A Guide to Graduate School Applications

We hope this document helps you to prepare for graduate school applications. It has a lot of information and we realize it may be overwhelming. Take it bit by bit--don't feel any need to read it all at once. If you're an underclassman, consider reading just the "All of College" section (page 2), and lightly skimming the rest so you know what's coming--don't worry about the details. If you're a senior, we hope the detailed information under the "Senior Year" section (pages 4-6) will prepare you for the path ahead and equip you to be confident and prepared. We wrote this document with the aim of telling you what we wish we knew before we began the application process. We hope it serves you well.

Best wishes for grad school and beyond,
Maike Morrison & Griffin Glenn

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Suggested Graduate School Application Timeline

Here's a compilation of strategies that helped us stay organized and feel prepared. Many of these come from people who really like to-do lists and spreadsheets--if that's not you, feel no pressure to follow many of these suggestions!

All of College:

- **Find what specific research fields get you excited!** Go to research seminars, talk to your peers about their research, talk to your professors and TAs, skim random papers, take graduate classes or specialized classes as early as you can, etc.
- **Track who is doing work that gets you excited!** Make a folder on your web browser's Bookmarks Bar where you keep track of professors/researchers whose work you admire.
    - Every time you come across a paper/presentation/project you think is super interesting, look up the authors and skim their websites.
    - *If you find someone who you would want to learn from in the future, bookmark their personal page to this folder.* This will serve as a helpful starting place when you're looking for principal investigators (PIs) to work with in graduate school.
- **Do research + apply to things.** Build your CV :) Things to apply to include:
    - NSF Research Experience for Undergraduate (REU) programs
    - Other summer opportunities: the FRI Summer Research Fellowship, NIH Summer Internship Program, SULI programs. See the *CNS Honors Summer Experiences* folder for more!
    - The Goldwater Scholarship (sophomore/junior year)
    - The NSF Graduate Research Fellowship Program (first semester of senior year)
- **Get to know professors who will write you *strong* rec letters.** You will need at least three for most grad school applications. It would be great for these to be from professors you have done research with (i.e. school year or summer research advisors). Sometimes, a grad student mentor can draft your letter, and the professor will sign and submit it as if they wrote it--all letters need to come from PI-level professors. Letters can also be written by professors from a class, just make sure they know you quite well.
- **Write things down.** Maike found it helpful to have a "Grad School/Life Plan" Google Drive Folder. In it she had a doc with her answers to the questions listed below, and another doc (she called "Meeting Notes") where she wrote down life advice people gave her. This was a handy reference, especially when she was feeling overwhelmed. Griffin didn't do this, but kind of wishes he had.

Junior Year:

- **Have some real chats with yourself.** Consider writing down answers to these questions, and adding to your answers as you gather advice.
    - What kind of questions do you want to be asking in graduate school?
        - Are you more interested in basic or translational science? Theoretical work? Methods development? Do you want to work mostly at a bench in a lab, or behind a desk?
    - What are the specific skills you want to learn in grad school? What equipment/tools do you want access to?

    - What is important to you in a graduate program, university, mentor, or lab environment?
    - What career tracks do you want to be prepared for?
        - Academic positions--research or teaching professorships
        - National labs--staff scientist roles
        - Government agencies (NIH, CDC, etc.)--senior scientist roles
        - Industry--senior scientist roles, or lots of other roles
        - Science communication/writing
        - Policy work

          (etc!)
- **Have some real chats with research mentors, trusted professors from classes, older students, etc.** Tell them what you think you're interested in and what type of work you hope to do in the future. They're invested in your success and are familiar with these fields--they know people, too. If they're in your field, ask for pointers on programs & PIs to consider. If you have a list of people you might be interested in, hear their thoughts.

Spring Semester + Summer Before Senior Year:

- **Establish what programs you want to apply to.** Maike found it immensely helpful to track this information in a ginormous spreadsheet. Griffin started a spreadsheet like that, but never really used it. Different strokes for different folks!
    - Maike started her spreadsheet by listing out all the people she was interested in (many came from that People Bookmarks Bar folder mentioned above), and grouping them by university. Every time she found a cool person, they went in the spreadsheet.
    - It's also not a bad idea to look at the PhD programs at the top ~20 universities in your field. Skim through the faculty lists + program overviews to see which you're most excited about.
    - If you want to stay in the same field in grad school, recommendations from your undergraduate research supervisors can be a great way to build your list.
- **Write a list of important deadlines.** *Or don't, but at least be aware of when they are*--some things (like major UK fellowships) have deadlines as early as late August and early September. Some US fellowships (like NSF GRFP, which you should definitely apply for!) are due in October. Grad school application deadlines vary widely by field, but are usually in December or January.
- **If you're feeling ambitious, start drafting personal statements, statements of purpose, or NSF GRFP materials.** Maike and Griffin didn't do this, but at least one of their friends did and it worked well for them.
- **Confirm that you have at least three people who can write you rec letters.** Ask them if they would be willing to be one of your graduate school recommendation letter writers--it doesn't hurt to ask this before summer.

#1 Goal: Have a mostly finalized list of grad programs + faculty by the start of your senior year.

Senior Year!

September/October:

- **Write & submit fellowship applications.** These are hard, but worthwhile! If you get your own funding in grad school, it gives you more research freedom + flexibility. You can also recycle these materials for your grad school applications (and everything else you write for the next year). See the NSF GRFP folder for more details!

October/November:

- **Email the professors you're interested in working with.** This is expected in some but not all fields… even if it's not expected, it can't hurt!
    - Earlier can be better, since it gives you plenty of time before you need to apply (and sometimes rich labs fly out prospective students for early visits). However, you need to balance this with the fact that they might forget your name by the time they see your application in December. If you have an early conversation, consider sending a brief follow up email when you submit your application, reminding them of your conversation and letting them know you have applied.

Here's an example email:

> *SUBJECT:* Inquiry from Prospective PhD Student - Maike Morrison
>
> Dear Dr. _____,
>
> My name is Maike Morrison; I am a senior math major at the University of Texas at Austin. I am currently applying to the _____ program at _____ and I think your research group would be a great fit for my interests!
>
> I am especially excited about your lab's combination of evolutionary and epidemiological approaches to disease dynamics. I have worked in these fields separately in the past, through projects in statistical modeling, population genetics, genetic epidemiology, and disease dynamics; more details on these projects are in my CV, which I've attached for your reference. These endeavors have been broadly driven by my interest in research involving evolutionary genetics, math/statistics, and disease. I hope to work at the intersection of these fields as a graduate student, using quantitative methods to study disease dynamics at multiple scales (e.g. inter-host and intra-host evolutionary dynamics). Your research group sounds like an excellent place to develop these skills.
>
> If you are available in the next few weeks, I would be very interested in talking more about your work and the possibility of doing a PhD at _____. Thank you very much for your time!
>
> Best wishes,
> Maike Morrison

October through December:

- **Write & submit graduate school applications.** Plan to give yourself *several* weeks so you can get feedback on your statements--the more eyes the better! Ask your friends and family for their thoughts. Lastly, ask your research mentor(s) for critical feedback.

December through early spring:

- **Relax!** Try to unwind a little bit. You've just completed some very stressful tasks, so make sure to give yourself a break.

- If you've applied to programs with interviews, you will hear if you got an interview in December or January.
- If you've applied to programs without interviews, you will likely hear if you got in between late January and early March. Unfortunately, many programs do not send rejection letters or send them very late, so if you haven't heard back by this time you likely have not been admitted.

Spring:

For ALL programs: You will be flown out for a visit or interview. This is your chance to ask questions and determine if the program is a good fit for you! Here are some questions to get you started:

Questions for all grad students:

- Are you happy here?
- What do you do for fun?
- Why did you choose this school/lab?
- Are you encouraged to develop your professional skills (speaking, writing, etc.)?
- What are the unwritten requirements to graduate?
- How many years did previous PhD students take to graduate? And what did they do after graduation?
- What resources (career support, identity-specific orgs, computational resources, travel funding, etc.) are available to grad students?

Questions for grad students in labs you want to join:

- Is the PI very hands-off or hands-on? How do you deal with that? Do you have the support you need?
- Does your PI care about your mental health?
- How is authorship decided in the lab?
- Does your PI have clear expectations for you?
- What's the funding situation?
- Does the PI send students to conferences?

Questions for faculty:

- How does this university compare to others you've worked at?
- What do you see as the strengths and weaknesses of this department?
- Do you feel supported by the administration + department?
- How have you seen the department change in your time here?
- Where do you see your research going in the future?

For programs WITH interviews (i.e. most "life" science fields + computational biology)**:**

- Each program will have a 3- to 4-day interview weekend in the early spring. Some have two options to avoid conflicts. Maike's earliest interview was Jan 23-25 and her latest was March 4-8.
- The program will cover all expenses (flights, hotel room, meals, some ground transportation).
- Dress is usually business casual. If you don't have a carry-on suitcase, consider getting one.
- You'll get a list of whom you'll be interviewing with. Read their lab websites before you go, and consider *skimming* a recent paper from each lab on the flight to the interview. If they're not someone you expressed interest in working with, you won't be expected to know the details of their research.

- For the labs you're interested in joining: make sure you're quite familiar with their current research interests. Skim some recent papers. Be able to answer the question, "What aspects of our work are you most interested in?"
- Be able to state your research interests and why you're interested in that school's program. It's okay to have broad interests, but be able to identify some specific topics you're interested in.
- Have a good answer to "tell me about yourself" (hint: start with your major + school, and then talk about your research interests + experience). A good, specific, adaptable elevator pitch can go a long way too. *For example, here's Maike's elevator pitch (roughly)*: I've realized that I get excited about the statistical dynamics of spreading processes--be it an allele or a disease spreading through a population. I'm interested in statistical methods development and mathematical modeling for evolutionary genetics and infectious disease.
- Here's a twitter thread from a Harvard professor on what he looks for in a grad school interview.
- Here's a standard schedule, so you know what to expect:
    - Day 1:
        - Arrive in the afternoon & check in to hotel
        - Optional fun dinner + drinks with grad students at a local gastropub or something
    - Day 2:
        - Breakfast + an "intro to the program" talk from a faculty member or program director
        - 3-8 interviews with faculty, with a break for lunch in between--lunch is sometimes hosted by a lab you're interested in
        - A fancy evening dinner with faculty and grad students, or a poster session with food
        - A night on the town with grad students--usually a beer option and an ice cream option
    - Day 3: Either a repeat of Day 2 or a travel day or ½ interviews ½ fun exploration time
- *I know they sound stressful, but these weekends are really fun!* You get to meet many fun and smart people, see an interesting new place, and eat/drink well on someone else's dime! The interview is a chance for you to meet these amazing researchers whose work you admire, and also to see if the program and university feels like a good fit for you. And don't forget to have fun and make some friends! The other interviewees could be your future cohort.
- You'll probably hear the program's final decision within 1-3 weeks.

For programs WITHOUT interviews:

- Each program will have a 3-4 day visit (including travel days) in the mid-to-late spring. When Griffin applied to physics programs there was usually only one visit weekend for each program, but in the event of a major conflict some departments will fly you out for an individual visit. Griffin's earliest visit was 2/28-3/3 and his latest visit was 4/4-4/7.
- Major programs in the same geographic area will likely try to arrange their visits back-to-back, so be prepared for this to happen if you apply and are admitted to, for example, Stanford and Berkeley, Harvard and MIT, etc. If you have back-to-back or mildly-overlapping (like by one day) visits between schools which are even farther apart, the programs will generally do their best to help you find a compromise.
- There are no specific requirements on dress, but you're going to be talking to faculty, so don't get *too* casual.
- Some schools will give you a list of faculty that you'll have meetings with, and others give you blocks of free time to schedule as many or as few meetings as you like on your own. It varies widely.

- The format of faculty meetings will also vary widely. It's worth following the advice above to be as well-prepared as possible and to, if necessary, impress potential advisors. Some people will want to quiz you, some will spend the entire time talking about their work, and others will let you have a pleasant back-and-forth. Try not to worry too much, though, because you don't need to worry about admission to the program! It's more likely that your meetings will help determine which research group you join, but this process will be very program-specific.
- The schedule of these visits will also generally follow that of the sample schedule above, maybe with fewer meetings and more time blocked out for departmental activities/discussions with current students.
- As above, make sure to have fun! Celebrate your admission, and make sure to spend lots of time talking to the current students - they're your best window into the department culture and what it's really like to be a grad student in that program. (The evening activities are a good time to dig for departmental dirt.) Make sure you feel like you fit in with your cohort, because they'll likely end up being some of the people you spend the most time with.

By April 15th:

- **Make your decision!** This is the typical decision deadline for US grad schools.

After April 15th:

- **Congratulations!** You did it - enjoy the rest of senior year and have a great summer!

Components of the Average Graduate School Application

Here's a list of elements shared by most graduate school applications across most fields.
Alt caption: what the #@% is the difference between a personal statement and a statement of purpose?*

Statement of Purpose

Example Prompt:

> Please describe your aptitude and motivation for graduate study in your area of specialization, including your preparation for this field of study, your academic plans or research interests, and your future career goals. Please be specific about why UC Berkeley would be a good intellectual fit for you. The statement of purpose should convince readers– the faculty on the selection committee– that you have solid achievements behind you that show promise for your success in graduate study.

This is your chance to convince the committee that you know your stuff.

Some general suggestions:

- State your research interests in the first paragraph.
- In the body, you can outline impactful classes, research projects, and other experiences. If there's a personal statement, keep this science-focused. If there's no personal statement, you can mention a bit of your story here.
- When discussing your research, make sure you hit all the important points:
    - Where you did the work and whom you worked under: "Dr. [full name], a [title, like professor] in [name of their department]"
    - What *you* specifically did (it's okay, even important, to use "I" and not "we" here)
    - What you found and why it's super cool - "So what?" is a good question to try to answer
- Close with a statement of your research interests, whom at the school you're interested in working with, and why they're a perfect fit for your interests .
    - This is where you argue to the committee that their school is the best place for you to take the next step in your career. You've spent the rest of the essay convincing them that you're a strong candidate, but they get tons of those. What makes the pairing between you and this school particularly powerful?
- Make sure there's a clear progression of ideas from beginning to end. You don't need to talk about things chronologically (though this often helps), but you want your development from a clueless freshman into a promising incoming PhD student to be clear.

Personal Statement (or Diversity Statement)

Example Prompt:

> Please describe how your personal background and experiences influenced your decision to pursue a graduate degree. In this section, you may also include any relevant information on the following:
>
> - How you have overcome barriers to access higher education
> - How you have come to understand the barriers faced by others
> - Your academic service to advance equitable access to higher education for women, racial minorities and individuals from other groups that have been historically underrepresented in higher education
> - Your research focusing on underserved populations or related issues of inequality
> - Your leadership among such groups

This is your chance to share that you're a real human being and to tell a bit of your story. It can be much more narrative than the statement of purpose. The "ever since I was a child, I knew I wanted to be a ___" opener is not encouraged. ;)

At least three letters of recommendation

These need to come from faculty. If you're advised by someone who is not faculty (like a graduate student or postdoc), talk to your research advisor--often, they can write a letter and the PI will edit, sign, and submit it.

Miscellaneous other elements (which vary greatly by program):

- A list of faculty in that department you would be interested in working with
- More details on coursework or experience in specific fields (like coding or wet lab skills)
- A description of a significant research project

A final note: YOU CAN DO IT! If you feel overwhelmed or unprepared--that's how we all felt when we are starting this progress. You're not alone. Support one another, *start early*, work on things bit by bit, and don't be afraid to write down stuff you know you'll edit heavily later. When it's all over, you'll be surprised by how much clearer your research interests and goals are. And you'll have had some nice time to reflect on your accomplishments throughout undergrad--you've made it a long way since high school, and that's worth appreciating. Go you!

Some Useful Resources

Here are a few resources that helped us navigate the grad school application process.

- Here's some great application writing advice from UT Prof Dr. Caitlin Casey
- See the next page for an infographic on what to look for in a research advisor

The Definitive 'what do I ask/look for' in a PhD Advisor Guide (minus lifestyle questions)

You've been accepted to a PhD program, and have time to ask questions while visiting – what do you look for and ask? Below are some high level ideas to keep in mind as you start this journey and an exhaustive reference of questions to ask, color coded by who you should probably talk to first.

You'll have 30 min – full day with each lab, so focus on the questions relevant to your situation. Some have complex, nuanced implications that you should ask a trusted neutral party about or @ me on twitter (@andrewkuznet).
Good luck, I believe in you. :)

Who best to ask this question to...

- Advisor's website / publications
- Direct Observation
- Department
- Advisor Directly
- Advisor's current PhD students
- Current PhD students in program
- Advisor's current PhD student (candid)
- Yourself

0 **Before:** Understand potential advisors' work: read a few, recent, paper abstracts (e.g. prev. 2 yrs for HCI) and check out their academic/lab website. Do this even for profs you might not be directly interested in, come in with an open mind and try to learn as much as possible. Never know if you'll want to add or switch an advisor.

1 Who do you want to work with?

Your advisor relationship determines quite a bit of your graduate student experience. Pick wisely :)

2 What do you want to research?

Figure out what topic you'll be working on, projects, types of approaches, etc.

3 How does funding work?

Money is (unfortunately) important. Figure out how much it will drive your experience and what to expect.

4 How likely is what you had in mind?

Although you may have time to sort out the details later, now is the time to check if a specific arrangement is viable.

5 Do you want to be co-advised?

Co-advising can be useful for a number of reasons. It's almost always easier to add a co-advisor later than to remove.

6 What's the culture like?

Much of lab culture will be gleaned from methods other than direct questioning but will strongly affect your experience.

① Advisor Style & Expectations

- Does the professor have tenure yet? [engagement level, PhD might get interrupted]
- What is the professor's formal training / background / PhD? [helps contextualize problems/approaches]
- What have previous lab members done after getting their PhD? [Gone to industry?/Post-doc?/Professor?]
- What is the lab structure? [how collaborative/disjointed are lab members' projects?]
- Does the advisor consider themselves a 'hands-on' or 'hands-off' advisor?
- How does the advisor give feedback on papers/what is their feedback style?
- How often does the advisor meet with their students? [1:1 or all together? Daily guidance by PI or post-doc?]
- Are there lab meetings? What are other meetings you will see your advisor in a group with other people?
- What does a group/lab meeting look like? [Or other relevant meetings]
- How many students are in the group? [Number of undergrad/masters/phd/post doc]
- What progress does the advisor generally expect from a student in the course of a semester? [Submission/Publication pace]
- What other expectations does the advisor have for their students: time/vacation/paper/project/experiment wise etc.
- *"When have you given a letter of concern? Why?"*
- *"What do you do when students are struggling"?*

② Research Fit & Projects

- How directly applicable will your future technical skills be to the roles you want after graduating. [If set on industry]
- What 'research methods' does the lab use? [What 'types' of papers / contributions / conferences targeted]
- *"What are some of the projects that you and your students are currently working on"?*
- *"In general, do you tend to give your students projects or have them select their own"?*
- *"Do you have particular projects that you see me working on"?*
- *"How much freedom do you think I'd have in selecting my own projects"?*
- *"Are there other students you are interested in working with? If so, what would they be working on project-wise"?*
- *"Would they have their own line of work or contribute to a bigger project/someone else's project"?*

③ Funding / Obligations

- Where does their funding primarily come from? [If military / industry-focused funding bothers you, figure this out]
- What are their constraints from their funding source? [Some restrict research topic and change final deliverables. Some add work — writing progress reports, traveling, preparing presentations for the funding source or engineering overhead for integration]
- If your advisor made you work on a project in their area that you are least interested in (e.g. for a grant) would you still be excited doing that work? [Useful for choosing between advisors]
- *"If you run out of your primary funding for a student how do you expect the student to handle that"* [advisor's responsibility / you'll have to write a grant with me / dept will cover the student / you have to find their own funding]
- *"What does the quals process look like"?*
- *"Is there a TA requirement"? / "How often would I be expected to TA"?*

④ Student-Advisor Fit / Placement

- [If you are interested] Would the advisor be interested in co-advising?
- *"Are you taking a student" / "Do you have funding to take students in this year (or, for which projects)"*
- *"What factors will affect whether or not you take a student"?*
- *"How do you anticipate your funding to change during my time as a student"?*
- *"Do you think our research interests are a good match"?*
- *"Are there other students in my cohort that you're interested in working with"? (If so, are you taking more than one student?)*
- *"I'm interested in working with you. Do you think I'd have a good chance of working with you if I come to [your university]"?*
- *"Are there other faculty you think I'd be a good match for"?*

⑤ Co-advising

- How much overlap would they have in research?
- Have these advisors co-advised in the past? Or worked together in the past?

⑥ Lab Culture

- How often do grad students get to attend conferences? [Pace + What constraints]
- Do students mostly work with senior students or directly with professor?
- How many conferences are students expected to target a year? [remember pubs ≠ submissions]
- How often do students take time off? Are there lab / department outings/events?
- Are there snacks in the lab?
- Is the professor in an 80/20 with a company? Are student's research projects tied to industry funding?
- Will it be acceptable/encouraged to intern at a company during the summer? [Does this change with seniority?]
- Do students work together in common space? Is their common space? Do students often get meals together?
- Do students often work late? [Often / only before conference deadlines.]
- How often are students expected to be contactable by their advisor. [Email, slack, hangouts. Online around the clock?]

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