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PRE-MED MYTHS: GETTING INTO MEDICAL SCHOOL

An open letter to aspiring doctors

**From Michael McCullough MD, a former Stanford pre-med, now Emergency Medicine Physician
(Next 'Getting into Medical School' Session Tuesday 7:00 PM October 29, 2002. Kresge Auditorium)**

New Creative Summer and Year Time Jobs List Attached

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25 October 2002

Dear Stanford Pre-meds,

Greetings. This fall a new Stanford freshman class began with diverse backgrounds from around the globe. In contrast to your divergent histories many of you have similar goals: many to engineering, law, business, medicine. Six to eight hundred freshman are 'considering medicine,' in other words, almost half you are pre-med.

And if you follow a long trend, about 15-25% of your class will eventually apply to medical school. And the good news is the vast majority of you will be accepted, most to the nation's best medical schools. Stanford students do very well in this process.

As a "pre-med" many of you may fall prey to the same myths that past pre-meds, including myself, did when we were undergraduates at Stanford. Many of these myths promote undergraduates to needlessly drain time, life energy, and happiness. They are based in part on *a faulty assumption that college is like high school and that the approach which successfully put you into a competitive college will work again for medical school*. Premeds often swallow the myth that there is one 'right' way to get into medical school.

Left unchecked, this folklore creates anxiety in many and can rob from the joy inherent in being an undergraduate at Stanford. Added together these myths can lead to hundreds of wasted hours on pursuits which will neither benefit you as a medical school applicant, as a learner, as a person, nor as a doctor—many are counterproductive to all four. Some attitudes can actually dampen or kill an otherwise good medical school application.

In the worst-case scenario, some potentially fantastic doctors quit pursuing medicine, simply because they hit a wall in the classic Stanford pre-med process. This is a needless, and avoidable, loss. This is not to say that all eight hundred freshman 'pre-meds' ought to become doctors, but those who change their minds should do so for the right reasons.

I am now an "ER" doctor in the Stanford area, a local trauma center, which is something I say hesitantly because I have only been an attending physician for a short while, having graduated from medical school at UCSF, and recently from my Emergency medicine residency at Stanford. I have come also into contact with the new pre-meds through my work directing the Quest Scholars Program (where many of my staff and students targeting medical school) and SCOPE, a group which allows students to shadow doctors in the emergency room, pediatric clinics, and operating rooms. More recently, I created a 'sidekick' program where I work directly with a handful of undergraduates in the ER.

My interactions with these pre-meds have shown me the pre-med mythology is alive and well at Stanford. I hope to dispel some of these myths below and to keep some of you from wasting time and peace of mind in the way my friends and I did.

I will begin by confessing that when I entered Stanford as a freshman, the only profession I had "ruled out" was medicine. Pre-meds in my Stern dorm were too intense for me and appeared overly anxious—not a way I wanted to go through Stanford. I thought I had to give up enjoying college to be pre-med. I was wrong.

Being pre-med is to some extent hoop jumping, as much of what you will learn you will never use as a doctor. But not all hoops have to be jumped through. I found I could shed many of the “you’re supposed to do this or that” misconceptions and still apply successfully to medical school. I humbly offer a collection of observations below which I have gleaned from my own mistakes, from other doctors and medical residents, their mistakes, medical students I have known and taught at Stanford, Harvard, Yale, Johns Hopkins, UCLA, UCSD, UCD, Duke and UCSF, and from my friends who are past and present admissions committee members at UCSF, Harvard, Stanford and other medical schools. I begin with those myths most relevant to entering freshmen. I hope that some of this will prove useful to beginning pre-meds who are as confused as I was upon entering Stanford.

(Before I go on, this year I have three exciting new opportunities to tell you about. One research on opportunities for courage which have a meaningful impact on humanity and a chance to lead this project (contact me at micha@stanford.edu). Two, working with attending emergency room physicians in a local trauma center (Contact directors Jennifer Miller or Jeanette Mellinger, email: beagooddoctor@yahoo.com); three, a chance to have hands on work at a pediatric clinic in Katmandu Nepal for as short as two weeks and as long as a year (contact Director Liz Kwo email: lizkwo@stanford.edu). All these opportunities are fully outlined in the back of this text. If you are selected for any of them, it could go a long way to help you deciding if medicine is for you.)

I offer these observations not to give you ‘short-cuts,’ but rather in an attempt free you up from anxiety and to show you that you have a great deal more flexibility than you probably imagined in this process. If you use this flexibility wisely, integrating your genuine academic and life passions into the pre-med process, then you will be a stronger medical school applicant, enjoy life more, and be a better doctor.

I. PRE-MED MYTHS

Myth #1.

I NEED TO START TAKING THE PRE-MED CLASSES (SPECIFICALLY CHEM 31) NOW OR I WON’T BE ABLE TO FIT THEM IN BEFORE I APPLY TO MEDICAL SCHOOL.

This simply is not true. You could take only distribution requirements for two terms straight and complete your “pre-med requirements” in time for the MCAT and medical school. In short, if you want to wait on Chemistry 31, don’t worry about it. You might be better served by seeing if you really want to be a doctor first (see below). Some of the strongest pre-meds I know took no science classes their first two terms. Unless you are absolutely certain you want to be a doctor (see below) you might be better served spending this term investigating the profession first.

Take home point: You don’t have to take chemistry 31 your first term if you don’t want to, are unsure you want to be a doctor or just want to settle into Stanford. There is plenty of time to take it next term and it will in no way ‘hurt’ you to do so. If you think that you might perform better having had a chance to settle in to Stanford, it is probably even a good idea.

Myth #2.

IF I DON’T TAKE THE ABSOLUTELY HARDEST TRACK AT STANFORD, MEDICAL SCHOOLS WILL LOOK DOWN ON ME.

False. Taking the hardest track in every subject certainly helped you get into Stanford, but this doesn’t translate into medical school admissions. Tak-

ing the 20 series in math and physics is just fine. Medical schools don’t have the time or energy to diligently follow all of the courses offered at every college in the nation. As long as you do well in a moderately challenging course load, you will do fine. The key is to find your passion academically and pursue it—while still taking enough of the pre-med courses to score reasonably well on the MCAT.

Take home point: You are no longer in high school, and the rules are different.

Myth #3.

IF I DO REALLY WELL AS A FRESHMAN, IT WILL IMPRESS MEDICAL SCHOOLS.

Not really. Medical schools pay much more attention to the trends of your grades. Your freshman grades are not a great indicator of your medical school performance. Your grades will, however, become increasingly more important until you actually apply to medical school. Naturally, it would be better to do well than to do poorly as a freshman, but your overall and science GPA is more important.

Much to my chagrin at the time, I didn’t even get one ‘A’ my first term at Stanford, and I ended the year with a 3.1 GPA. But I was still eventually accepted to every medical school I applied to since I did consistently better in subsequent years.

Take home point: Don’t panic if you have adjustment problems the first term at Stanford. Medical schools understand this. (This is actually a take home point for any professional school.)

Myth # 4.
IF I TAKE A LOT OF CLASSES PER TERM AND DON'T DO AS WELL, THEN MEDICAL SCHOOLS WILL TAKE INTO ACCOUNT THAT I TOOK A HEAVY LOAD.

False. There is no doubt that it is better to have a higher GPA with an average course load than an average or low GPA with a heavy class load.

On the AMCAS (universal medical school application) form it is difficult to tease out what classes were taken together. Few medical school admissions officers will have or take the time to tally how many units you took during individual terms.

Take home point: Torturing yourself academically as a freshman won't win any points with medical schools, won't impress your classmates, and can easily backfire (and backfires more often than not).

Myth # 5.
IF I TAKE OVER TWENTY UNITS MY FIRST TERM IT WILL IMPRESS MEDICAL SCHOOLS.

False. See above. Taking too many classes may actually limit your ability to sink into Stanford and take full advantage of many non-class related opportunities—besides being a huge academic risk. I have even seen new freshman overload themselves academically in an attempt to be the “best of the best” at Stanford. This is not a recommended approach.

Take home point: Leave the “best of the best” mentality behind you.

Myth #6.
THERE IS ONE “TRACK” TO MEDICAL SCHOOL.

False. There is no one ‘track.’ Some pre-meds spend a great deal of energy trying to figure out what they are “supposed to do” to go to medical school. Particularly among successful applicants, the paths to medical school are quite varied. Providing one has a strong academic preparation and moderately decent MCAT scores, more original applicants often catch more attention from admissions officers than those who put more energy into what they thought they should look like as an applicant than remembering to explore Stanford's many opportunities for academic and inner growth.

Take home point: There are many paths to becoming a physician. Find the one that is best for you.

Myth #7.
I HAVE TO TAKE PRE-MED CLASSES IN SEQUENCE.

False. There is no requirement or expectation from any medical school that you take the same classes at the same time as everyone else, and it won't “look bad” if you don't.

Take home point: There are many paths to becoming a physician. Find the one that is best for you.

Myth #8.
I MUST TAKE EVERY SINGLE PRE-MED REQUIREMENT BEFORE I APPLY TO MEDICAL SCHOOL.

False. All medical school applications contain a provision for classes which you will take before enrolling, but after applying to medical school. There is no penalty for doing this, especially if you filled the gaps with other challenging and enriching classes that make you a more interesting applicant. Examples of classes which can be postponed in this fashion include the chemistry labs and biology 44x and 44y. Once you have been accepted to medical schools you may not have to take them at all, especially if you have taken more interesting equivalents (see below). Medical schools can waive or substitute requirements. Or, at worst you can take your remaining pre-med classes pass/fail once you have been accepted to a medical school. It would be wise to take most of the pre-med classes actually pertinent to the MCAT before taking the exam as you need to know the information anyway.

Take home point: You don't have to take all of the pre-med classes before applying. It will not enhance your application to cram them all in before you apply.

Myth #9.
I ABSOLUTELY MUST TAKE EVERY SINGLE PRE-MED REQUIREMENT IN ORDER TO APPLY TO MEDICAL SCHOOL.

Medical schools can be more flexible than most pre-meds think. Pre-med ‘requirements’ are really guidelines, which medical schools can, and sometimes do, apply flexibly. You may not even have to take your least favorite pre-med ‘requirements’ if you postpone them until your senior year after you have already been accepted to medical schools, or you can simply take them pass/fail at this time.

At this juncture, medical schools have the option to waive requirements if they feel that your academic preparation is sufficient. Even if you are required to take these remaining classes, you can take them pass/fail if you like. This will free up class time for intellectual pursuits and other classes which you find personally enriching—and this can easily make you a stronger applicant simultaneously.

One undergraduate I knew who was accepted to every medical school he applied to (and later also won a Rhodes Scholarship), never took chemistry 31, 36, 130, 135 physics 23, or biology 44x or 44y. (He was accepted to the schools before winning the Rhodes). He took other upper division classes instead in both science and non-science subjects (and did well in the pre-med classes he did take). Interestingly, he said

that he would have actually been a worse applicant if he had tried to fit in all the classic requirements. Upper division classes often teach you more, bring you in to closer contact with the professor, are not graded on a curve, have fewer pre-meds, are less intense, and can be tailored to your interests. Many of my fellow students at UCSF, and medical students I know at Harvard and Stanford, also charted their own paths and freed themselves from the standard pre-med grind.

Medical schools usually require two years of chemistry with lab, one year of physics with lab, and one year of biology with lab. However, the guidelines do not stipulate how these requirements are to be fulfilled. You are often free to substitute classes in creative ways. For example, the above undergraduate took vertebrate biology lab and neuro-anatomy lab in place of biology 44x and 44y. In place of physics 23, he took the physics of nuclear weapons (for which he took the option of writing term paper on the medical implications of nuclear war instead of taking the final exam). Sometimes working in a lab can substitute for a lab class itself. The point is there is more room for creativity in scheduling than it might appear. You can certainly take the classic pathway, but don't be afraid to branch out.

To be clear, there is no substitute for hard work. But if there are science classes that interest you more than the classic pathway, and you have the basic concepts required for the MCAT, then you should consider following your scientific curiosity.

The pre-med 'requirements' at Stanford were created in an attempt to satisfy the general pre-med requirements. Different colleges have different classes that do the same thing, and there are certainly non-traditional classes at Stanford, and other schools, which also meet the requirements.

Take home point: you do not need to take every classic pre-med class at Stanford and can certainly substitute some of the standard requirements for other science classes you may enjoy more.

**Myth #10.
I SHOULD TAKE ALL OF MY PRE-MED
CLASSES AT STANFORD BECAUSE IT WILL
LOOK BETTER TO THE MEDICAL SCHOOLS.**

This is not true either. Many successful medical school applicants at the nation's best medical schools took many of their pre-med requirements at community college in the summer or other local schools. By taking some of the basics elsewhere, you can create more academic freedom to take some of the truly amazing courses that Stanford offers both in the sciences and non-sciences. The introductory classes are taught very well here, but they can also be learned elsewhere. Many upper division classes in all departments are uniquely taught well at Stanford.

The only caveat to this is that it might look strange if you did poorly in all of your science classes at Stanford and then did well in an 'easier' school.

However, if you do fairly well at Stanford, it will not appear strange that you took some basic coursework elsewhere to save academic time and/or money.

Take home point: You will not be penalized for taking some of your introductory pre-med classes elsewhere and this can free you up to take classes which are uniquely taught well at Stanford.

**Myth #11.
I AM ALWAYS BEST OFF TAKING ALL MY
INTRODUCTORY PRE-MED CLASSES AT
STANFORD.**

False. It is true that it is more difficult to get an A in a Stanford pre-med class than it is at most other schools. This is easier to understand since you are graded on a curve with some of America's best students. Consequently, an 'A' at Stanford can mean a lot, particularly in science classes with a 'C' mean.

However, most of you won't get A's in every class. And because of this, some of you certainly would have had higher GPA's elsewhere. It is also true that medical school know this and will take it into account.

However, this 'forgiveness factor' is not infinite. Getting a 4.0 in your pre-med requirements at a junior college will certainly make you a stronger applicant than a 3.5 in your pre-med requirements at Stanford. One admissions officer I spoke with estimated the bump factor of attending a school like Harvard or Stanford to be between 0.3 and 0.5 of a grade point.

For some of you, an 'A' in high school could be achieved through hard work and determination. This is not necessarily true of the pre-med classes at Stanford. Everyone is trying hard. They are all smart. And the classes can be very difficult.

The upshot of all of this is that some of you may be more successful applying to medical school by taking most of your pre-med classes elsewhere. And I have certainly known many applicants who would have been more successful applying to medical school if they had pursued their academic passions at Stanford and took their pre-med classes elsewhere, either in summers or in a year off. I have also known students at Stanford—who would have been fantastic physicians—who quit the pre-med process in frustration without exploring this option. If you want to be a doctor and are struggling at Stanford, this option is worth exploring.

I say this with some hesitancy because I know it may cause controversy and it is difficult to know who would be statistically better off focusing their pre-med energies at a less competitive institution. I should also add, however, that all such 'core' classes cover the material required both for the MCAT and to be a good doctor.

This in no way is meant to imply you made the wrong choice by coming to Stanford if you are a pre-med. Quite the contrary, Stanford may be the best place in the country for pre-meds to attend college. You can attain a first-rate education in any field and

simultaneously approach your pre-med curriculum with more flexibility and more creativity than at nearly any other university.

Take home point: Consider taking some of your pre-med classes elsewhere if you are hitting a wall here. Many successful medical school applicants have done this.

Myth #12.

IF I DON'T GO STRAIGHT THROUGH COLLEGE I WILL APPEAR WEAK TO MEDICAL SCHOOLS.

False. Very false. If you take time off you will likely even appear more well-rounded to the nation's top-flight medical schools. Students with some life experience often work better with patients. Medical schools know this and very often even prefer mature students with more life experience. Life experience also makes you a more interesting applicant.

The average entering medical student at UCSF is at least 24 years old, as it is at Harvard and Stanford medical schools. (In contrast, 'straight through' graduate is 21-22.) It is often easier to strengthen one's extracurricular activities by taking extra time either in or after college, or by stopping out. In fact, the strongest applicants are usually the ones who do take extra time to enrich both their lives and applications.

I had to take off five terms at Stanford for the simple reason that I could not pay for them. But using these terms to continue to grow as a student and person I greatly enhanced my application, and had more time to smell the roses along the way. In short, if I had been able to pay for school and go straight through I would have been a weaker medical school applicant.

Many of my fellow medical residents at the Stanford hospital who went straight through Stanford to medical school lament that they didn't have enough time to be young. That time won't appear magically when you are done with residency, have a family and a mortgage. Many medical students and doctors I know avoided burnout as an undergraduate by spacing out their education. No medical school frowns on this. Most good ones encourage it.

Take home point: Don't be afraid to take off time, especially if you use it meaningfully. It won't 'look bad' and in reality will enhance your application if used wisely.

Myth # 13.

THE BEST PERIOD TO TAKE OFF TIME IS BETWEEN MY UNDERGRADUATE YEARS AND MEDICAL SCHOOL.

False. There are several advantages to taking off time while you are in college rather than waiting until you have graduated. Time taken off during school can be applied toward graduation in many creative ways: work toward an honors thesis, directed readings,

research, special projects, and internships. Often, the credit can be reflected when you are back in school. Some internships are directed solely toward undergraduates—when you graduate you can't get them. Time off can also be even used for MCAT preparation. (Preparing for the MCAT and midterms simultaneously during the spring of your junior year can be onerous.)

Take home point: Don't be afraid to stop out at Stanford, particularly for meaningful activities, research, MCAT preparation, or travel. It can tremendously enhance your application and prevent burnout.

Myth # 14.

IF I DROP A CLASS, THEN I AM WEAK.

False. If you drop a class, it may mean you (1) have the courage to take academic risks, (2) had gotten all you wanted to out of the class, or (3) you may just be human. If you routinely have to drop half your classes to make it through school then medical school may be difficult for you. One or two per year may just indicate that you were prudent. This isn't high school. When it comes time to apply to medical schools, no one will 'know,' and no one will care (so long as you drop in time).

I tormented myself over dropping calculus 42 my freshman year, every minute of my self-flagellation was wasted and evidence that I hadn't grown up.

Every student has a difficult term or two, especially at first. Don't worry if you have to lighten your load

Take home point: Don't be afraid to drop a class or two while at Stanford, especially at the beginning.

Myth #15.

'I HAVE TO BE A GENIUS TO BE A DOCTOR.'

False. Few doctors are geniuses, and 'genius' doctors often can't relate to patients. Many doctors couldn't have, or didn't, get into Stanford as undergraduates. You did. If you were able to intellectually handle advanced or AP classes in high school, you certainly have the baseline intellectual requirement to become a physician. The rest is just work, determination, memorization and compassion.

If you do hit a wall in the pre-med process here, it does not mean that you shouldn't be a doctor; it simply means that perhaps the classic pathway to medical school at Stanford isn't for you. It wasn't for me either. I didn't enter being pre-med until my junior year because I hated the 'pre-med' culture here so much. I had swallowed too many of these pre-med myths myself.

Take home point: If you are at Stanford and can work hard, you are smart enough to be an outstanding doctor.

Myth # 16.

I WON'T KNOW IF I AM MAKING THE RIGHT DECISION ON BECOMING A DOCTOR UNTIL I GET INTO MEDICAL SCHOOL.

False. Medical school won't really tell you if you made the right decision either. The first two years are just more coursework and the last two years, while clinically focused, do not let you fully appreciate medical practice.

You ought to know more about the medical profession before you devote your once in-a-life-time \$135,000 Stanford education to it. More than one medical resident has regretted their decision—after 8-10 years of education (and an *average* \$90,000 educational debt; others graduate owing as much as \$200,000). As a profession, medicine has the highest rate of suicide, depression, drug abuse, alcoholism and divorce. Recent surveys show that a little over half of physicians would go into a different profession if they had it to do over again.

Many medical and surgical residents never really investigated medicine before they entered, relying instead on public perceptions of what is probably the most rapidly evolving of all professions. There are as many unhappy doctors as happy ones. You should find soon if the sacrifice is worth it to you.

One doctor suggested to me that you all should spend a 36-hour day with a resident on call to know what you're getting into. The 'residency' is the 3-10 years you will spend after medical school working 70-115 hours/week training in one field. You will earn \$25,000-\$35,000/year during this time and have almost no free time off.

While the work is arduous, there is no other profession where, even in the training, you can deliver babies, hold a living heart, or comfort a frightened child as she goes off to surgery. You will see the best and the worst in human nature and directly witness the consequences of life choices. You will partake the full range of joy and suffering, integrally involved in both. No other profession affords you the privilege of helping people in such a profound and simultaneously hands-on way.

Few professions give you this window into humanity, and few will require you sacrifice more of your young adulthood and lifeblood for the privilege of training to do so.

Take home point: If you want to know if medicine is for you, spend time with doctors and in hospitals (see below). Just being a pre-med won't tell you anything about medicine.

Myth # 17. THE MOST IMPORTANT THING IS WHERE I GET INTO MEDICAL SCHOOL.

False. The most 'important thing' in applying for residency is how well you do *in* medical school, specifically in your third year of medical school, not which school you went to.

At this stage there are few exams and you are subjectively evaluated on your ability to help with patients and function on a medical team. *In short, clinical skills and people skills are far more important to eventual success in medical school, residency selection, and doctoring than written exam skills or where you attended school.*

At the beginning of their fourth year, medical school students apply to medical residencies. (This is referred to as the "match" where a complex algorithm matches applicants and residencies with only one program.) Clinical performance far outweighs both the school they attend and the performance on pre-clinical coursework. Statistically speaking, it is better to be one of the best students at an average medical school than an average student at one of the best medical schools. (Note, the relative equality of medical schools is not true for law and business school where the school attended is much more important.)

For more on this, read an excellent book called "Getting Into a Residency," by Iserson. It is short and ought to be required reading for first year medical students.

The take home point: you can get into one of the nations most competitive residency spots even if you don't attend one of the top five medical schools. Conversely, almost every year at Harvard and UCSF there are medical students who are not offered a job anywhere on their wish list.

Myth #18. THE MOST IMPORTANT PART OF MY APPLICATION IS MY PRE-MED GRADES.

To some extent this is true. Granted, academic preparation as evidenced by your grades is the most important factor on your application (about 35%-40%). But many pre-meds shortsightedly neglect the other aspects of their application.

Your application will also consist of letters of recommendation, a personal essay, an activities list, an MCAT score, and an interview. All of these deserve your attention.

On class work you will be forced to spend thousands of hours in lecture, writing papers, reading, learning, and preparing for exams. Pre-meds around the country routinely underestimate the importance of other aspects of their application. A good personal essay, for instance, should take 50-100 hours.

To get into the nation's very best medical schools, you should do some type of research (not necessarily lab research) and show evidence of meaningful public service or other activities. At all medical schools, these activities will enhance your application (note: they need only be done before you apply, not necessarily during your undergraduate terms.)

Again, the personal essay is worth at least 100 hours, a typical pre-med spends twenty, or less. The MCAT is worth focusing on too (which is why I suggest stopping out during the MCAT term). Some pre-

meds don't bother getting to know any of their professors. Their references will basically be: "this student took my class and got an A." Still other pre-meds never practice their interview skills or even spend 2-3 hours learning about the school they are interviewing with (expecting it to come 'naturally'). More than one 4.0 pre-med has been baffled when classmates with lower grades were more successful in applying to medical school. Don't let this happen to you.

Do spend a lot of time writing a thoughtful essay, get to know your professors, spend time on meaningful extra-curricular activities (which is easier if you take a term or two off), prepare for the MCAT, research the schools you are interviewing at before you go, practice your interview skills. Some pre-meds spend less time on these activities than on one set of final exams.

Take home point: Don't ignore the other aspects of your application.

Myth # 19.

MY PRE-MED ADVISOR CAN ANSWER ALL OF MY QUESTIONS.

False. Stanford has one of the best pre-med advising systems in the country with extremely dedicated and energetic volunteers. However, since many of them are only two to three years ahead of you in the pre-med process, it may be difficult for them to appreciate hurdles they themselves still have to face. They may not be aware of all the opportunities that you all have (including them) to navigate the pre-med process.

Take home point: Pre-med advisors are excellent sources of information, but it is useful to supplement your questions with input from successful medical school applicants (seniors this spring), medical students (particularly those who went to Stanford), medical and surgical residents or even doctors.

Myth #20.

THE HIGHER I SCORE ON THE MCAT THE BETTER.

This is one myth that has some basis to it, but is not absolutely true. If you score within the general range for your target school, you have passed a threshold after which other factors will usually have a stronger influence on your application. The SAT is much more linear than the MCAT. The MCAT is much more of a 'threshold' test. If you get above a certain score, which is usually that schools average, you are usually fine. This is true because multiple research studies (of which all medical schools are aware) have demonstrated that there is no correlation between extremely high MCAT scores and being a good doctor.

Take home point: Aim to do well on the MCAT, but you don't have to be perfect.

Myth #21.

BETTER PRE-MED GRADES MAKE ME A BETTER PHYSICIAN.

False. Good undergraduate grades have some correlation to an applicants' success in applying to medical school and performance in pre-clinical medical school courses. But grades bear no statistical relationship to one's quality as a physician or clinical performance. For that matter, neither do MCAT scores. This question has been well studied. However, it is true that the better you do academically, the stronger you will be as a medical school applicant. Still, some of the nations best "pre-meds" bomb in medical school where people skills are more important than exam/memorization skills.

Take home point: In short, you can be an excellent physician even if you aren't a good exam taker.

Myth #22.

BAD GRADES MAKE ME A BAD PERSON. GOOD GRADES MAKE ME A GOOD PERSON.

Obviously not true. I have heard the following from more than one pre-med advisee: "when I don't do well in school I don't feel like a good person." This approach to medicine can, and does, give people ulcers. I believe that it is this marriage of self-esteem with grade performance that makes many pre-meds so miserable (and medical students for that matter). Albert Einstein, Bill Gates, Winston Churchill, Thomas Edison, and Mother Theresa all had something in common: they didn't do well in school.

Take home point: Don't rely on a grade point average to prop up your sense of self.

Myth # 23.

THE HIGHER THE MEAN ON AN EXAM, THE EASIER IT IS TO GET AN "A."

From a simple math standpoint, this isn't true. Most science classes at Stanford are graded on a curve, meaning there will be a set percentage of A's. If the mean is 30% and you get a 50%, you just earned an "A." Conversely, if the mean is 90%, you will need to get near a perfect score to get an A. Figure out what style of learning you like. Some people like classes heavy on memorization; others do well with classes oriented on theory. Stanford has both types.

Take home point: Figure out what style of learning you like best and tailor your class selection to it.

Myth #24.

I NEED TO MAJOR IN BIOLOGY OR SOME OTHER SCIENCE.

False. You have to complete enough of the pre-med science requirements and other coursework to demonstrate a challenging curriculum and to prepare for the MCAT. Other than that, you can major in anything. Moreover, non 'pre-med' major classes are often

less tense, less grade focused (by your fellow majors, and more enjoyable.

The bottom line questions regarding academic requirements is, 'will this candidate be able to handle medical school.' You can certainly demonstrate this by majoring in something that you really like. Whether that happens to be biology, chemistry, poetry or history, that is up to you. If you are passionate about your work, you are much more likely to learn, get better grades, be a happier person, get better rec letters, and eventually a better physician. I personally love science and had a science focused human biology major. One of the reasons I was able to keep my love for science was that I replaced 'pre-med' weeder courses for upper division classes when it made sense. But if you personally don't love science, you are probably better off as a pre-med majoring in a subject in which you are passionate. Medical schools do not want to be filled with science majors

I have known many successful pre-meds to actually take the bulk of their pre-med classes after college, or even all of them. In fact, that can be a great way to be pre-med. As long as you take enough science classes to prove that you can survive in medical schools, you can major in anything you want.

Clearly, given a good G.P.A. and MCAT scores, the more interesting you are, the better applicant you will be.

Take home point: Major in the field that interests you, non-science or science, while still completing a threshold of pre-med science requirements.

Myth #25.

TAKING THE BIOLOGY CORE WILL MAKE ME A STRONGER APPLICANT TO MEDICAL SCHOOL THAN TAKING THE HUMAN BIOLOGY CORE.

False. The medical school success rates of the two cores are similar. The biology core obviously does delve into straight biology more thoroughly than the human biology core does. In exchange for this, the human biology core gives you a broader understanding of the basic themes of many sciences including economics, sociology, psychology, anthropology and others. I should also add my own bias: I majored in human biology, and loved it.

In biology you are required to take all of the basic pre-med requirements since they are also degree requirements. Human biology gives pre-meds more of a chance to design their pre-med curriculum. In short, it is easier as a pre-med to be flexible majoring in human biology.

On the other hand, the biology major requires fewer credits than the human biology major, and some people find it easier to double major with biology than human biology. (However, I am not aware that this improves application success). I have been told by several of my advisees that the grading curves are pres-

ently stricter in the biology core, meaning there are fewer A's. This is always in flux.

Both biology cores teach you more than enough to take the MCAT and be a good doctor.

Take home point: The biology core and the human biology core have equal success rates for medical school applications. Choose the one which suits your interests and need for flexibility.

Myth #26.

MEDICAL SCHOOLS WON'T LOOK AT ME IF I DON'T DO LAB RESEARCH.

False. Statistically speaking, you are very unlikely to end up doing lab research as a doctor. If you like research, pursue it with passion. If you don't, there are many other extracurricular activities which are equally as strong. You don't need to do research. If your passion lies in other areas, it is likely to benefit you more as a person and as a medical school applicant.

There are a few research oriented medical schools which especially like a research background. However, even at these schools the research can be in almost any field and need not be bench work.

Take home point: If you don't really like the lab, don't spend your undergraduate years working with test tubes.

Myth # 27.

I WILL USE WHAT I LEARN AS A PRE-MED AS A PHYSICIAN.

You will unfortunately use very little of what you learn in your -premed requirements outside of the basic scientific principles from chemistry, math, and physics at approximately the level covered in AP high school courses.

Take home point: Pre-med classes don't give you any flavor for medicine.

Myth # 28.

IF I DON'T DO WELL IN MY PRE-MED CLASSES AT STANFORD, I SHOULD QUIT BEING PRE-MED.

No way. If you want to be a doctor, be one. Not doing well as a pre-med—particularly in a school as competitive as Stanford—does not mean that you would not make a superb physician. It doesn't even mean that you won't do well in medical school—where clinical performance is paramount. It does not mean you can't eventually get one of the nations best residencies. Not doing well in your pre-med classes at Stanford simply means you are not doing well in your pre-med classes at Stanford.

It also means you need to figure out a different path. Find your own path. If you are hitting a wall at Stanford, then take a pause and regroup. Figure out why.

Providing you have a work ethic, if you made it to Stanford, you ought to be able to become a doctor. Perhaps you should take your pre-med requirements elsewhere. Perhaps you need to space out your extra-curricular during terms off in order to focus on classes during school. Maybe you should take fewer classes with grade-paranoid pre-meds. Maybe you can take different science classes. Maybe you need classes that focus on theory rather than memorization, or vice versa. Some science classes even allow papers in place of exams. Find your own way. The classic Stanford system won't work for everyone. All medical schools realize this. You can prove you are a strong applicant by a hundred different routes.

My route was flat out lucky. By becoming a pre-med late (in my junior year when I knew how to take exams) and by having to quit school four terms for work for money (when I got interesting jobs and could prepare for the MCAT), I became a much stronger applicant.

My alternative path eventually brought me acceptance at every medical school I applied to. But if I had been a 'classic' pre-med, I may not have even made it to medical school, certainly not UCSF. In short, I was forced by circumstances to abandon many pre-med myths, which greatly enhanced my application. You can abandon the myths by choice.

Myth # 29.

I NEED SCHOLASTIC OR MEDICAL SCHOOL SUCCESS TO BE HAPPY.

Hopefully you will not fall into this trap. The only person I ever knew with an absolutely flawless academic resume was miserable (4.0, near perfect MCATS, perfect medical school performance). I am not saying that success makes you miserable, but needing academic success to be happy, kind, or joyful will only keep you as happy as your next A. If academic success were enough to make you happy, your exemplary high school performance would already have left you with unshakable self-confidence.

An inner joy untouched by pre-med swings combined with superlative outer performance is obviously a powerful combination, but sometimes even more so if they are not linked together.

Take Home Point: Grades can't make you happy or sad if you don't let them.

II. THINGS TO DO IF YOU WANT TO BE PRE-MED:

- **MAKE SURE YOU REALLY WANT TO BE A DOCTOR.** Pre-meds spend several thousand hours preparing to apply to medical school. But most spend minimal or no hours investigating the field itself. This is shortsighted. Before running the pre-med gauntlet, you better make sure that you can tolerate medical school and residency and like being a doctor. A recent survey demonstrated that more than half of physicians wouldn't do it again given a choice.

There are many ways to confirm your interest in medicine (see below): spending time in hospitals, with doctors, or even engaged in clinical work. I even have known undergraduates to volunteer in overseas medical clinics where they confirmed their interest in medicine by being directly involved in clinical care (helping deliver babies etc.).
- **SPEND TIME WITH PHYSICIANS.** The alumni binder is full of doctors who have volunteered for this purpose. Many of them haven't even had one call.

When I was an undergraduate I used to go into emergency rooms all over the Bay area and just ask to observe. Fifty percent of the time the answer was yes. Be creative, and be persistent. Answer the question: do I really want to be a doctor? Start with the phone book if you must.
- **FIND CLINICAL EXPERIENCES.** I have recently helped start several undergraduates start the 'Scope' program and which lets undergraduates volunteer in emergency rooms and a project which allows undergraduates hands-on work in Nepal.

These are excellent clinical experiences, but there are certainly others. Find them See the end of this handout for other pre-med opportunities and contact information.
- **FIND A MENTOR WHO IS A DOCTOR OR AT LEAST A MEDICAL STUDENT.** The pre-med advising at Stanford is excellent. However, often the pre-med advisors are only two or three years further in the process than you are. Consequently, you may benefit from talking to people who are further along in the process.
- **DEVELOP YOUR PEOPLE SKILLS IN COLLEGE.** If you cannot relate to people, you cannot be a good doctor. Learn to listen, to empathize, and pick up non-verbal clues. Ninety percent of medical diagnosis is a good medical interview.
- **LOOK AT THE AMCAS APPLICATION NOW.** The sum of your college and life experiences will eventually be filtered down to one grade sheet summarizing all your academic activity, a personal essay, a brief space for activities, and three letters of recommendation. You should look at the application early to visualize how your application will fit together as you go through school.
- **DO NOT FOCUS ON GRADES TO THE EXCLUSION OF OTHER ASPECTS OF YOUR APPLICATION.** Spend a couple months writing a good essay. Don't put your letter of recommendations off to the last minute. Don't overload your MCAT term, or even consider stopping out to focus on your application. Stopping out and doing something interesting can really enhance your application.
- **GET TO KNOW YOUR PROFESSORS.** Professors are one of the most underutilized resources on campus. With few exceptions, professors like students, but you have to show initiative. One good way to do this is simply to visit office hours, which often go unattended. This is an incredible opportunity to talk to national experts, for no additional cost, about your class work or even just your areas of interest. Many of the questions I asked in office hours had little to do with the class work at hand, but were an attempt to answer childhood questions I had about various aspects of our world. Genuine curiosity is difficult to resist.

If you get to know your professors you will learn more, enjoy school more, broaden your contacts and give your teachers a real basis on which to support your application to medical school. If you bring genuine curiosity to the office hours with you, you enrich their day too. It's a win, win, win scenario which most students pass up.
- **IF YOU PURSUE RESEARCH, PURSUE RESEARCH WHICH INTERESTS YOU.** Try to get it published if you can. Simple participation in research is like joining a club in high school.
- **DEVELOP PUBLIC SPEAKING SKILLS.** Many of the hundred or so hours you work a week as a resident are spent communicating with colleagues and patients. The better you are at speaking and listening, the better doctor you will be. I also suggest practicing interview questions with friends on videotape when you reach the medical school interview stage. It really helps.

- **BE CREATIVE ABOUT YOUR WORK STUDY WORK.** For those of you who qualify for work-study, try to leverage this into interesting employment. Your employer need only pay a fraction (12%-25%) of your salary.
- **DEVELOP WRITING SKILLS.** The better you can write the better doctor you will be and the better application you will write. The better your life will be generally.
- **RELAX A LITTLE BIT.** Too much intensity can make you miserable. If it spills over into the interview, it will hurt your application. If it spills over into your medical practice, it can compromise your patients.
If you are at Stanford you are very likely to get into a great school anyway. In a typical year, of the 300 pre-meds or so at Stanford, about 20 go to UCSF, 20 will go to Stanford, and 5 each will go to Harvard, Yale, and Johns Hopkins. Many of you will go to other excellent University of California and private schools. All but a handful of you will get in the first time you apply. Relax. The success of past Stanford students like you is a better predictor of your success than the sheer number of people who apply and enroll in medical school from around the country. Moreover, you can get into the nations best residencies from an 'average' medical school, providing you do well there. Again, how you perform in medical school is far more important than which school you attend.
- **HELP YOUR FELLOW PRE-MEDS.** Even though most pre-med classes are graded on curves, there is no class so small that helping a pre-med in need will somehow compromise you. Quite the opposite. The best way to learn is to teach. Medicine is as much an art of cooperation with other doctors as it is with the patient. Working together will make college a more enjoyable experience, it will make medical school a more enjoyable experience, will allow you to survive in residency, and thrive in medical practice.
- **RETAIN YOUR HUMANITY.** If you grow to require an 'A' to be happy in life, you will eventually be miserable. I am not suggesting to aim for B's, just not to tie your joy to the outcome. Pre-meds who do not realize that happiness is a choice and not a consequence of circumstance are hopping onto a roller coaster that they will never get off.
A Rhodes scholar medical student I knew with a perfect pre-med resume committed suicide --- 4.0 in college, near perfect MCAT scores, then high honors in every clinical rotation in Harvard Medical School (something never accomplished before). He was afflicted with what I call success addiction. And success addiction, like any other addiction, can ruin your life and the joy flowing from it.

III. WAYS TO BE A STRONG PRE-MED AND ENJOY LEARNING AND STANFORD ALL THE MORE:

- **CONSIDER AUDITING EXTRA CLASSES RATHER THAN TAKING THEM FOR A GRADE.** Stanford affords you this wonderful learning option. Some of my favorite class experiences aren't on my transcript. You can learn without overloading yourself.
- **POSTPONE SEVERAL PRE-MED REQUIREMENTS, ESPECIALLY THOSE NOT ON THE MCAT, THAT YOU DON'T WANT TO TAKE UNTIL YOUR SENIOR YEAR.** Every application has room for classes you can take later. In my case it was the organic and inorganic chemistry labs and biology 44x and 44y. Instead, take upper division classes which interest you or other Stanford classes you find enriching.
From the standpoint of a student, you will learn more. From the standpoint of a medical school applicant you will be stronger. The worst that can happen in this scenario is that you take the class as a senior after you have already been accepted to medical school. If you did well enough on the MCAT, you may not have to take these postponed classes at all (medical schools have the option to waive classes and will sometimes do so). Many medical students I knew at UCSF did not take all the pre-med requirements, but instead invested their energy in more interesting equivalents. The point is to use these extra class slots meaningfully.
- **CONSIDER TAKING SOME UPPER DIVISION SCIENCE CLASSES INSTEAD OF 'CORE' PRE-MED CLASSES.** For instance, I took "The physics of nuclear weapons" instead of physics 23, which was a paper oriented class, a pre-med free zone, and a wonderful experience. Some lab classes can be substituted for chemistry 130 or 36. Upper division classes are often more educational, more flexible, less intense, bring you into better contact with the professor, and are not graded on a strict curve.
- **PURSUE YOUR PASSIONS WHILE BEING PRE-MED.** As long as you have a respectable academic performance, medical schools like to take students with passions in many areas.

- **STOP OUT THE TERM YOU ARE TAKING THE MCAT.** One way of easily increasing your score is simply to take off the term you take the MCAT. It is very difficult to do well in school and prepare for the MCAT at the same time. Spend some of the extra time on academic and other activities (see below).
- **CONSIDER STOPPING OUT ONE MORE TERMS AS AN UNDERGRADUATE.** This can restore your vigor, and improve your extra-curricular activities at the same time. There are also many ways to continue academic work even though you have “stopped out.” Work on a honors thesis, directed, research, readings, outreach projects, internships, etc. The happiest pre-meds I know are those that weaved an extra year off through their undergraduate years and used this time meaningfully. There is little downside to taking an extra year in school to expand your educational and life experiences, improve your application, and avoid burnout. Medical school is harder than college, and residency is harder still. If you are burnt out going in to medical school, it can rob from the experience.
- **TAKE CHALLENGING CLASSES WHICH INSPIRE YOU, AND DO AS WELL AS YOU CAN IN THEM.** This is easier to do if you postpone some of your least favorite pre-med classes until your senior year (providing you don’t need them for the MCAT).
- **REALIZE THAT COLLEGE IS A TRANSITION BETWEEN HIGH SCHOOL AND LIFE.** You can use it to glorify the last vestiges of high school or prepare you for life.
- **DIVORCE YOUR JOY FROM YOUR SCHOLASTIC ACHIEVEMENTS.** The happiest person I have seen recently was a small child in Nepal playing next to a Himalayan stream, completely consumed by watching the reflection the sunlight off of a fish. One set of tattered clothes, callused bare feet, and a smile that no amount of discomfort could seemingly wipe off his face.

IV. REASONS NOT TO BE PRE-MED:

- **YOUR PARENTS WANT YOU TO.** You will regret being a doctor for this reason.
- **YOU WILL EARN A LOT OF MONEY.** You won’t. Salaries are dropping by over 50% in many medical specialties. Jobs are scarce in many desirable fields and locations. And the average medical school graduate owes about \$90,000, many owe over \$200,000. Nine years of training in some special area of law or business will get you a lot higher salary. Don’t go into medicine for the money. It isn’t there anymore, and was never a good reason to practice medicine in the first place.
- **IT SOUNDS GOOD AT PARTIES.** For most of your twenties you will spend little time around people who will be impressed you are training to be a doctor. (In fact, you will spend little time with anyone outside of medical school and residency).

V. SUMMARY

Most of this letter can be summarized in two thoughts:

One, if you are not sure you want to be a doctor; figure it out through investigation. (The sooner the better.) If you find you don’t want to be a doctor, don’t be one. And don’t put yourself through the pre-med gauntlet. Don’t become a doctor for any other reason than that you want to help people in this way. Medical school is more consuming than being a pre-med, and residency is harder still.

Two, if find you do want to be a doctor, be one. But approach it creatively. If you hit walls, find ways around them. If you get burned out, take time off. There is no substitute for hard work and determination in the pre-med process. There are no short cuts. It is difficult. But it can be a lot less miserable than some will make it out to be. Find mentors. And with their help, chart a course that works best for you. Don’t worry if it isn’t the same path everyone else takes. Being pre-med is difficult enough without falling prey to the myths which permeate every undergraduate campus. If you are at Stanford, you are smart enough to be a doctor. And if you choose to be, you can be a great one.

Presumably, you are becoming a doctor to help people be healthy, which is an indirect way increasing their happiness and decreasing their misery. (Happiness through health.) Pre-meds who lose sight of this and allow the pre-med process to dictate their own happiness are not only sacrificing their own peace of mind, they are undermining their ability to help others as a future physician. I hope that this discussion of the ins and outs of the pre-med and medical school

process has been helpful, but I worry that in doing so I may have served, in some, to increase the grip that the pre-med grind has on their self-esteem. The pre-med game is one that those wishing to enter medicine will certainly have to play. But if a 'pre-med' forgets that these requirements, these 'hoops,' are simply artificial surrogate markers, they run the risk of confusing the pre-med game with real markers of human worth and dignity.

Obviously, this entire letter is simply a viewpoint, prejudiced by my own experiences, friendships and observations. I have also shown it to several medical admissions committee members I know at Harvard, Stanford and UCSF; they agreed with the above principles and helped edit this text. Still, I suggest you get a wide range of opinions. I hope that one or two paragraphs here were useful. And I hope you enjoy becoming a doctor. From one Stanford 'pre-med' to another—good luck.

And take good care.

Last year I was asked by some pre-meds if I will answer questions by email. I can sometimes. My email address below. I would also welcome feedback on this letter.

Sincerely,



Michael McCullough, M.D., M.Sc.
Graduate---Stanford Emergency Medicine Residency
Attending Physician---Santa Clara Valley Medical Center
Director---Quest Scholars Program (Formerly Stanford Youth Environmental Science Program)
Co-Founder---Stanford Medical Youth Science Program

See Below for Feedback Request and Special Pre-Med Opportunities & Internships such as the Courage Project Emergency Room Internships, the Quest Scholars Program, and Pre-Med Clinical Experiences in Nepal

P.S. I would like to ask a favor of the reader. For those who found the time to read this letter to conclusion, I would appreciate a few comments by the e-mail address below if you have found it useful in any way (and also if you did not find it useful). I ask this for several reasons. One, I would like to know if it was useful, and what questions it does not answer for you.

Two, I would be willing to conduct a question answer session campus sometime this term if enough Stanford pre-meds feel this would be helpful. If you would like to be included in this talk, you can simply e-mail to that effect.

Three, I am considering writing a sequel to this letter about the actual medical school application process, the transition into medical school, overseas clinical opportunities for undergraduates, and "medical school myths." Do you think such additional information would be helpful? Was this letter helpful to you? If it was helpful to enough people I will squeeze out the time to write the next installment.

Four, I have hired two undergraduates to collect overseas opportunities for undergraduates. This process is underway. If you would like to be on a mail list for these and other opportunities, I will make them available to you.

Sometimes pre-meds have e-mailed me with specific questions about medical school or applying to the Rhodes scholarship. Usually, I have been able to respond to questions via e-mail in as much of a timely fashion emergency medicine. As I can, I have enjoyed helping pre-meds avoid wasting their time and to enjoy the process more.

mjm@stanfordalumni.org

I thank you in advance for your feedback and will respond to your questions to the best of my ability. If I do not have the answers I will try to refer you to someone who does.

Take good care.

Warmly,



Michael McCullough

P.S. Some of you asked to look at my personal statement for medical school. I have now put it on the web for anyone who wants a sample essay.

<http://questscholars.stanford.edu/years/95/staff/mccullough.shtml>

On a different subject, I have already received some inquiries about working for the Quest Scholars Program (formerly SYESP), which hires 14 undergraduates per year. Formal applications will be available in the winter, but you may send a resume, photo, and cover letter early if you would like advance consideration. (Use the above program address.) Obviously, pre-meds who we hire will be connected to the same network of physician mentors and clinical experiences (hospital visits etc.) that our participants have, which includes substantial assistance with the medical school application and admission process. We hire 2-3 pre-meds per year.

There are also some other job opportunities which may interest you:

CREATIVE JOBS FOR PRE-MEDS AND OTHERS:

Title: Courage Project

Description: I am interested in writing a book profiling examples of courage (something of a catalog) and the nature of courage. I have several agents interested. But I need help compiling the catalog. I am looking for actual opportunities for people to express courage as well as examples of people who have. For instance, we have collected the names of groups clearing mines, or those that need volunteers to test HIV vaccines. I need about 120 more opportunities. This will be part history piece and part catalog of opportunities for courage that have a meaningful impact on humanity. This will obviously be a very fun and creative job. This will be a multi-year project, and one that I am very excited about.

The chapters at this time include collecting opportunities for courage in the following areas: Medical research, NGO's, Organ transplantation, Legal courage (e.g. helping those prosecuting the mafia), close to home and far away opportunities for courage. "120 things that you can do that will help save the world."

Students accepted for the courage project will be given automatic acceptance to SCOPE.

Supervisor: Michael McCullough, MD

Open: Now. Summer also. First round of applications is due Sunday November 25th at midnight. But you may apply after that as well if work remains available.

Compensation: \$10/hour for those on work-study or who have student financial aid. Year time work available. Letters of reference. Pre-med advising. Directed reading credit or internship credit may be available.

Requirements: Hard work and independence

To apply: Email cover letter and resume to Dr. McCullough. mjm@stanfordalumni.org

Deadline for application: Rolling. Applicants should apply ASAP. First round of applications is due Sunday November 25th at midnight. But you may apply after that as well if work remains available.

Title: Courage Project – Overall Project Leader and Book Chapter Directors

Description: I would like to hire a leadership structure for the courage project listed above. There needs to be an overall director coordinating the research and writing with me. Also, I would like to put one person in charge of each chapter. The chapters at this time include collecting opportunities for courage in the following areas: Medical research, NGO's, Organ transplantation, Human rights, legal courage (e.g. helping those prosecuting the mafia), close to home and far away opportunities for courage. "120 things that you can do that will help save the world."

Supervisor: Michael McCullough, MD

Open: Now. Summer also. First round of applications is due Sunday November 25th at midnight. But you may apply after that as well if work remains available.

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Requirements: Hard work and independence

To apply: Email cover letter and resume to Dr. McCullough. mjm@stanfordalumni.org

Deadline for application: Rolling. Applicants should apply ASAP. First round of applications is due Sunday November 25th at midnight. But you may apply after that as well if work remains available.

Title: SCOPE (Shadowing for Clinical Opportunity and Premedical Experience)

Description: See handout. Students are assigned to an ER attending physician whom they shadow for entire shifts on a regular basis. Students also help in ER with various non-clinical items to help increase the ER's efficiency. Ambulance ride-alongs will also be available, as will be opportunities to witness other clinical settings (e.g. surgeries). Students accepted for the courage project will be given automatic acceptance to SCOPE.

Director: Jennifer Miller; Jeanette Mellinger

Positions Open: Immediate. Applications start now.

Compensation: \$10/hour for students with loans or work-study. Students will see all aspects of patient care, including traumas.

Letters of reference. Ambulance rides. Potential for watching surgeries, attending pediatric clinics, and other hands-on clinical experiences. \$10/hour for those who are available for work study or have Stanford financial aid.

Requirements: A good heart and consistent work ethic

To apply: Email beagoooddoctor@yahoo.com. You will receive an application via email. We will also request a resume, cover letter and/or brief essay explaining your interest, and an unofficial transcript

Deadline for application: November 1 for the first group starting this fall (November 11). Rolling otherwise.

Title: SCOPE Leadership Positions

Description: SCOPE needs new directors to operate, help institutionalize and grow SCOPE. This is a 1-2 year term

Supervisor: Dr. McCullough; trained by current leadership.

Positions Open: Immediate. Applications start now.

Compensation: \$10/hour for students with loans or work study. Leadership training. First choice of shifts and clinical opportunities. Letters of reference. Ambulance rides. Potential for watching surgeries, attending pediatric clinics, and other hands-on clinical experiences.

Requirements: A good heart and consistent work ethic

To apply: Email beagoooddoctor@yahoo.com. You will receive an application via email. We will also request a resume, cover letter and/or brief essay explaining your interest, and an unofficial transcript

Deadline for application: November 1 for the first group starting this fall (November 11). Rolling otherwise.

Title: SCOPE Sidekick with Dr. McCullough Positions

Description: You will work directly with Dr. McCullough on emergency medicine shifts. He will train you to train other SCOPE members. Dr. McCullough generally only works with the Sidekick members.

Supervisor: Dr. McCullough; trained by current leadership.

Positions Open: Immediate. Applications start now.

Compensation: \$10/hour for students with loans or work study. Leadership training. First choice of shifts and clinical opportunities. Letters of reference. Ambulance rides. Potential for watching surgeries, attending pediatric clinics, and other hands-on clinical experiences. Dr. McCullough will help you with your medical school application process personally.

Requirements: A good heart and consistent work ethic

To apply: Email Dr. McCullough directly mjm@stanfordalumni.org with an email explaining why you want to be a sidekick. We will also eventually request a resume, cover letter and/or brief essay explaining your interest, and an unofficial transcript. Students who work with the Courage Project will be given preference in this process.

Deadline for application: Rolling. There is currently room for several sidekicks.

Title: Fundraising and Development for the Quest Scholars Program (Formerly Stanford Youth Environmental Science Program)

Description: The Quest Scholars Program is looking to hire 2-4 undergraduates who will help raise [Ana Rowena Mal-lari] financial support for Quest. This job will involve extensive instruction and a chance to form connections with donors and large foundation --both in the Bay area and nationwide. We would like a 1-year commitment. Special attention will be placed on the skills development of those hired.

Supervisor: Sarah Chandler

Open: Immediately. Possibility for continued employment through the summer. First round of applications is due Sunday November 25th at midnight. You may apply after that this deadline if work remains available.

Compensation: Work Study approximately \$10/hour. Summer approximately \$3,000. Letters of reference.

Requirements: A good heart and work ethic

To apply: Email Sarah Chandler at workforquest@yahoo.com. Applications are available on-line at www.questscholars.org,

Deadline for application: Rolling. First round of applications is due Sunday November 25th at midnight. But you may apply after this deadline if work remains available.

Title: Web Programmer IT person

Description: Assistance is needed with web development for both the project involving clinical opportunities for undergraduates and the Quest Scholars Program.

Supervisor: Sarah Chandler

Open: Immediately. Possibility for continued employment through the summer.

Compensation: Approximately \$10-\$30/hour.

Requirements: Web experience. Independence. Creativity

To apply: Send cover letter and resume to Michael McCullough at micha@stanford.edu

Deadline for application: Rolling. Applicants should apply ASAP.

Title: Nepal Pre-med Pediatric Clinical Internship

Description: Pre-Meds internship in the Kanti Children's Hospital Internship, Katmandu, Nepal. Students can work from two weeks to one year in the hospital with hands on clinical experience (e.g. physical therapy for injured students and/or in the burn unit)

Director: Elizabeth Kwo

Positions Open: Now. A clinical experience will be available at any time, including Winter break and in the summer.

Compensation: Students will get to take part in clinical work in the only pediatric hospital in Nepal. Housing coordinated by program.

Requirements: A good heart, interest in children, an adventurous spirit, and consistent work ethic

To apply: Email Elizabeth Kwo. LizKwo@Stanford.edu. You will receive an application and complete description via email. We will also request a resume, cover letter and brief essay explaining your interest.

Deadline for application: You may apply at any time. If you wish to go to Nepal over winter break or apply for the director position, apply immediately.

Title: Emergency Medicine Research Assistant

Description: Get involved with Emergency Medicine research both on and off campus. Learn about the process, from Human Subjects Committee application to submission for medical journal publication. Specific area of focus is Pre-Hospital Care / Emergency Medical Systems. Potential for authorship and learning about the field of Emergency Medicine. ED shifts and paramedic ride-alongs also possible

Contact: Eric L. Weiss, MD: eric.weiss@stanford.edu

Supervisor: Eric L. Weiss, MD

Open: Now. Summer also.

Compensation: Work Study \$10/hour. Summer \$3,500. Letters of reference. Pre-med advising.

Requirements: Energy, intelligence and a good work ethic. Strong writing skills a plus.

Deadline for application: Rolling. Applicants should apply ASAP.

Title: Student Manager -- Stanford Global Health

Description: Get involved with a new and exciting program in Global Health at Stanford University. Candidate sought with strong leadership, interpersonal and organizational skills to manage and help grow a new inter-disciplinary international health program at Stanford. Work with a team of Stanford faculty on administrative and programmatic issues such as organizational structure, budget, program development, education and research. Opportunities include research, publication, and overseas health experiences.

Contact: Eric L. Weiss, MD, DTM&H: eric.weiss@stanford.edu

Supervisor: Eric L. Weiss, MD, DTM&H

Open: Now. Summer also.

Compensation: Work Study \$10/hour. Year Time available. Summer \$3,500. Letters of reference. Pre-med advising.

Requirements: Energy, intelligence, organizational and interpersonal skills, and a good work ethic. Strong writing skills a plus.

Deadline for application: Rolling. Applicants should apply ASAP.

Title: Staff Support for Dr. McCullough

Description: I need some help generally organizing and tracking all these various non-profit projects. I am looking to hire 2-5 people as office support staff, each 5-10 hours a week. Hours flexible. This person would work directly with me (Dr. McCullough) on various exciting projects (see above). I could really use the help.

Supervisor: Michael McCullough, MD

Open: Now. Summer also.

Compensation: Work Study \$10-\$20/hour. Summer \$3,000. Letters of reference. Pre-med advising.

Requirements: Energy, intelligence and a good work ethic

To apply: Email cover letter and resume to Dr. McCullough. mjm@stanfordalumni.org

Deadline for application: Rolling. Applicants should apply ASAP. Some year-time work may be available with immediate application. Early applications will be given preference.