

A discussion of the graduate school application process

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Why go to graduate school in the sciences?

- You really enjoy science, and would like to spend your career doing science, or in a science-related career (e.g. management, start-up, science writing, etc)
- You want to develop your critical thinking skills
- A PhD is helpful for career advancement within a corporate system
- You also enjoy teaching, and are considering an academic science career
- Science careers can be relatively stable and well-paying....but:
 - 1) Graduate school is a lean time, and
 - 2) Other professional careers, e.g. lawyer, are better paid– don't do science for the money!)

Should I go *straight* to grad school?

- **No one answer here!**
- We frequently see BMSE applications from students a few years out of undergrad, after time in pharma/bio-tech
- *Advantages of an industrial position before grad school:* a few years of 'real life' to mature, make a solid paycheck, consider decisions
- *Disadvantages:* Limited upward mobility without PhD, potential lack of intellectual excitement/challenge in an industrial job; maybe you are mature enough now!

Choosing a graduate school

- Fit and support are as important, if not more important, than prestige/ranking
- **Prestige/ranking:** Any number of lists, though of limited precision. Top rankings correlate with having cutting-edge research across the board. Such programs are good for creating next-generation research faculty, which might not be your goal
- **“Fit”:** **Not all programs are the same!** Are there faculty pursuing research in a direction of interest to me? Are the strengths of the school in line with my career goals? Do recent graduates go to jobs like the ones I aspire to?
- **“Support”:** **Is the program invested in student success?** Are classes taught well? Do nearly all students complete the program, and in a timely fashion? How does funding for students work? Are there extensive TA responsibilities?

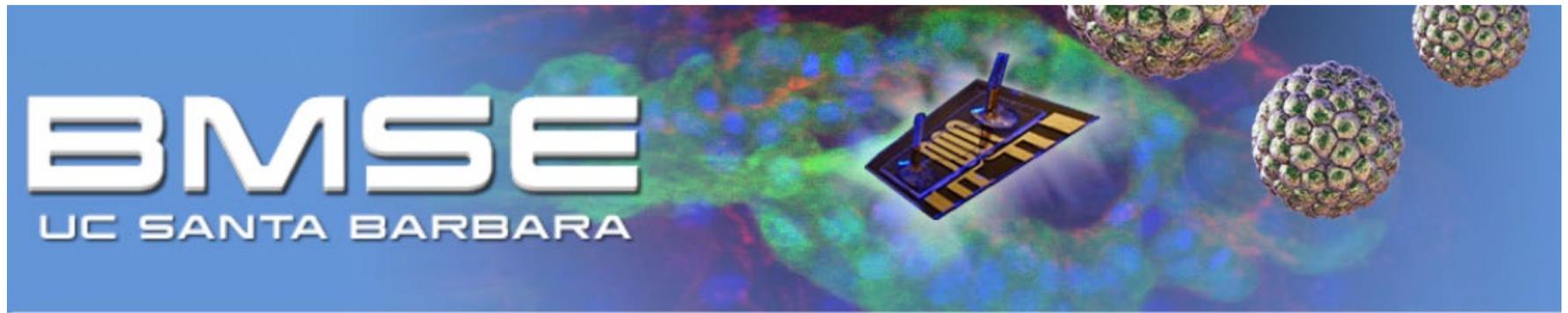
Judging programs

- Consider your own personal constraints (family obligations, etc.)...but outside of 'hard' constraints, try to be flexible on location (grad school is temporary!)
- Do some research!
 - Look at academic requirements
 - Contact listed staff with questions
 - Acquire program statistics, use to evaluate program characteristics/health (admissions profile, stipend, diversity, time to graduation, post-PhD jobs, etc.)

Example: ***The UC Doctoral Program InfoCenter***

<https://www.universityofcalifornia.edu/infocenter/doctoral-program>

Example:



(Listed under 'Biochemistry & Molecular Biology' in UC Infocenter)

Statistics:

- ~100 applicants/per year, 20-30 admits, 5-10 enrollees
- Stipend just moved to \$32k
- 60/40 male/female
- >80% completion rate, median time 6 years

Program structure: Interdisciplinary and flexible

- Three research rotations in first year; join group at end of rotations
- Research focus, with minimal class requirements: 6-7 classes, elective-driven (no core), with some cross-disciplinary work required
- Small incoming class (5-10 per year)
- 2 quarters of TAing required
- 'Candidacy exam': Oral presentation of thesis proposal, end of year 2

Judging programs, part 2:

Your research advisor (a single faculty member) is more important than the program

- Typical PhD: ≤ 2 years taking classes, 3-4 years working on the thesis
- Direct mentorship is by far the most important support mechanism
- Advisor's funding situation can dictate how much TAing you do
- Advisor's contacts can help with post-graduation job prospects
- How to choose a good advisor?
 - Ask current mentors for advice
 - Read faculty websites, evaluate student paths
 - Talk to them, and their students, at visit days
 - Direct faculty email contact not advised...tough to get a response!

The grad school application cycle

- **September-December**

- Identify, research programs
- Send in applications

- **December-January**

- Admissions committee reads, ranks applications
- Admission decisions (accept/interview/waitlist/reject) sent out

- **February-March**

- Interviews and visit days
- Specific discussions with potential research advisors

- **April 15: Decision day**

The typical graduate school application

- CV/resume
- Transcript
- Statement of purpose
 - State your scientific career goals and motivation to attend graduate school
 - Make an argument as to why the University of X is a good fit for your interests
 - Discuss your past research experience
- Personal statement
 - Discuss your background
 - Discuss any hurdles you have overcome in your academic career
 - Comment on any outreach activities or leadership roles
 - Do not discuss hobbies...
- Three recommendation letters
 - Best letters: From a faculty or senior research scientist who was your direct supervisor on a long-term research project (at least 1 such letter is expected, more are great)
 - Good: From a professor from whom you took a class, or who supervised you as a TA
 - Okay: From a non-technical supervisor (e.g. a manager/boss at a company where scientific research was not a focus)
 - Don't send: Letters from peers or near-peers
- Becoming less common, but not universally: GRE scores

What the admissions committee looks for in an application

Evidence of....

- ***...ability to think critically, creatively and in an independent manner***
 - From letter comments, statement of purpose
- ***...dedication to a scientific career***
 - Course profile in transcript; research experiences/motivation in CV/statement;
- ***...fit with department research profile***
 - Statement- goals/background, and fit with faculty
- ***...relevant technical skills***
 - Letters, statement
- ***...academic abilities***
 - A 4.0 is *not* required. But a very low GPA will raise questions
- ***...mitigating factors that could explain gaps in the above***
 - Personal statement
- ***...suitability for nomination for a campus fellowship***

Things to do to optimize your application

- Write a good statement of purpose
 - First and foremost: ***Highlight your research experience***, including the motivation/curiosity that led you to the project, and especially ***your specific contributions***
 - Be thoughtful in connecting your goals to the program— make a logical argument (frequent problem: Disconnect in goals, e.g. “I want to work in drug development”, whereas no faculty work in that area)
- Choose letter writers with care— who can best speak to issues that the admissions committee cares about?
- Be honest and concise in your personal statement
- Note you do not need publications— they are eye-catching, but more important is knowledgeable discussion of the work in your statement, and clear idea of your contributions from your letters

The visit day

- If you make it here- Congrats on a good application!
- You are either accepted, and the visit day is
 - The program's chance to impress you (don't let it get to your head! You still have work to do)
 - Your chance to find a match with a research advisor (accepted into the program does not mean you are accepted into the lab you want)
- ...or you are on a list for potential acceptance, and the visit day is a two-way situation:
 - The faculty are gauging your potential (interview-like)
 - You are gauging them and the program
 - Both sides are again looking to make a match

The visit day

- Typical structure: A program-wide presentation, 1-on-1 discussions with faculty, time with current grad students
- Program wide: Info about academic structure. Ask about program-wide graduate rates and post-PhD jobs. Look for clues about climate, e.g. diversity
- Faculty discussions: **Most important!** Find your research match!
 - Be ready to speak knowledgeably about your past research experience
 - Frequent point of failure: inability to do this!
 - Be polite, express enthusiasm, do some homework on faculty research & expertise, but okay not to know everything
 - Ask specific support and fit questions, e.g.: how students are funded, how they are mentored, what jobs they typically go to..
- With students: Very valuable! ***Do not overlook***
 - Ask about their experience with specific faculty
 - Ask about the climate of the dept/program as a whole
 - Get opinions on the academic part of the program

The decision

- Between visit day and April 15, follow-up with faculty of interest to continue match-making
- Be sure to consider how certain you are to get into the group you want (perhaps try to find a program with a handful of potential advisors)
- Hard to generalize: You need to choose what will work for you!

A final comment:

Money is a big deal: Having a full or partial graduate fellowship can open many doors!

- Gets you into a group that does not have grant funding for another student
- Relieves you from frequent TAing
- A great line-item on the CV for later job applications
- Various online lists exist for finding graduate fellowships, e.g.:

<https://research.jhu.edu/rdt/funding-opportunities/graduate/>

Be sure to carefully check eligibility requirements

Thanks!
Questions?

