Finding STEM Research Opportunities: A 5 Step Guide

1. MAKE A LIST

Make a list of PIs (principal investigators) you might want to work with. Look at departmental websites and scan their faculty lists. Faculty members usually have lab webpages specifically designed for people interested in learning more about and/or joining their group. Your first stop is their 'research' page: look for a simple (or "layman's") explanation of the group's work. If it's interesting to you, put their name and email on your initial list. It's okay if this list has anywhere from 10 to 15 or more labs on it.

2. CHECK IT TWICE

Of that initial list of PIs, look closer. Ask several important questions:

- **Does their alumni/personnel page have a lot of current or former undergrads on it?**

This indicates whether the lab has mentored undergraduates before, which will be important for your experience, though not necessarily critical (there's a first for everything!).

- **Is the lab more than 15 or fewer than 6 people?**

Around ten is a good number - there'll be plenty of people to ask for help and get to know (one of the most important parts of the scientific experience!), but not so many that you'll feel lost.

- **Has the lab published papers recently? What projects have they been in?**

This is a good indication of the lab's projects which are actually active. Read some of the abstracts so that you know what you're getting yourself into. Don't worry if it seems highly technical - you're just starting! If you discover that you dislike the work that the lab actually does, or if the group seems too large, you can eliminate the lab from the list. Don't hesitate to eliminate labs based on small things. Pare down your list to around 3-5 (closer to 3 is better). This is also a good time to reach out to your classmates and ask upperclassmen if they know anyone who's worked in those labs as an undergrad.

3. MAKE FIRST CONTACT

Email the professors on your shortlist. In a **BRIEF** email describe:

1. **who you are** ('I'm Daniel, a rising sophomore majoring in Physics')

2. **the reason you're sending the email** ('I read your Nature paper from 2012, and I thought it was awesome! I'd love the opportunity to work in your lab')

3. **set up a meeting and propose a SPECIFIC time and optionally location** ('Could we meet and discuss this possibility sometime this coming week? Would Thursday at 3:30 PM work?').

You may attach a resume if you have a neatly formatted one on hand, but it's not absolutely necessary, especially if this is your first research experience. Keep it short and sweet: professors are busy people and don't want to read a (probably disingenuous) saga about how you've wanted to work in their lab since you were in diapers!

Note: if you are planning on applying for external funding, this is enticing and you should probably mention it - everyone loves free labor. This is also an important point if you intend to work there full time over the summer.

4. IF YOU DON'T SUCCEED AT FIRST, TRY AGAIN!

It is not considered impolite to speak to multiple labs at once. It is also not impolite to send a follow-up email once more if you don't receive a reply for several days: emails are often buried or responses are put off. More than once, however, and you risk placing yourself in a lab that can't give you the attention or level of mentorship you really need.

5. THE FIRST MEETING

When you have your first meeting with the PI, you have several objectives. First, it is an opportunity to see whether you like him/her. This person will likely become an important source of recommendation letters in the future and have quite an influence - whether you expect it or not - on your career. Make sure you get along with him/her, and take note of the types of people in the lab that you will probably be introduced to.

At this point, there are also several pieces of business that need to be addressed. The most pressing issues are: **(1) timeframe**, **(2) project**, and **(3) funding**. The latter two are contingent on the first: if your timeframe is limited, this will constrain your possible project but remove your need for extensive funding. You should be upfront with your potential future boss about this. They will, given this information, generally suggest one to multiple projects you can work on.

OTHER TIPS

Don't expect to have your own project immediately - you will generally work under a more seasoned postdoc or graduate student for your first few months or even year, but you will gradually gain autonomy. Continuity of your experience helps in this regard - the longer you stay in a lab, the more you'll get done! However, remember that as an undergraduate, value is primarily placed on exposure to experiences, and thus, if you feel as though your work is stagnating or if you've learned all you can from that lab, it is okay to leave the laboratory and find another.

Funding is another issue which you will have to cover. When starting out, very few PIs will be willing to pay a wage to a student who, in all likelihood, might not be productive or even autonomous for several months, especially if they aren't well acquainted with said student. Thus, typically one will begin working, if during the school year, either for credit or simply on a volunteer basis. For the summer, most universities, including Yale, have funding particularly available for full-time research on campus. PIs will always be willing to help you apply for these types of scholarships/grants, as it will relieve financial burden from them.

Once you've got all that sorted out, you're done! Do your best in the lab, go in regularly, and remember: your goal is to learn. You aren't married to this lab/PI, but to learn about the research they conduct and get your hands dirty. If you love it, great! If you hate it, don't hesitate to ask to switch projects or even to ask your advisor/PI for ideas for other labs you might want to try out.

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Questions?

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