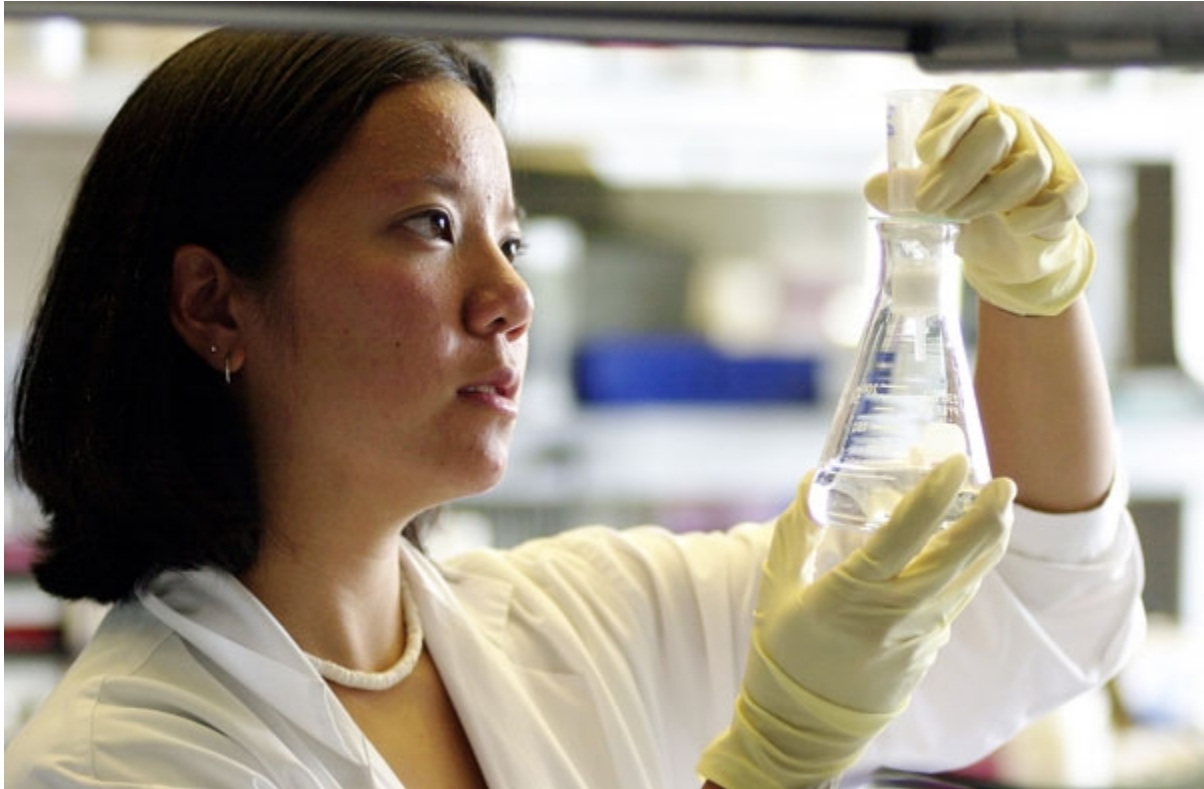


A Short Primer for Those Who Plan To Attend Graduate School in the Biomedical Sciences:



Felicity Motivational Group

We don't just educate, we motivate!™

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According to Bharati Mehrotra of Vanderbilt University:

Entry to good graduate schools in the Biomedical Sciences is competitive. Oftentimes undergraduate students are not familiar with what it takes to get accepted in a chosen graduate program. Based on our observations and experience, we at Felicity Motivational Group have developed the following information to help young college students plan and prepare to convince graduate programs admissions committee that they are able to enter and successfully handle graduate studies.

Things to do before you ever apply to Graduate School:

Be careful to take the right courses during the undergraduate years. Of course this is easier said than done, as it is a rare undergraduate who really knows their future career plans when they arrive in college. From the get-go you need to be focusing on getting good grades. The odd, less than stellar performance won't wreck your plans for attending graduate school the way it can play havoc with strategies for medical school. Nonetheless it is better not to go there if you can avoid it.

Early hands on research experiences are, nowadays, absolutely necessary. If you begin to develop such an interest, offer to work in a research lab for a few hours a week during the academic year and full time during the post freshman and post sophomore summers as well. At first you will probably just be doing busy work. Don't fret, you will be able to talk with other lab members and you can begin to find out what research is all about. You may have to volunteer in order to get your foot in the door, but if you are reliable and do a good job, you may be able to negotiate a modest wage for your work. The main goal though is not the income....it is the experience which you definitely need for your graduate school application. As your plans mature and if graduate school is a serious option, then you will need to increase the amount of research exposure at a later stage in your undergraduate career (see below).

What about later in your university career? Assuming that late in the sophomore year or at the beginning of the junior year you will likely begin to crystallize your plans for a major and for possible career paths. If you are seriously beginning to think about graduate school in the biosciences, then this is the time to focus your plans.

You should try to take as many upper level courses in your major area as it is possible in your junior and senior years. Admissions committees look for a broad repertoire of course exposures. Graduate level courses will be less of a challenge if your background is that much broader. If you are a Biology major, definitely take biochemistry, cell biology, genetics, microbiology, physiology and any other upper level courses that you can fit in your schedule. Do not take these courses just for the sake of taking courses but really delve into the material, and at this point some decent grades won't come amiss. If you are a chemistry or physics major who is thinking of going for a career in biomedical research, then plan on taking some upper level biology courses in your junior and senior years. Students who have majored in chemistry or physics and have also had Biochemistry are highly sought after these days.

Get some “serious” research experience:

As mentioned above, it is hard if not impossible, to get into a front rank graduate program without having “meaningful” research experience. So, for students who are interested in doing graduate studies, a post-junior year summer research experience is essential. These days there are ample opportunities available for such summer research at graduate institutions. Apply to at least four or five summer research programs at different institutions, particularly those schools in which you may be most interested in pursuing your graduate degree and that you might like to check out. It goes without saying that just getting into the Summer program of choice is in itself insufficient to assure you of a subsequent successful application to graduate school. Once admitted to the summer program of choice you must then excel! The letter of recommendation from a summer research mentor is one of the major components of a graduate school application incidentally.

Choose the right lab at the right school:

You really must do your homework here. The decision in whose lab to work can have profound affect on your future career. Ask around your home institution. Where would they recommend? Perhaps they know someone at a particular school you could contact to find out more about the summer offerings.

The heavy lifting, however, has to be done by you. First choose schools that have an excellent reputation. Choose an area of interest, which is fairly mainstream and where the research topics are relevant to the kind of studies that you would like to pursue in graduate school. An oceanographic project may seem like a lot of fun, but if you are not focused on graduate studies in ocean ecology then this may not be the best approach to establish a career in insulin signaling and diabetes research.

Once you have a notion of the four or five schools you might like to apply to, focusing on three or four areas of research you think highly relevant and interesting, then you move to, the next three steps:

1. Find out if they have a summer program.
2. Use the school’s websites to probe in detail the areas of research done by faculty at these schools. Read some relevant papers from these labs.
3. Get on the phone. Call the folks listed as running the summer program. Ask whom you can call to get an idea of the faculty involved. Ask if the people on your list are available. And above all ask about how they mentor and if they are around all summer. Find out if they have students in their labs, and if so get a phone number and call the students and chat with them. Ask if their advisor is mostly available? Is she/he helpful and supportive? Do they have good projects? Have they had previous summer students? How did they do? Remember, if you want a really good letter from a faculty advisor then you have to interact extensively over the summer. One caveat here is a letter from graduate students or post docs in the lab is useless...do we need to repeat that; they are useless in terms of helping your subsequent application to the graduate school.

Finally, if you get admitted to the Summer Program, call and push to be assigned to your chosen faculty member (as a condition for going). Then call your choice and discuss what the summer project might be.

How to succeed when you are at the summer research site:

First of all do not worry too much about being strange and new. That is normal when you move to a new environment. Any institution worth its salt will send you lots of information before you arrive, including some information on where you will be staying. Read this information carefully as it will save you a lot of stress. Did we say ---read this information carefully? Do so.

You will almost certainly start off on the first day at work with an orientation. You will save yourself a great deal of trouble if you go early and get situated well before things start. Arriving late is rude and reflects very badly on your organizational skills and on your real interest in being there.

You do not go to these places to goof off or have a ball. First of all, many of you are going on the taxpayer's nickel and the taxpayers are giving you the money because they believe you can develop a career in biomedical research and thus help conquer serious diseases. We can assure you that the taxpayer does not care whether you are having a blast; in fact he/she hopes you are much too busy to be having any fun, other than the fun and excitement of doing real research.

The key to success is to use your time wisely. To be honest, in 10 weeks it is hard to come up with very much that is truly new. Mostly you will be getting the experience of what it is like to do research. This of course will be very useful to you nonetheless. That said; aim to get the most out of the summer research exposure.

You need to devote yourself to reading (scientific literature that is pertinent to your project), and to working in the lab. As mentioned above, getting anything worthwhile done in the lab over a summer is really difficult, and lab work is very time consuming, so you will have to work very hard in the lab. Also, use this opportunity to explore the institution and the professors and their research interests. Participate in lab meetings and also in presentations, be dedicated and do the best job you can so that you win the heart of your research mentor as well as that of the people in the lab. This will enable your mentor to write a strong and positive recommendation for you, which will be extremely helpful for your admission in graduate school.

This does not mean that you should not have any "downtime" over the summer. In fact, any good summer program worth its salt will arrange some outings to local arts performances, sports or outdoor activities depending on the location. You should take advantage of these opportunities to relax and to network with other faculty and students.

Admission committees value above all a strong letter from an advisor in whose lab you have worked. A strong letter will allude to dedication and commitment, a love of science, a wide encompassing interest in lab discovery, a cheerful friendly aspect and trumping all else, the ability to work hard. A few successful experiments won't come amiss either.

Finally, if you get an opportunity to present your summer research work at a national conference, be sure to utilize this opportunity and share your work through a poster or oral presentation. Often graduate school recruiters are looking to recruit undergraduate students for their graduate programs through these meetings.

Applying to Graduate School

Which graduate schools should you apply to?

In your senior year at college you are busy; however, if you start planning for graduate schools early enough then you will have sufficient time to apply to several schools. But the question is how to select those graduate schools? Based on the area of interest, look at a range of graduate schools, look at their faculty, how many students a year they graduate, how well the faculty in an area of your interest is doing at a particular school. How is the funding situation in those schools, how many graduate students they graduate each year, and where do their graduate students go after finishing their PhD? Do they go for post doctoral positions in big name institutions or do they generally serve in the industry or do they end up in small institutions in teaching positions? Also, it is important to see the availability of funding from the government grants; it is a good measure of the ability of the faculty in a given university. If they are good researchers they will have sufficient financial support through grants, etc.

It is also good to learn on average how long it takes for a graduate student to finish their PhD. These days typically it takes 5-5 1/2 years to finish your Ph D in biomedical sciences in a good university and in a good caring research supervisor's laboratory.

If you had a good summer research experience at a graduate school in your post junior summer and if you feel your research mentor was pleased with you, then you should definitely include that school as one of your graduate school applications.

How many graduate schools to apply to:

Always try to apply to 4 or 5 top choice schools and then also apply to 3 to 4 second level institutions to fall back on if in case you do not get accepted in the very top schools.

The competition is fierce and it is always good to have a fall back plan in place.

Graduate record examination

Often graduate schools say they do not care about GRE scores. Certainly it is well documented that the GRE scores do an abominable job of predicting successful outcomes as researchers! However, almost all schools still require you to submit GRE scores so it is important that you do well on the GRE. To do anything well requires preparation and practice, and the same is true for

the GRE test. You should plan on taking GRE in your senior year. GRE preparation should be started no later than September of senior year.

Preparing for the GRE:

Purchase some GRE sample test books. Once you have bought your test books, the next thing is to zip through a few tests. Right? No, wrong! The next thing is to visit the ETS website. Here you will find a major resource offering advice on test strategies. Careful attention to strategy can increase your scores without knowing an extra piece of information.

The following advice is written by Dr. Michelle Grundy of Vanderbilt University. Her GRE prep course regularly increases students' scores by 20 – 30%. So the information, which follows, is invaluable.

There are numerous books available to help you prepare for the GRE. The most helpful are printed by ETS, Princeton Review, (Cracking the GRE) and Kaplan. You will want to make sure there are plenty of practice tests and descriptive answer keys in any of those you purchase. We recommend taking as many different practice tests as time will allow. They should be timed to gauge your speed, but also untimed to learn what you do know. Test sections also can be practiced individually. Begin preparing for the GRE at least 2-3 months before you plan to take the exam.

A great first start to preparing is to take a practice test without any preparation just to see how you do. This will give you a starting point to identify weak areas and what you may need to focus on during your preparation. For every question you miss, you should always dissect the question to understand why you answered incorrectly. There are several reasons why you may miss a question and thus understanding what went wrong will help you organize yourself to attack those issues.

Most common reasons for missing questions:

1. Lack of knowledge: OK, so this is obvious, but the surprising thing is that you probably know much more than you realize you know. And, the key to doing well on the GRE is to make sure you use what you do know.

This is really the key to the whole exam, to graduate school, and research. There are many things that are unknown. The trick to making discoveries is to use what you do know to discover the unknown. This is also what ETS proposes that the GRE tests should do. However, without understanding this, students pressure themselves into feeling like they must know everything before the exam. At first glance, if the test-taker does not know the answer, it creates a great deal of anxiety and things only go downhill from there.

So, how do you increase your fund of knowledge 2-3 months before the exam? There are several strategies you can use for both the verbal and math sections. This is usually much

more important in the verbal section, because the quantitative section focuses on math skills that you had most likely in junior high school. So no new information needs to be learned, just refresh your skills and know how to use them.

There are 4 types of questions on the verbal section: Antonyms, Analogies, Reading Comprehension, and Sentence Completion. Much of students' success on the Antonyms and Analogies sections can be attributed to having an extensive vocabulary, but you can do well without being a literary genius. In fact you don't really need to know the meaning of 3000-4000 words to do well on this portion of the exam. It is more important for you to "sort of know" the meaning to a significant number of words than knowing the exact definition of words. Flash cards are helpful but they teach you to learn one word at a time. Set up a list of word families. Keep adding related words to the families. For example, all words that mean something related to friendliness or poverty or giving have other words that mean similar things or have some definition related to these words. The best prep books will provide you with lists of word families. Study those and if you want to use flash cards, by all means, use them, but color-code them to help you remember what other words they are associated with.

As mentioned above, the quantitative portion of the exam is really a review of math you had in grade school all the way up to maybe 8th or 9th grade. You should not have to learn any new material for this section of the exam. You should plan to review how to read a graph, know the basic geometry formulas, the Pythagorean theorem, functions with fractions, and solving word problems with algebraic equations and geometry. You can do well on this section merely by practicing problems and by avoiding the mistakes listed in items #2 and #3 below. Use the practice tests in the ETS GRE book and in the Princeton review book to familiarize yourself with the types of questions asked and practice going through solutions to these types of questions.

2. Trying to learn something while you are taking the exam: In the reading comprehension, you probably either do really well on these types of questions or do really poorly. There are some simple strategies for attacking the reading comprehension that will not only improve your score, but also dramatically reduce the amount of time you take to complete the questions about the passages. The single most important factor to remember on these questions is that you are not going to be tested on this information again. Your qualifying exams in graduate school will most likely not include a question comparing two different styles of poetry written by a single poet. So, do not try to learn this information. Surprisingly, there is no need for you to read the entire passage. In fact, I would encourage you to not even try unless it is really short. All well constructed essays start first with an outline including: I. Introductory paragraph (what the essay will be about), II. A conclusion paragraph (summary of the information provided and key conclusions about the data presented or discussed), and III. Several supporting paragraphs in the middle that make key points addressing the central hypothesis. (Keep this in mind for later on in the discussion of the analytical writing section). Another key thing to remember is each well-constructed paragraph has an introductory and a concluding sentence telling what the paragraph is about. So, if you read the first and last sentence of each paragraph, you should have a good idea of what each paragraph is

about. You can then work backwards to make an outline of what the essay is about. If you do this, you then in a matter of one-two minutes should have a guide as to what the essay is about and which paragraph you should be able to go to immediately to find the answer to the question that is asked. If you study the outline, it will also help answer questions related to the overall purpose of the passage. A quick review of the concluding paragraph will help you understand how the author likely feels about X. Since you would most probably re-read these paragraphs when answering the question anyway, there is no need to read it through in detail the first time. It takes practice to deconstruct a paragraph effectively, so PRACTICE.

3. Too much knowledge. Keep it simple! What???? I know. I just told you that you needed to work on having more knowledge, and now I'm telling you to know less. You must understand that this test is assessing your ability to solve problems with the information given. It is not telling you that you need to be an expert in poetry, social issues, or even polymer chemistry to do well. The general test is gauged for individuals who are planning to go to graduate school in any number of disciplines regardless of whether it is biochemistry, literature, mathematics, or sociology. You are not expected to be an expert in any of these areas only to have a basic level of knowledge of mathematical concepts and vocabulary. All of the information you need to solve a more complex problem is actually already there. You just have to use that. You do not have to bring in any outside knowledge of poetry or population genetics to do well on the reading comprehension or on more advanced graphs or word problems in the quantitative section. Just break everything down to its simplest form. Reduce complex paragraphs to an original outline to diagram the word problems in the quantitative section. Anything you can do to help you get a better grasp of the specific question being asked will help improve your score.
4. Rushing: This can be a result of anxiety and/or overconfidence. The math quantitative section, more than anything, assesses the test-taker's ability to walk him or herself through a problem assimilating the important information and disregarding the irrelevant and then solving the problem in a step-wise fashion. Understanding how the test is scored is a key step to understanding the best way to approach the test. Questions at the beginning of the exam are those (based on the research by the kind folks at ETS) that have proven to be answered correctly by 50% of the test takers. In other words, the above average test taker would mostly get them right. If you answer a certain percentage correctly, the computer then moves you to more difficult questions, namely those that only 30% of test takers answer correctly. If the test-taker answers all of those correctly, they move to even more difficult questions. If the majority of "the 500 level" questions are answered incorrectly, the questions move back down to questions answered correctly by about 40% of test takers. Incorrect answers at this point lead the test taker to questions that about 80% of all test takers answer correctly. This means of course that the questions are much easier if you miss the early ones. This also means that your test score will never have a chance to get back up in the higher score range. My point....you have to ace the first series of questions and that means....take your time, do not rush. You can always rush through the final questions if you have time b/c they count less towards the final score than the early ones (i.e. Providing you with questions that may

mean the difference between 650 and 670 vs. the initial questions which could mean the difference between 450 and 700.) This is true for both the verbal and quantitative sections, so BEWARE of problems that seem relatively easy.

5. Not practicing: Keep in mind that there is only a finite number of ways to ask any given question. The more exposure you have to these “tricky” questions, the more ready you are to step over the trip-wires that have been set for you. So, PRACTICE, PRACTICE, PRACTICE!!!!

ETS has done a significant amount of research with the test questions that earlier unfortunate test takers have missed. They know where people make their mistakes, and they are right there ready to give you that incorrect answer in the multiple choices listing, just to make it easy for you to make the same error. With any of the algebra problems and even many of the geometry problems, you can check your work or simplify problems by plugging in numbers for appropriate variables to determine if the outcome is correct. All of the practice books recommend that you use this strategy, instead of trying to solve problems purely variables alone. You can use two or three different sets of numbers to improve your confidence in the outcome. Rushing through and not working through the problems in this manner, can be costly.

6. Incompletely answering the question as a result of anxiety. Again, ETS knows that many people react to what they initially see, so test questions are written in such a way that students often jump to the conclusion that they know the question that is asked, but there may be one more step to defining the problem, and in fact a totally different question is posed. BEWARE of this tactic as this is a common mistake and you can bet that the incorrect partial answer to the question will be looming somewhere between points A & E.
7. Not writing enough on the Analytical Writing Section. This is the only portion of the exam that is graded by a real person, so while there are some key things the grader is looking for, however, it is still a person who can be influenced by the paucity of content. General organization of the essay is another key component of the grade, so use the guidelines listed above for constructing your paragraphs.
8. Not taking a stand in the Issue essay. There are two types of essays that test-takers must write during the analytical writing section. One is the Issue essay, where the writer first reads a statement about a particular issue. You are asked to agree or disagree with a given statement and to provide evidence to support your opinion or to dispute the other side of the issue. Writers frequently forget to state their opinion with clarity and thus lose points in this particular section.
9. The second type of essay is the Argument essay. In this section, you are given an essay that makes an argument about a particular issue. You must determine whether the author has logically developed the argument and supported that case. It is important to understand what the requirements of this section are in terms of the expectations and

specific points that the grader will be looking for. Make sure you read and consider the very specific expectations for this essay, which are discussed on the ETS website.

ETS has done their homework, so you must as well. Don't get the impression that I am teaching you to fool the test. But you should also not be a fool, because you can become a player by understanding what you are working with.

The personal statement:

Remember that an application to graduate school is not an application to medical school. Graduate admissions committees are a fairly hard-bitten bunch and are mostly skeptical of dramatic "conversions" because of the experience of nursing a sick relative. Compassion is an attribute, which hopefully motivates many of us, but although this trait may positively impact acceptance into medical school it can even have negative affect on a graduate school application. How often have we heard "medical school wannabee!" This immediately puts the admissions committees into a skeptical, hard probing mode.

Likewise for community service, if you have spent time tutoring or helping a science teacher, then this can be a big plus. But volunteering at old folk homes or delivering meals on wheels, while a noble endeavor, will not help your application in any way.

In a nutshell, the admissions committees are asking quite specific questions which you should address in the statement of purpose. How did you develop an interest in science/research? How sincere is your interest? Do you have a talent for this work? Are you motivated to stay the course? Have you provided some evidence that you have thought through everything very seriously and that an application to graduate school is not purely a "logical next step" to staying in school for a while longer? In describing your research experiences, first talk about the overall objective of that research and then describe the part that you did and how it fits in the overall picture of the main project. How well you describe your research and explain the results gives the reader an idea of how well you understood what you were doing and what you were trying to accomplish in the project.

Here is really an important point. If, during your undergraduate tenure, you have not done well in a science course, or if in one semester or over a whole year, your grades were not what you might hoped, then it is extremely important that you clearly and honestly explain the reasons for this weakness in your transcript. Perhaps an illness, a family emergency or some other valid reason was the cause for your not performing well. You still need to offer an explanation and indicate to the reader how you recognize the weakness and how you have tried to address it, by pointing out a better performance in the following upper level courses, etc. The reviewers of your application will quickly find a poor semester performance. You should not ignore this and simply hope the evidence will be overlooked. It won't. In fact, this will hurt you much more than admitting the problem and trying to explain what happened. Even an explanation such as "I was immature" is more positive than pretending it never occurred and hoping that the reviewer is careless enough not to notice it. You should be so lucky!

A couple of final points to help you write a convincing essay for your personal statement. This is not an exercise in creative writing....don't over dramatize for effect. This always deflates faster than an old party balloon. Do a spell-check, but remember computers aren't that smart, if you typed in a profoundly wrong word, but which is a real word, then the computer won't flag it

and you may end up embarrassed. So, read the document carefully to spell-check yourself. Finally, read the essay out loud. Listen for solecisms and be on the lookout for malapropisms. If a sentence doesn't sound quite right, rewrite it. Whatever you do, don't send in something you would be ashamed of, because the readers are every bit as critical as you should be. Finally, you should ask a faculty member for their critical assessment.

As a final note in this overview, do not use the personal statement as a witness to faith. One can be a good scientist equally as a believer or not, admission committees are well aware of this and do not give extra credit for such professions of zeal.

Recommendation letters:

There is nothing more important in your application than the recommendation letters, especially the letter from someone with whom you have done research. Research has shown that the best indicator of success in graduate programs is a strong, enthusiastic letter from a research advisor who has actually interacted with you and followed your progress with some degree of attention.

When you are applying to graduate school, the reviewers of your application want to measure your interest in research, capability for solving problems, ability in running different techniques motivation, preparation, inquisitiveness and finally your desire to succeed as a scientist. Your research mentor can very well evaluate these things. When you go for your summer research experience, do a very good job with full dedication in the lab. so that your research mentor is impressed with you, then at the end of the summer ask your summer research mentor if he/she will be able to write a positive recommendation for you when time comes for you to apply. If you have done a good job the mentor will be willing to write such a recommendation for you. At the time when you start applying, you should email your summer research mentor and ask if he/she is still willing to write a supportive letter on your behalf, give him/her a decent amount of time, because they are often very busy.

Now here is an important point to consider: Suppose your summer mentor says that he/she cannot give you a strong letter. First, find out why. It could be that they did not have much opportunity to see what you were doing. This is really a problem as you may well have, in fact, done a great job but it has not been recognized. And, there isn't very much you can do other than accept the fact that you made some strategic errors and more or less wasted the summer experience. You really must do your homework ahead of time and try to identify and avoid "absentee landlords". What can you do to help address this problem? Possibly you might discuss why there is a problem with your advisor and ask if you could get the person with whom you actually worked with in the lab to summarize your achievements and forward them to the PI. Then ask your mentor to explain in their letter why they were not present as much as they might have wished and to incorporate the support comments of their colleagues in a positive recommendation. This can work. What you should not do is to ask another student, or a technical assistant or a postdoc to write a letter on your behalf. This simply does not cut it and an admission committee will largely disregard it. So, if they ask for three letters, you have just lost 33% of your recommendation thrust!

One variation on this theme is that there is a danger that the mentor may not have paid sufficient attention to your efforts, or time may have blunted his/her recall. As a result, they may submit a bland "vanilla" recommendation. This is the kiss of death! Admissions committees have their antennae highly tuned to detect vanilla and they will lower their assessment of your standing

very substantially. You can (and should) avoid death by a “nice” recommendation. Incidentally, even if the PI thinks you were lazy, ineffectual and incompetent, he/she will usually find something “nice” to say about you, but it is the things not said which raise skeptical eyebrows! The solution then is as follows: When you are ready to ask for a supportive recommendation, writes your erstwhile mentor. Start off letting them know why you are writing. Then go on to indicate how valuable the research experience was, especially the interaction with and the advice received from (...). You should then outline the project and the results you obtained. Don't write a 50-page thesis, two or three succinct paragraphs will do the trick. Indicate any triumphs or new experiences (the all night sampling every Saturday evening, even though the experiment didn't quite work). Finally, summarize what you learned about the project and also about the research. In all likelihood much of your narrative will end up in the recommendation, so in essence you will end up writing much of the letter. So make it look good.

Of course another reason the PI may not be inclined to give a strong supporting letter is because they feel you do not deserve one. If you agree, based on your performance, that this is, unfortunately, a fair response to a lack of effort or commitment, you will not want to include this letter. This is a situation very much to be avoided, as admissions committees collective eyebrows will hit the ceiling if they do not find a letter from a research mentor. The way to avoid this nasty situation is to follow the strategies outlined above and work hard all summer, do lots of experiments, even if they don't necessarily work out.....and make sure you are seen to be working hard!

I cannot emphasize enough that admissions committees value above all, a strong letter from an advisor in whose lab you have worked. A strong letter will allude to dedication and commitment, a love of science, a wide encompassing interest in lab discovery, a cheerful friendly aspect and, trumping all else, the ability to work hard. A few successful experiments won't come amiss either.

Incidentally, if you are anticipating a strong letter then make sure that it gets sent! If your application does not have this critical letter then the assumption will be made that it is because it is insufficiently strong, even if in fact it merely reflects a dilatory faculty member! So, check with the admission folks to make sure that the promised letter of recommendation has been received. If it has not arrived yet, a gentle nudge by email, and then if necessary, by phone is called for.

The undergraduate transcript:

Every graduate school application requires that you submit an official copy of your transcript. Admissions committees focus on your performance in coursework, which is relevant to the area of future research. For example, if you are applying for the biomedical sciences they will scrutinize your grades in upper level biology and chemistry courses. So you may want to perform well in your upper level science courses. If for some reason your grade in a relevant course is less than stellar you should explain why in your personal statement (may be it was some illness or some other compelling circumstance).

Also, make sure to double check with your registrar's office to make sure that the transcript has been sent in a timely fashion. It is not inappropriate (and it is certainly nice) to contact the schools to which you are applying to make sure that it has been received.

Submission of the application:

Check everything one last time and then hit the "submit" button. You can expect prompt notification of the receipt of the application. After two weeks you should call to make sure all the letters of recommendation and the transcript have been received. If not, you cannot afford to procrastinate and you will have to get after the offending culprits. Polite emails, extravagant flower arrangements, a new Ferrari...whatever it takes!

So, what is happening now to your application? A prescreening committee is taking a first look at the applications. The prescreening committee could be a group of faculty, but more likely it is the chair of the admission committee or his/her staff assistant. They are basically applying a very coarse sieve to the applications looking for those who are manifestly unlikely to survive the admission committee's ministrations. They will catch applicants with very weak credentials, very poorly written personal statements, and total lack of any research in the area to which you are applying, and of course a statement of research interest outside of the recipient department. So if you indicate to a Biochemistry Department that you are dedicated to studying Ancient Sanskrit sex poetry, you probably won't make it past the initial screening.

If your application makes it past the initial screen then the dossier will pass along to the admissions committee, a group made up of faculty members from the program to which you applied. This group will read your application (along with a number of others whose applications are ready for review at this week's meeting). The group dissects the applications. They look hard at everything, but as mentioned above they are particularly interested in your personal statement and especially in the letter of recommendation from your faculty advisor with whom you have done meaningful research.

Depending on the school, about 20% of the applications will be dubbed worthy of further study. It's possible they may contact you to ask for more information, and this is usually when a very component (a recommendation letter?) has not been received. Mostly for this selected group they will want to go on the next step and invite you for a visit with a series of interviews.

At this point a position in the graduate program is yours to lose. The admissions committee is feeling pretty positive, but they want this to be combined by a successful interview visit. Certainly they wouldn't be shelling out lots of dough for airfare and hotels if they weren't hopeful you'd be accepted. In practice less than 20% of the applicants, to a good program get accepted, but 85-90% of the interview visitors end up with an offer. Not bad odds at all.

The interview

Let's say you have been invited for an interview. Congratulations, this is a good start; but you are not home safe yet! At this stage you will likely be interacting extensively with staff that will be scheduling your visit. The staff that run the admissions process are usually very dedicated, very anxious to make your visit a success and usually overworked. This offers you a great chance. If you are invariably courteous, helpful, respond to emails and phone messages almost

in a nanosecond, then the staff are going to like you, and they will invariably pass on to the program director what a nice person you are. This is no guarantee of admissions, but I can tell you it surely doesn't hurt. Arrogant behavior also gets noticed, by the way.

Most programs bring in a group (5-15 students at a time) together, usually over a Thursday-Sunday period. There will likely be several weekend dates to choose from and you will most probably be asked to choose. Ask to think on this and make sure there are no conflicts with your own academic program (exams and the like). Then get back to the staff promptly. Is there an advantage to visiting early or late? In general, it probably doesn't matter much, but on the basis of little convincing evidence, I would advise an earlier visit.

Make sure you read carefully the information they send you. Do they book the tickets, or do you? How do you get to the hotel, do they meet you or do you take other public transportation? Don't leave booking plane tickets until the last minute. They will suggest where and when they will meet you. Be there ahead of time.

Graduate students tend to wear jeans and sweatshirts in the lab as clothes get splattered with all kinds of stuff in the lab and so faculty are not surprised by sloppy outfits. However, this is a formal visit. What should you wear? This is not a wedding or a funeral so don't overdress, just be respectful. A tie and jacket with slacks is fine for a man, though the tie is dispensable. A relaxed suit, a dress or a blouse or cardigan and skirt or slacks are fine for women. Low cut tops or gaps in the middle should probably be avoided.

Prepare for the interview: You should be able to give a clear description of the research project on which you have worked in your undergraduate tenure. Be knowledgeable and have good conceptual and technical grasp of your research project. Be thorough, articulate and well practiced in describing your research so that you give a good account of your research project and you demonstrate that you have a good understanding of technical aspects of things you have worked with. Be articulate and perceptive and show that you are genuinely excited about science, highly motivated and knowledgeable about the research you have done. Read about the university, know the program well. Read the research work of scientists that you will interview with. Think of some good technical questions that you can ask your interviewers, show that you really enjoy talking about science. Be a person who comes up with some novel ideas, be engaging and curious. Demonstrate that you have passion and genuine enthusiasm and aptitude for science and that you are capable of an in-depth discussion, bright and intellectually curious, focused and that you are a well-prepared student. While answering questions, give insightful answers. Show a strong desire to get a graduate degree and dedication to pursue a career in biomedical research. Be committed to science. Be excited about scientific questions. Be engaging in your discussions and demonstrate creative thinking and persistence. Your enthusiastic and energetic personality will be very much liked by your interviewers who look for your sparks and enthusiasm. They look for your potential, motivation and intellect for your success in graduate school. If you have any contact with any of the graduate students or faculty at the institution you will be interviewing then talk to them beforehand. Try to find out the

expectations of the scientists from their graduate students at this school, how is the program set up, normally and how long it takes for a person to finish their PhD. It is good to be aware of these things before you land for an interview so that you feel comfortable and relaxed at the time of the interview.

Poster session:

Many institutions arrange for poster sessions at lunch hour on interview day so that the students who are interviewing can get a good feel of the work that is in progress in different labs. Make the most of this opportunity to visit as many posters as you can. Nobody is expecting you to come up with earth-shattering questions. This is an opportunity the school is providing to you to meet students in the program to find out their level of passion about their work, as well as a sample of the interesting projects, which are being pursued in their labs.

Dinner and social hour:

Many institutions have a dinner to honor the interviewing students. There will be several faculty and graduate students at these social situations. This is a low-key way of exchanging information and of finding out how the school works. If you have specific questions about a particular focus of interest, find a faculty member who can help. It doesn't matter whom you buttonhole, if someone can't answer your questions they will happily walk you over to someone who can.

From the students you can usually find out the real McCoy. They will advise you on everything, from choosing a lab to finding the best apartments as well as where are the best places to unwind. You certainly should not go home after the visit with any significant questions unanswered. The program will undoubtedly do its best to figure out what most of the questions might be, and provide the answers. However, if you still have a question which is important to you.....ask it.

Some do's and don'ts

Be engaged and engaging. Don't be loud and don't be too quiet or pushy. You probably shouldn't roll up with 10 lbs of metal hanging from your nose, and magenta and orange dyed hair in a Mohawk is probably not ideal hair styling. Your talents in the Don Juan department should certainly be held firmly under wraps. Imagine your mother in on the faculty there....you get the idea!

What should you do when you get home?

In general, you don't need to write thank you notes to program leaders or to interviewers. It won't hurt if you do, but although your mother might feel you should do it, it is not necessary. That said, if a support person went out of their way to help (recovered your late arriving suitcase?), then sure, drop them a line. If you struck up a great relationship with a faculty

member who is doing really neat stuff and seemed interested in talking more, by all means establish an interaction....it can't hurt and might even help

What happens after you leave?

Most programs of any worth will meet fairly soon after the interview visit. At this meeting they will decide, and make a final decision based on all the information available both from the application and the visit. Occasionally they may want additional information (updated transcripts) but this is rare.

Years ago in the event of a positive outcome, the next thing you would hear from the program would come in the form of a detailed offer letter. Nowadays, you very well get a brief email indicating you are in, and that a more formal and more detailed letter will arrive in the near future (usually by snail mail).

What now? The accepted policy (subscribed to by most graduate programs) is that a student holding one or several offers need make no commitment until April 15th. By the end of this day you have to have been in contact with your school of choice (and while not required, it is certainly courteous to inform the other school(s) of your negative decision). When you decline, most schools will write you a nice supporting letter, and likely ask where you will be going and quite possibly to give them some information on how you came to that decision. The information you give them will provide them with useful ideas for the future; they have been nice to you, so go ahead and respond to their query.

If you receive an offer and you have already decided this is where you want to go, then don't wait until April 15th. This helps the school organize its plans, especially in terms of dealing with a "wait" list. This is always appreciated.

The receipt of a formal offer may be the best time to respond and discuss any critical personal issues. If you have a significant other who is also looking at the same school then let the program director know. He/she won't be able to influence the decision of other departments or programs, but they may well be able to let you know how the other application is progressing. All things being equal, they might even be able to tip a decision in your favor. So, go ahead and pass the information along.

If you have a significant health issue which might require accommodation from the school, this is definitely the time to let them know and to see how creative they can be.