Getting Into Graduate School

How Do You Distinguish Yourself from the Crowd?

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Why Go to Graduate School?

- Really liked doing research!
- Excited by discovering new things
- Enjoy the freedom to pursue questions
- Want to improve the human condition

Many Paths to Graduate School

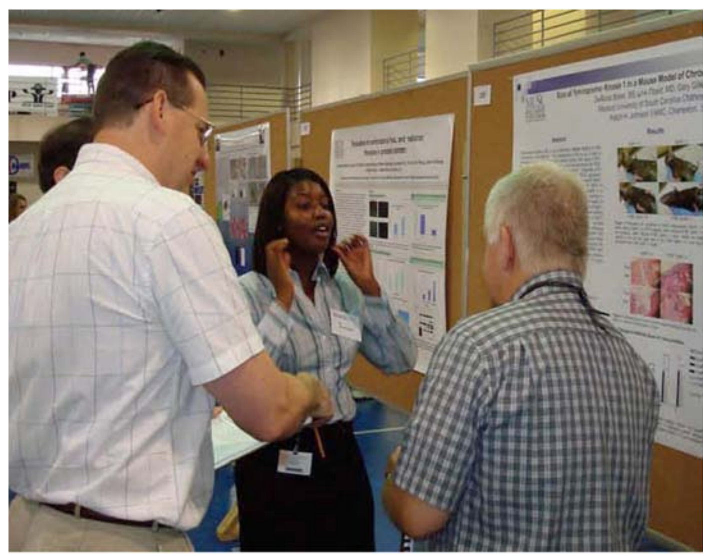
www.aamc.org/phd

What Should I Expect in a PhD Program?

Year 1 | Year 2 | Year 3 | Year 4 | Year 5…

- Coursework
- Rotations
- Select Mentor
- Qualifying Exam
- Professional Development
- Dissertation Research/Thesis and Defense
- Writing About and Presenting Your Research

PhD



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What do I Need to Apply?

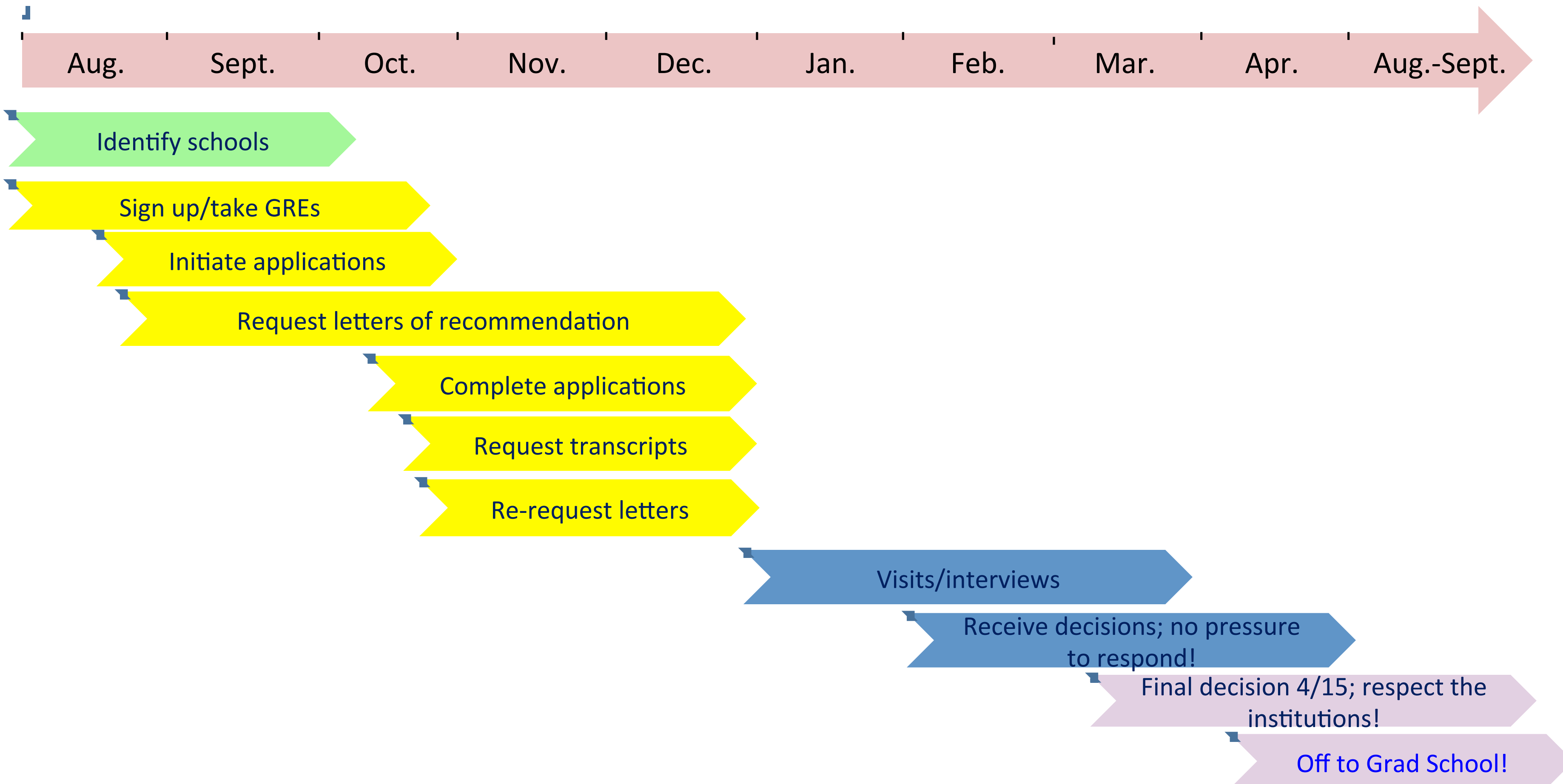
- Application form – each school or program has its own
- Personal statement (research statement)
- Letters of recommendation from the heads of labs in which you have worked
- Transcripts – undergraduate and above
- GRE – Graduate Record Exam

What Are Graduate Programs Looking For?

Applicants who have:

- Integrity and maturity
- Ability to communicate
- Aptitude for working with others
- Good academic records (GPA and GRE)
- Advanced courses in sciences
- Research Experiences
- Letters of recommendation from research mentors

Graduate School Application Timeline



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The Core of Your Application: A Substantive Research Experience

- Sufficient time pursuing research opportunities to understand what you are getting into
  - Multiple summer projects
  - Senior thesis research
  - One or more years pursuing research activities after undergraduate degree

- Familiarity with idea of testing a hypothesis
- Understand the implications of your research
  - Not just a technical exercise

Writing an Effective Personal Statement

- The application process is a job!
- Take the time to find schools that match your interests – self-reflection
- Tailor your statement to each individual school
- Address weaknesses in your application
- Follow the directions!

Writing an Effective Personal Statement

- Introduce yourself – motivation, give examples
  - *Why a PhD (or masters)?*
- Describe your research experience(s)
  - *Mention any pubs or awards*
- Proofread and edit – no misstakes!! No kiding!
- Why you are applying to a particular institution
  - *Strengths of institution, be flexible*
- Not the time to be overly creative

What is the proper length?

My infatuation with genetics began the moment I first saw DNA being gently spooled around a glass rod at a summer science program. At that moment this mysterious molecule suddenly became real to me. The potential for manipulating, studying and even altering DNA instantly fascinated me. This experience planted a seed of inspiration in my 13-year-old mind. Since then my innate desire to learn has grown into a love of science and a passion for research. Various experiences helped focus this passion into concrete academic and career goals. One of these goals is to join the Department of Biochemistry and Molecular Biology at the Medical University of South Carolina [MUSC], where I plan to study the genetic basis of disease and explore potential new therapies. My long-term goal is to conduct genetic research in either an industrial or university setting. I plan to use my degree to teach, as well. Many factors have influenced my decision to enter this field, including my undergraduate courses, research experience and some very meaningful extracurricular pursuits.

As an undergraduate I began to discover more about my interests and myself. I found my courses in human genetics and genetic counseling especially appealing. In these courses I enjoyed learning about the unique difficulties associated with diagnosing and managing genetic disorders. In addition I learned the importance of educating the public about genetic disorders during a brief job shadowing experience with a genetic counselor at the UNC [University of North Carolina] Ambulatory Care Center. As a junior, I also got a glimpse of graduate-level courses by taking Principles of Genetic Analysis. This class taught me how to analyze and approach a research topic in the field of genetics. Merely learning about these topics in the classroom, however, was not enough. I wanted the hands-on experience that can only be found in the laboratory.

I took advantage of the research opportunities at UNC and became involved in the Undergraduate Research Program during my sophomore year. I soon found my niche in Dr. Brent Weston?s lab in the Department of Pediatrics. Although I helped with several projects, my main research objective was to develop a viral vector for delivery of an antisense sequence to human colon and liver cancer cells. I used an adeno-associated virus [AAV] vector to package an antisense strand corresponding to part of a human fucosyltransferase gene. This gene produces cell surface molecules that aid in cancer cell adhesion and metastasis. For this project, I collaborated with Dr. Paul Monahan, in the R. Jude Samulski lab at the UNC Gene Therapy Center. Here I learned many of the technical skills I needed in the laboratory. I also interacted with doctoral and post-doctoral students. This further fueled my desire to pursue a graduate degree. The fulfillment I felt when working in the lab convinced me that research was in my future. Despite the many obstacles encountered during my research project, I viewed them as learning experiences rather than barriers to success.

Outside the lab I became involved in Carolina Pediatric Attention, Love and Support [or CPALS], an organization that pairs college students with young people coping with terminal illness. I had the opportunity to meet and connect with two girls, both battling leukemia. This interaction greatly influenced my career goals. It kept my lab work in perspective and focused my research interests on finding better ways to diagnose and treat disease. In addition to CPALS I tutored during my senior year in both Biology and German. Although I had always enjoyed helping classmates informally in these subjects, I felt great satisfaction tutoring other students and watching their progress over time. In addition to their personal successes, I learned from their questions and became a better student in the process. I feel this was good practice for a teaching assistantship. Earning my Ph.D. will open the door to becoming both a researcher and a teacher. Hopefully, my tutoring experience will be the first of many opportunities to teach some of the skills and concepts I have learned.

I have come a long way since that summer many years ago and yet I know that I still have far to go. Once I marveled at the sight of DNA. Now I am interested in such topics as cancer genetics, gene therapy and microarray technology. I have become a strong independent thinker and a creative researcher. Continuing my education is the next step in my development. I hope to draw on my genetic analysis and molecular biology research background as a foundation for studying more advanced concepts. I believe original research is fundamental to acquiring new knowledge and formulating theories. However, applying these theories to real-life situations is just as important, if not more so. I hope to be part of this progression from the lab to the clinic at MUSC. I can find all the tools I need to achieve these goals the Biochemistry and Molecular Biology Department. In addition to its faculty and facilities, the university offers an interdisciplinary curriculum that combines the basic sciences with clinical applications, which is ideal for my interests. Nevertheless, it is my hope that I will be an asset to the university, as well as the department. After completing my doctorate, I hope to study the genetic basis of diseases and develop more efficient treatments for them. My educational and research background is only a part of what I hope to bring to the graduate program - my passion and commitment to this field are equally valuable credentials. I look forward to contributing to the science that has inspired me for so long.

I am in my senior year at Washington & Jefferson College in Washington, Pennsylvania. I am a Cell/Molecular Biology Major. After my undergraduate studies at W&J I would like to further my education in graduate school in pursuit of a doctorate in Biomedical Sciences. At Washington & Jefferson I have a GPA of 3.02 overall and a 2.82 in my major. Over the past two years at W&J my major GPA is 3.0.
I have completed numerous miniature research projects in many different biological capacities. Washington & Jefferson is a small research-intensive college, which has provided me various opportunities to do independent research. I have done two, four-week research projects. The first examined the effect of Ibuprofen on malignant cells. The second research project examined glutamate receptors in the retina of juvenile tiger salamanders. Also, through a summer class taken in conjunction with Cornell University, I did a four-week transect study examining population disbursement and predator/prey relations of the intertidal region of Appledore Island, Maine.
My current research interests include both facets of my previous research. I am very interested in looking at marine aspects and the molecular biology concepts that I am currently studying. I feel that the Medical University of South Carolina is a perfect fit with their program in Marine Biomedicine.
I am currently interested in pursuing a graduate degree in order to become more specialized in a major that infatuates me. An undergraduate degree is not sufficient in order to pursue my lifelong goals. My long-term goals are to obtain my doctorate in Marine Biomedicine and pursue a research career. After developing some experience in the field, I would like to teach in an academic institution.

One page is good- 1/3rd to 1/4th of a page is not

Purpose of letters of recommendation

- To assess whether an individual has the personality traits likely to make them successful in a given field

- To assess whether an individual has had experiences to enable them to determine if they are truly interested in a given field

Very important part of an application.

What make a reference letter *strong*?

1. Writer knows the applicant well
2. Writer directly supervised the applicant in a relevant area of work or study
3. Writer is of significantly higher professional rank than the applicant
4. Writer has positive things to say about the applicant

Ideally, what you want for grad school references are..

- letters from the highest ranking people who
  - directly supervised you
  - in positions related to science and/or research
  - have a favorable opinion of you, and
  - know you well enough to make specific statements about your abilities and character

What if I don't know three people like that?

Cultivating references – plan!

- For any activity you take part in related to your goals from now on, think in advance about who could write you a strong letter
- Work at the relationship, in a professional manner
  - Work hard in the class, lab, etc.
  - Send thank you emails when appropriate
  - If they are a professor, go in for office hours or extra help, even if you don't think you need it
  - Find common interests, talk about your goals

How to ask for a letter

- "Would you be able to write me a ***strong*** letter of recommendation?"

- Professors and supervisors expect to be asked to write letters of recommendation, but...
  - Asking in this way gives them an opening to tell you if they have reservations about you
  - They are probably also more likely to tell you what their reservations are – which will be instructive!

How to ask for a letter, part 2

- Give your writers plenty of time: 3-4 weeks is best
  - It's okay to send reminders as deadline approaches
- Provide your recommenders with a concise packet of information to draw on:
  - Cover note explaining purpose of the letter, deadline, how to submit it, and your contact information
  - Copy of your academic transcript (unofficial)
  - Resume or CV containing
    - List of experiences relevant to your chosen field
    - List of leadership positions held
    - Scientific publications or presentations, if any

Preparing for the Interview

- **Think about questions that might come up and be prepared to answer them - but be careful not to over-prepare (sound like a robot).**
- **Have a faculty member or friend "interview you"**
- **Know what you wrote in your application. Your interviewer will know it, be prepared to answer any questions the interviewer might have about it.**
- **<u>Ask Questions</u> - it makes you seem interested. Some issues you might consider asking about are:**
  - **The programs you might be interested in pursuing.**
  - **Construction on the campus and new facilities.**
  - **Stipend support or financial aid.**
  - **Mentor selection at the school.**

Dress to Impress

- Dress somewhat formally. Make it clear that you understand and appreciate the importance of the interview, and of the interviewer.
- **Women** – Appropriate dress for women going to a college interview is nice slacks and a blouse or a suit, similar to attire for a job interview.
- **Men** – Men should wear dress pants, with a shirt, tie and jacket, or wear a business suit.

Send a Thank You Note

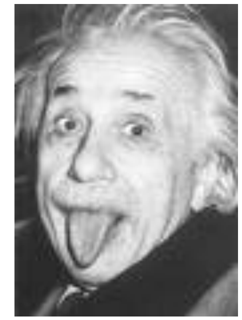
- **Setting up and conducting an interview takes time and work. Take a little time from your own busy schedule and write a "thank you" note to either the person who interviewed you or the admissions office that coordinated the interview. It gets noticed.**

What do I do if I don't get accepted?

- Graduate School (PhD or MD/PhD) - Continue obtaining research experience
  - ❖ Work as a technician in a laboratory
  - ❖ Post-baccalaureate programs (PREPs at NIH, individual universities)
  - ❖ Master's programs

- Professional School – Post baccalaureate Pre-medical programs (see AAMC website)

What can I do with my degree?



Academic Research

Teaching

Industry Research

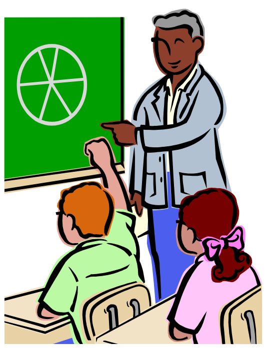
Patent Law

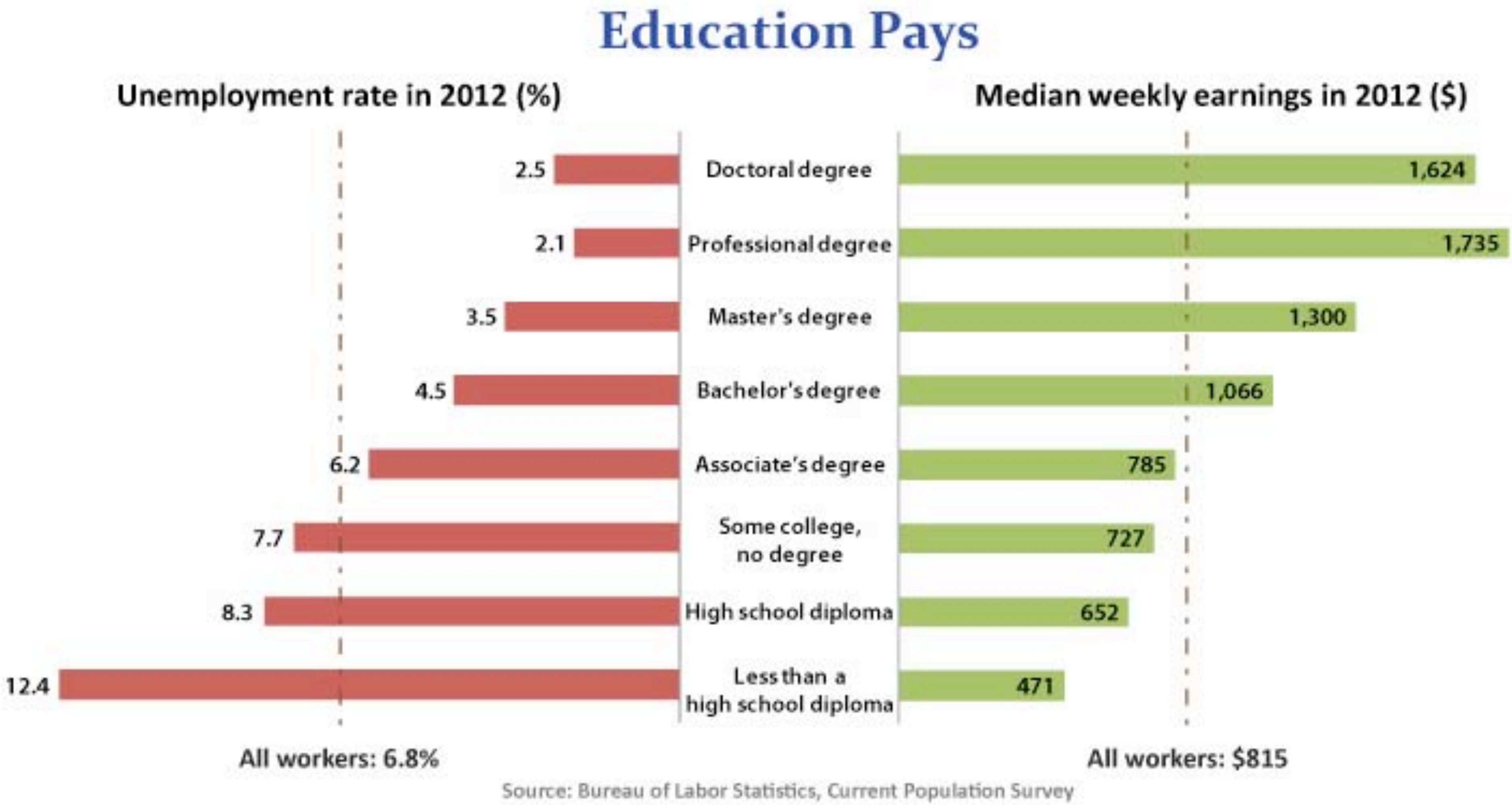
Consulting

Entrepreneur

Medical Writing

Public Policy




Education Pays
Unemployment rate in 2012 (%)
Median weekly earnings in 2012 ($)
2.5
Doctoral degree
1,624
2.1
Professional degree
1,735
3.5
Master's degree
1,300
4.5
Bachelor's degree
1,066
6.2
Associate's degree
785
7.7
Some college, no degree
727
8.3
High school diploma
652
12.4
Less than a high school diploma
471
All workers: 6.8%
All workers: $815
Source: Bureau of Labor Statistics, Current Population Survey

What Skills do I Have?

- Communication – speaking, writing, graphics
- Analytical – critical thinking, organize data, innovation
- Research – experimental design, techniques, statistics, peer review
- Business management – leadership, time management, detail oriented
- Social skills – networking, group work
- Professionalism – ethics, people skills

Choosing your graduate school- What to Look for

- Research environment - programs, support, faculty and opportunities
- Are there faculty there doing research you want to do? Clinical or industry ties?
- Don't choose schools based just on rankings. Look for a sense of belonging or "good fit"

How to Choose Your Graduate Program

•Talk to faculty at your undergraduate institution

•Participate in Summer Undergraduate Research Programs

•Visit the institution

•Discover where graduates have gone

MUSC
COLLEGE of GRADUATE STUDIES

Degrees Offered

- MS (2-3 yrs)
- PhD (5-6 yrs)

Dual degree (7-8 yrs)

- MD/PhD (MSTP)
- PharmD/PhD
- DMD/PhD

Financial considerations

Stipend $23,000-25,000/year

Paid health insurance

Dean’s scholarship for tuition

Resources

www.phds.org - personal grad school finder
www.petersons.com - graduate school listings
www.gradschools.com - graduate school listings
www.ets.org- administers standardized tests- GRE, TOEFL
    PowerprepII – free online materials from ETS
www.kaplan.com - standardized test preparation
www.aamc.org/phd - information about graduate school
www.aamc.org/mdphd - information about MD/PhD programs
Magoosh.com – website for online test prep

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