“A guide for applying to graduate school in Biology”

Written by The German Lab, Dept. of Ecology & Evolutionary Biology, UC Irvine

Target audience: STEM students, first generation graduate students, prospective graduate students applying to doctoral programs (particularly those in Biological Sciences and especially the Ecology & Evolutionary Biology side of things). Many of these same truths will hold for master’s programs as well, but our audience is aspiring doctoral students (some of whom may already have an MS degree).

Purpose: To provide a guideline for prospective and current graduate students who might not know how to navigate the process. Expose what they don’t tell you and provide tips and advice on applying to graduate school.

Glossary:

REU - Research Experiences for Undergraduates, NSF funded program
LOR - Letter of Recommendation
Scientific Conference: An event where researchers and scientists get together to present and discuss their work. It is a good place to network with labs that you might potentially apply to for grad school, and a good place to learn about different programs and get information about fee waivers for applications. Many programs have booths where you can gather information and talk with representatives from that institution.
Stipend: A paycheck that you will receive bi-weekly, monthly, or bi-monthly etc. that is not based on the hours you spend on the work you are doing (it is like a salaried paycheck).
NSF - National Science Foundation
PI - Principal Investigator: The director and lead researcher of an academic laboratory (a professor).

APPLYING TO GRAD SCHOOL: Do’s and Don’ts

Do:

- **First: Apply. The only way for one to absolutely ensure they won’t get into a program is to not apply. Do not self select against yourself beforehand.**

- **Research experience matters**: If possible, get involved in research either at your university (at least a couple of quarters/semesters) or at a summer research internship that hopefully provides you with a stipend or other kind of funding. Yes, you can get all expenses covered AND get paid to do research during a summer program.
    - Don’t be afraid to ask professors or instructors about where to find opportunities. Plan on applying to these programs. They want a diverse array of students and are not only looking for students with top grades and experience from well-known universities. The point of undergraduate research programs is to get people exposed to research.

- They are often funded as “Research Experience for Undergraduates” (REU). The applications for such programs usually close in the fall or winter, so search for them the summer BEFORE you want to apply to them. Some programs prefer students doing their first REU over those with significant experience. If you have no idea how to get started, you can search for NSF-funded programs here: https://www.nsf.gov/crssprgm/reu/.

- Beyond REUs, there are other programs funded locally by universities or other entities (Cornell University has a nice list: https://biology.cornell.edu/research/summer/). If you are at an undergraduate institution with a strong research focus, there are likely funding opportunities to do research, and get paid, at your university. They are often called SURF (Summer Undergraduate Research Fellowship) or something of that nature.The Ecological Society of America has a listserv called “Ecolog” where you can find opportunities (https://www.esa.org/membership/ecolog/). There are also resources through the Evolution Directory (Evoldir: https://evol.mcmaster.ca/evoldir.html), and the American Physiological Society (https://www.physiology.org/ugsrf?SSO=Y).

- Your institution or others in the area may offer workshops on applying for REUs or other undergraduate research programs. There may be discussions about it online on social media, blogs, or other services like Reddit.

- If you can, go to scientific conferences because it is good for networking. Many institutions offer funding support for students to attend conferences, and the conferences themselves offer travel support. This is usually fairly easy to find on the conference website. If you engage in an REU program, there is usually funding built into that program to pay for your conference travel to share your research with the scientific community.

- Build your network and ask TA’s, grad students about grad school, you are encouraged and have permission to do this-get more targeted information on certain topics and people enjoy talking about themselves and are willing to do it**. Don’t be afraid to ask questions!**

- Programs have emerged to link students, particularly first generation (i.e., first in your family to go to college, and also pursue graduate education) and underrepresented students, with mentors to help them find the right programs and apply to them. The mentors range from current PhD students who have gone through the application process recently, to tenured professors who understand the admissions process from the institutional side. Please checkout the program here: https://eebmentormatch.com/.

- Science Twitter has emerged as a useful resource for sharing ideas and finding scientists in similar fields. Find professors whose research you like and follow them on Twitter or other media. This can also provide insight into their other interests and whether you will fit with them.

- Build connections with professors early by going to office hours, asking for help or career advice, etc. This helps you build a list of potential recommendation letter writers. Try and allow them to get to know you. **Involvement in research (discussed above) is probably the most effective way to get excellent letter writers on your side.**

    - Choose recommenders carefully, try and think about if they will remember you and write you a strong letter

    - These are also the people you could ask about different things you might be naïve about (how to get to a certain career goal)

    - Ask the professor for a letter of rec when it is fresh from completing the class

    - Go to office hours and make yourself a known entity to get a letter

    - Explain your understanding of the material, as there is usually something more to gain from the material when talking to the professor. They can point out different key components of the material that they may not have time to cover in class. You can also ask them about their graduate school experience and potential programs that interest you.

    - A professor knows more about a specific topic than what is presented in lecture. Ask them about it, especially if it is a topic near to their own research interests (could be a good way to find a lab in which to work as an undergraduate or as a future graduate student).

    - Talk to current graduate students! Your TAs, graduate students in your communities, graduate students in your research group, etc. They will all be happy to demystify the experience.

- **Letter of Recommendation**: Have at least three (most programs require three). Having a fourth letter is not bad, but does that fourth letter actually add anything great in terms of describing your strengths as a prospective graduate student? Quality of letters most important.

    - At least one letter should be from a professor. A letter from your professor will be on official letterhead and should include how long they've known you, how well they know you. Many professors will ask you for some basic

information that they like to use to write you the strongest letter. However, if there is something in particular that you'd like them to highlight, it's completely appropriate to mention that! Letters from community college professors are totally appropriate, especially if you got to know that professor.

- You can ask graduate students/ your TAs for letters of recommendation. This may be the first letter of recommendation this person has written-- you can suggest they co-write it with a professor and you can ask if they have a letterhead on which to write it.

- Situations may arise where it is necessary to have a letter from non-academics. For instance, an athletics coach, community organizer, etc., with whom one has closely worked. These are fine, as they can speak to one's character and work-ethic, but two of the letters should probably come from people in an academic setting.

- Ask for the letter well in advance (at least a month) of the deadline, and stay on top of the person from whom you are asking a letter of rec. Set up boundaries, ask them what schedule would be good for them to make sure you will not be annoying them and make sure they will remember. Communicate the hard deadline (day/time) of the letter and where to send it clearly and repeatedly in your communications with your LOR writer. Check in with them two weeks, one week, and the day before the deadline to make sure the LOR is still on their radar. Even if the LOR hasn't been sent a few hours before the deadline, as long as you have checked in with your letter writer the day before, they will very likely submit it, even if it's at the last minute (many academics submit things right at the deadline).

- Be very clear about the programs to which you are applying. Some programs may allow you to use a letter service (e.g., Interfolio) to send a common letter to all of the programs to which you are applying. But, this may not be the case for more ecologically/evolutionary focused graduate programs, which likely require direct letter submission from the letter writers. Thus, give your writers a spreadsheet with a list of the programs, deadlines, links to departmental websites about the program, and links where the letters are to be submitted. This will save a lot of time down the road as deadlines approach.

- Rejection is a common part of academia. Your letter writers are aware of this. You should communicate rejections with them, especially if you want future letters from those writers. Keep them in the loop as to whether you may be asking them for more letters in the future.

- **When searching for graduate programs: contact a faculty member** you would like to work with: email several months before you apply. Given that many application deadlines fall between November and January, this means reaching out during the summer BEFORE you apply. Many universities will state that reaching out to faculty is "recommended", but for Ecology & Evolutionary Biology type programs with direct applications (where you apply to work with a specific faculty member), this is **a requirement** and will help you to have an advocate while your application is in front of the admissions committee. It can also help you whittle down your list for where you will apply because those professors not taking students will let you know.

    - Before you email: learn about their work from their website. Find some of their papers that you think are interesting and read them. If possible, discuss those papers with your peers and mentors at your current institution to gain a deeper understanding of the work as well as identify questions you may want to ask about the work in your email to the professor.

    - In the email: Tell them you were considering applying, and you are curious about the research opportunities available in the field. Because you have read some of their papers, you can share that you find specific aspects of their research interesting and ask any questions you may have about the methods, conclusions, etc. (and the specifics can only be known if you read the papers, so they will know that, and it shows you cared enough to put in some effort ahead of time). Attach any research you have done (this can be as simple as a graph, Powerpoint slide, or link to current lab website), and briefly summarize your research interests. Online resources like social media, blog posts, etc, can be useful resources for samples/templates of what this email may look like.

    - If possible, meet with them either virtually, on the phone, or in person and then send a follow up email in December/January after submitting the app

- Ask the prospective advisor **how students are normally funded** (grants, fellowships, different programs to apply to at that university) and consider if you will need to supplement that funding (tutoring students for instance). Considering the cost of living for the area surrounding a university is a smart thing to do. Will you be able to afford to live there on the salary paid to the students? Many campuses have on-campus housing for graduate students that may be significantly cheaper than living off campus, so inquire about that. If the professor you are talking with doesn't know this information, then inquire who would know that information (Department Graduate Advisor, Chair of Graduate Admissions Committee) and reach out to them.

- Does the program have tuition waivers for doctoral students? Yes, it is normal to NOT have to pay tuition to earn a doctorate at most PhD granting institutions, but just confirm that with your prospective advisor. Tuition is not a reason to go into debt during pursuit of a PhD in biology, and this makes the pursuit of a graduate degree attractive. This is not true for many master's programs, so for those programs, pay close attention to tuition.

- Given that many potential graduate students may want to pursue careers outside of academia after graduation, what kinds of resources and training are available through the university? In this regard, is the prospective advisor encouraging/flexible of pursuing careers outside of academia?

- **Reach out to the current graduate students in the lab** you are interested in and talk about: the lab and department environment, advisor mentoring style, their research and how it might connect with what you are interested in, how they are funded (fellowship, teaching assistantship, graduate research assistantship), the city and culture around the campus

    - Talk about the advisors mentoring style if it will be suitable for you (if you need more guidance, you might want a more hands on advisor, do they expect you to be in lab a certain number of hours or at certain hours of the day, etc)

    - Is the lab a cohesive group that works together, or a bunch of individuals? What kind of environment does the PI foster for the students? Do they engage in outreach? What is the lab culture? If you are from a group traditionally underrepresented in the sciences, will you feel supported in that laboratory and the department as a whole?

    - Can the students afford to live on their salaries?

    - What does health insurance look like? It should be provided.

    - Beyond the tuition (which is usually covered for you), do you have to pay fees for each quarter/semester/required courses?

- Also consider how the prospective lab is funded or what grants the lab is applying for: does the lab have a grant for lab materials and be able to support your research, or would your project even involve materials that aren't readily available, what collaborations are possible through the lab that may support your research if your materials can't be obtained under current lab funding?

- Ask your school or the school you are interested in for **fee waivers** for the applications: the fees can get quite expensive! But, don't email them the night

before the application deadline and expect to receive a waiver. Ask a few weeks before you apply because you will likely have to apply for the fee waiver itself.

- After your first exchange with (and certainly after you interview) a given professor/lab, send follow-up thank you messages: thank the professor(s) with whom you are interested in working for their time and consideration, as well as the students/postdocs with whom you met from that laboratory.

Don'ts:

- **Don't self select yourself out of a program by not applying.**

- **Don't let grades or the GRE score discourage you** – many graduate programs are eliminating the GRE as an admission requirement, including UC Irvine's EEB department. There has also been a movement lately to demphasize GPA, but this varies widely among programs.
    - If you've built a connection with the faculty already and they are interested in having you in their laboratory, then you definitely should apply.

- COVID-19: Spring 2020 grades (and possibly subsequent quarters/semesters) won't be considered in calculation for admission to graduate school

- You will likely be applying to multiple programs. So, don't send the wrong prospective advisor a message intended for someone else. Manage your potential applications with a spreadsheet so that you can stay on top of who you are communicating with and when. Potential advisors know that you are applying elsewhere. It isn't a secret. But, don't cross your lines of communication unnecessarily.

- Don't feel like you have to pursue a lab that feels off or doesn't quite fit or doesn't seem to want you, you deserve to find a great lab "home". **Don't feel like you have to settle.** This may mean not accepting the only offer you got in a given year, taking a gap year, and applying again the next cycle. Fit is more important than it may seem upfront.

GRADUATE STUDENT INTERVIEW: Hurray! You got an interview.

- Some graduate programs will invite you out individually for an interview, whereas some have recruitment events (likely around a weekend) where they invite many applicants they want to recruit to their department. These are usually "all expenses covered" kinds of events where you have to spend very little (or nothing) out of pocket. Sleeping arrangements vary widely, however, so this is something to keep track of.

- The whole interview is reciprocal: are you a good fit for the department/lab, and is it a place you want to be? The department and laboratory are

obviously interested in you and think highly of you already, or they wouldn't be interviewing you. But, this is also your chance to vet that department and laboratory for your own and see if you would even like it.

Do's:

- Ask lots of questions ahead of time about the event so that you are completely prepared. These questions can be directed at the departmental coordinator or Chair of Graduate Admissions, with whom you will already be communicating. They will often send you a detailed account of what to expect, but if you still have questions, ask them.

- Once on campus, talk to the lab you are interested in joining: the advisor, graduate students, postdocs. While it is important to talk to most graduate students in the department, make sure to spend a lot of time talking to your prospective lab, or, to be honest, they might forget you are applying to their lab.

- The faculty that interview you are usually kind and considerate. Usually they want to get to know you and aren't trying to discourage you from coming. They invited you to the interview for a reason, and already are interested in you. Anyone who isn't kind to you during the interview is not within the majority, but pay attention to this because bad behavior may be a red flag about that program.

- What to do to prepare for the interviews/what are they going to ask you? Here are 10 common questions:
  "Tell Me About Yourself" ...
  "Why Are You interested in This Field?" ...
  "Why Are You Interested in Our School?" ...
  "What Are You Going to Research?" ...
  "What Are Your Strengths and Weaknesses?" ...
  "Why Should We Accept You?" ...
  "What Are Your Career Goals?"
  "To what other schools are you applying?"
  "What interesting papers or media have you read recently?"
  "What questions do you have for me?"
    This last question can be loaded, especially if the interviewer expects you to be familiar with their research. You may not even get the list of people you are interviewing with until a few days before the interview, so even something as simple as checking out their website and jotting down a few notes may go a long way.

- Get to know the other people who are applying and do not view them as the competition. This is a time to potentially build connections with people that you might be spending your entire graduate school career with. Be kind and uplifting to one another. The current graduate students and lab can see if you have a super competitive nature and grad school is not a competition with others or an independent endeavor. It is about collaboration.

- Inquire about a dress code. Although some programs may not have one, some may, so it doesn't hurt to ask. A safe default is to dress professionally (but with comfortable shoes!), unless there is a field trip involved with that specific day of the interview. Don't be afraid to ask the department coordinator who is communicating with you about the interview, or the Chair of the Graduate Admissions Committee.

Don'ts:

- Don't treat the interview like a vacation or opportunity to over-indulge or to let loose, the whole process is an informal interview and it is important to remain professional throughout the event. One should be themselves and be genuine, but behavior matters.

- If there is alcohol offered at an event, it is appropriate to have some if you want (and to say no if you don't), but do not over consume it. One of the surest ways to lead to detrimental outcomes is to get drunk and not behave in a thoughtful manner.

- **Recruitment events are not courtship events.** Don't hit on fellow recruits or current graduate students. They are social events, so of course you may make new friends, share contacts, etc., but avoid romantic endeavors during the event. **This recommendation works both ways: current faculty and students at the institution should not make advances towards recruits, either, so if this does happen, it may be a red flag about that institution.**

- Don't be condescending or rude to the graduate students in the program. Even if they aren't in your prospective lab or department, they have worked hard to get to where they are, just like you are working hard to attend graduate school.