two of graduate school is a learning experience. Use this time to settle in to your surroundings and absorb as much information as possible. It will pay off down the road.

The knowledge and experience gained in the research laboratory and the relationships forged during graduate school will be instrumental in shaping your future career. A healthy relationship with the Ph.D. advisor is especially important, as this person will serve as an advocate for you throughout your time after school. Keep in mind that graduate school can be a very fun and rewarding experience. It should be a time for growth both as a scholar and as a person.

Resources


Web Resources

Advice column by Patricia Gosling and Bart Noordam from *Science Careers*

http://sciencecareers.sciencemag.org/career_development/previous_issues/articles/2007_10_26/caredit_a0700152

Advice column by Tom Daniel from *Inside Higher Ed*

http://www.insidehighered.com/advice/mentor/daniel

Advice columns from the *Chronicle of Higher Education*


http://chronicle.com/article/Choosing-The-Right-Research/46388/

http://chronicle.com/article/Role-ModelsMentors/44794/


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