

Thinking about MD-PhD programs?

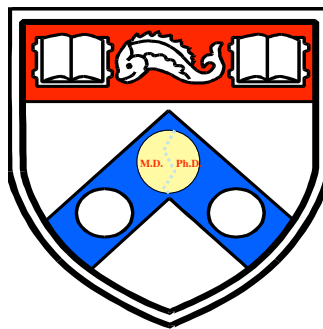
Useful information for future Physician-Scientists

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Generic FAQ for MD-PhD Program Applicants

Hello and welcome. This set of questions and answers was compiled by a group of MD-PhD program directors to help applicants (and potential applicants) learn more about MD-PhD programs and about the process of applying to them. All of us hope that you will find them useful. Some places to obtain additional information are included in the text. All of us wish you good luck in your search for the right career and the right place to train.

Why do it?

What if I'm not sure?

The program (or how does it work?)

What happens after you finish?

Admissions issues

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Why do it?

What is the purpose of MD-PhD training?

MD-PhD programs provide training in both medicine and research. They are specifically designed for men and women who want to become research physicians, also known as physician-investigators or physician-scientists. Graduates of MD-PhD programs often go on to become faculty members at medical schools, universities and research institutes such as the NIH. Regardless of where they eventually end up, MD-PhD trainees are being prepared for careers in which they will spend most of their time doing research, not just taking care of patients. It is a busy, challenging and hugely rewarding career that offers opportunities to do good for many people by advancing knowledge, developing new treatments for diseases and pushing back the boundaries of the unknown.

What is the difference between an MD-PhD program, a combined degree program and an MSTP program?

None. Programs designed to train physician-investigators go by all of these names. For the most part, the terms are interchangeable, although at some schools "combined degree" programs can include MD-JD and MD-masters programs as well. The NIH uses the term "MSTP" to refer to schools that have been competitively awarded special training funds to help support MD-PhD candidates. There are currently 39 NIH-funded MD-PhD programs.

Are MD-PhD programs limited to those interested in laboratory research?

The answer varies from school to school. Not all schools offer PhD programs in all disciplines and, even if offered, medical schools may limit the disciplines that can be combined with MD training. The vast majority of MD-PhD students receive their PhD in a biomedical laboratory discipline such as cell biology, biochemistry, genetics, immunology, pharmacology, neuroscience, and biomedical engineering. The names of departments and graduate programs vary from school to school. At some schools, MD-PhD trainees do their graduate work outside of the laboratory disciplines in fields such as economics, epidemiology, health care policy, sociology or the history of medicine. You should check before you apply to see what is actually offered at any particular school.

What if I'm not sure that this is what I want?

Are there other ways to become a physician-scientist?

In short the answer is “yes.” Some schools will consider you for transfer into their MD-PhD program after you have completed a year or two of medical school or graduate school at the same university. The rules and requirements vary from school to school. Another option is to complete medical school and residency training before doing an extended period of supervised research. That used to be the main path for preparing physician-scientists, but with the increase in the number of MD-PhD training programs nation-wide, most people who make the decision to become physician-scientists while still in college think hard about doing both degrees.

Do I really need a PhD?

Medical school by itself does not provide training in how to do research. At some point you will need that piece of your education if you intend to become a physician-investigator. In years past, it was not uncommon to learn how to do research by doing an extended postdoctoral fellowship after (or instead of) a clinical residency. The total time is not necessarily shorter, the costs for you (especially medical school tuition) are likely to be much higher and you will miss the coursework and formal training in research methodology that are part of a good graduate program. If you are ready to make the commitment before starting medical school, MD-PhD programs offer many advantages.

The program (or how does it work?)

How does MD-PhD training work?

The answer varies from school to school, but typically students begin with two years of medical school, switch to graduate school in the third year of the program, then return to finish medical school after completing (and defending) the thesis research project. At a growing number of schools there has been an increasing emphasis on integrating the MD and PhD parts of the training with graduate school courses during years 1 and 2 and clinical experiences during graduate school. Be sure to ask how things are organized at

schools that you are considering. In programs leading to a PhD in laboratory science, MD-PhD trainees usually spend the summer between the first and second years of medical school working in the laboratory of the faculty member that they are considering as a potential thesis advisor. Some programs ask students to do one of these “lab rotations” in the summer before starting medical school classes as well. When fulltime clinical training begins varies among programs. Depending on the particular school, MD-PhD trainees may have anything from casual clinical experiences during the first two years of medical school to extensive fulltime clinical rotations lasting six months or more. Depending on the number of clinical months completed before starting the thesis research, students returning to medical school will need 1 to 2 years to finish their training and meet the requirements for medical licensure.

How long does it take to complete both degrees?

The goal is to complete an MD-PhD program in 7 or 8 years. Numbers from across the country show that some students finish in 6 years, while others take 10 years (or more). A couple of issues are worth keeping in mind. First (and most importantly) the goal is to train you to be a physician-investigator. That takes time to do right. The biggest variable is the time needed to complete a thesis project. You will want to do a first class project that will set a pattern for your career. Second, keep in mind that the average time to complete a biomedical PhD in the U.S. is about 6 years. Combined with 4 years of medical school, $6 + 4 = 10$ years. Doing both degrees in less than 10 years is possible because of overlap in coursework and tailoring programs to fit the needs of the physician-scientist. You will want to be focused and efficient, not a clock watcher.

How long does it take to complete training after an MD-PhD program?

Corny as this may sound, the process is never really finished. Your education will continue throughout your career. A more pragmatic answer is that the process began in college (or sooner) and will extend beyond medical school and graduate school as you complete your post graduate education. Here are some typical numbers:

MD-PhD program	7-8 years
Residency	3 years
Post doctoral fellowship	3-4 years

For most people the “postdoctoral fellowship” includes another year or two of clinical training, followed by a return to research for 2 or more years. So the total before you get your first job can be 13 or more years beyond college. You’ll be in your 30’s! That means that you have to be sure that this is what you want to do and you have to be able to enjoy the process as it unfolds.

What happens after you finish?

What happens to the graduates of MD-PhD programs?

Most end up with a career in which most of their time is spent on research. The research may be lab-based, translational or clinical. Most end up at academic medical centers, research institutions like the NIH or in the pharmaceutical/biotech industry. Most, but not all, do clinical training for several years after completing medical school and many find that their MD-PhD training makes them particularly appealing to residency programs at top institutions.

How do physician-investigators spend their time?

The answer to this varies depending on what type of career they have chosen. A physician-investigator who is a faculty member at an academic medical center will typically spend 75-80% (or more) of his or her time doing research. The remainder may be split between clinical service, teaching and administration.

Admissions issues

Who should apply?

College graduates (or soon-to-be graduates) who seek to become physician-investigators and whose commitment to doing research requires graduate school (PhD) level training. This includes men and women who made the decision to become biomedical researchers while in college as well as those who have known since kindergarten.

Which schools offer MD-PhD programs?

More than 100 U.S. medical schools have an organized MD-PhD program. They range in size from small programs that admit 1 or 2 students per year and might have only a dozen students enrolled, to very large programs that admit 20 new students per year and have over 150 students enrolled. The disciplines in which PhD training is offered vary from school to school, so make sure you ask.

How do I find out if a medical school that I am interested in offers MD-PhD training?

Many of the programs can be reached using links from this site. If the school you are interested in is not included, contact them directly to ask. . The most complete list of MD-PhD programs can be found on the AAMC website.

How big are the programs and how many new students are admitted each year?

MD-PhD programs vary in size enormously - from smaller programs that take 1 or 2 students per year and might have a total enrollment of a dozen, to very large programs that might take 20 (or more) new students per year and have a total enrollment of 150+. As you look at programs you should ask yourself what will be the best fit and you should

ask the program director what they consider the strengths and weaknesses of their program, including program size.

How do I apply?

The process varies from school to school. Some schools have a separate MD-PhD admissions committee that will screen your application and coordinate the interview and admission process. Other schools consider MD-PhD applicants only after a decision has been made about MD admissions. Finally, some schools consider students for the MD-PhD program only after they have completed a year or more of medical school. Schools that subscribe to AMCAS will ask you to indicate your interest in an MD-PhD program and then to provide additional information as part of a secondary application.

When do I apply?

Most people apply after finishing their junior year in college, but a growing number of applicants finish college and work for a year or more before applying. Some people use time after college to take courses needed for medical school admission (if they've not had them already) or to gain more laboratory research experience. Some people simply weren't ready to make a decision about their future career and postponed choosing beyond the finish of college.

When will I hear?

Acceptance letters go out at different times of the year depending upon the policy at the individual school. Some schools do rolling admissions and send out acceptances throughout the year. Other schools send them all at the same time. That can be as late as March or even April.

What do admissions committees look for?

The answer to this question clearly varies from school to school, but some basic principles apply. In general the admissions committees will look for four things: evidence of academic success, relevant research experience, letters of recommendation from people who know you well and your plans for the future.

1) Evidence of academic success using criteria that will include your GPA and MCAT scores, but not be limited to them. They will undoubtedly consider where you went to college and what types of courses you took. They will not necessarily be dismayed if you got off to a slow start, as long as you did well later. They will place the greatest emphasis on courses that are relevant to your chosen area of graduate school training.

2) Relevant research experience. If you plan to get a PhD in one of the laboratory sciences, then prior laboratory experience counts heavily, particularly if you spent a year or more in the same laboratory. Summer laboratory experience can be helpful,

but summers are short. Whenever possible you should try to do research during the academic year or at least spend multiple summers in the same lab. For those of you planning a PhD outside of the laboratory sciences, seek equivalent experiences. The idea is to be sure you like it and to create a track record upon which your past performance can be judged and your future success predicted.

3) Letters of recommendation. The most important letter(s) are from the faculty member or other senior investigator with whom you worked. The letter should comment on your talents, skills, and potential for success as an independent investigator. If you are working with a senior faculty member, it is very helpful if they can compare you to other students with whom they have worked. Note that such a letter is not necessarily the most appropriate for an MD-only application. MD-PhD program admissions committees are usually most interested in your talent and ability as a scientist, not as a future primary care-giver. Fortunately, medical schools know this and allow you to submit more than one letter of recommendation.

4) Your plans for the future. Since training to be a physician-investigator is so costly in terms of your time and the school's resources, your career goals should be compatible with MD-PhD training. Becoming a full time practitioner is a laudable goal, but doesn't require a PhD in addition to a MD. Your goal as a trained physician-investigator should be to spend at least 75% of your time on research. You need not know the specific problem you want to work on at this point (many don't), or with whom you would like to train, but your commitment to becoming an investigator should be clearly communicated and you should have given thought to what will be required.

Is it important to have spent time working in a hospital or clinic before I apply?

Perhaps. Some medical school admissions committees take that as evidence of commitment and as a predictor that you will do well in the clinical portions of your training and career.

What GPA and MCAT scores will I need for admission?

The answer to this question varies among the MD-PhD programs. All of the medical schools will want to be as sure as possible that you can handle the load of work involved in doing medical school plus graduate school. MCAT scores and your college GPA provide one way of predicting how you will do, but only one way. Average MCAT and GPA scores for combined degree program applicants last year were about 31 and 3.5 respectively. Average numbers for those accepted varied from school to school. At one large program, the average numbers for matriculants were MCAT 36 and GPA 3.8, but the range was large. If you have concerns or questions, ask the schools you are considering. If you take the MCAT exam more than once, some schools will look only at your highest scores.

Do I need to take the GRE?

Medical schools require the MCAT, not the GRE, but some schools will want both for combined degree applicants. Be sure to ask.

What kinds of letters of recommendation will I need?

See: “What do admissions committees look for?”

I’m not a U.S. citizen. Will that affect my chances for admission?

It does complicate things. Some schools will not consider applicants who are not U.S. citizens or permanent residents of the United States, in part because NIH training funds are only available for U.S. citizens and permanent residents. If you are a non-citizen who went to college in the U.S., evaluating your credentials is easier for admissions committees than if you did college work outside of the U.S. Nonetheless, some MD-PhD programs will consider your application despite these obstacles. The only way to be sure is to ask each program that you are considering.

To how many schools should I apply for admissions as an MD-PhD candidate?

There is no universal answer to this question. Nationally, the average is 7 or 8 (compared to 11 for those who apply only to medical school). The range is wide. The application process is time-consuming and expensive. As when you applied to college, consider your strengths as an applicant and apply to programs that vary in their competitiveness for entry.

How should I decide where to apply?

Some applicants have decided that they want to work in a particular field or with a particular faculty member. For them, choosing where to apply is defined by where that faculty member works or where the field is best represented. Most applicants have only a general idea of what they might want to work on in the future and know that their interests are likely to evolve as they are exposed to new things. For them choice will be defined by issues such as the reputation of the school (hopefully not based solely on US News and World Report!), the success of the graduates of the program (be sure to ask!), and geography. Schools range in terms of the difficulty of gaining admission. The directors and non-faculty administrators of MD-PhD programs nationwide are a large pool of resources that you can tap. Most of us get e-mail from future applicants all of the time. Take advantage of our willingness to talk with you. Ask questions about the things that are important to you.

Will I get in somewhere?

Recent history shows that most well-qualified applicants who adopt a wise strategy for applying to programs will end up with one or more letters of acceptance. Just as you did when you applied to college, it is a good idea to assess your strengths as an applicant and

apply to a number of schools. It is also a good idea to plan ahead by seeking advice from physician-scientists at your institution and others.

Is it okay to apply “MD-only” at some schools and “MD-PhD” at others?

Yes. But consider what your motives are for doing that. Is it because you are uncertain about which type of program you want? Is it a strategy to make sure you have been admitted somewhere for some thing? If you are invited for an interview by an MD-PhD program, members of the admissions committee may want you to explain your reasons.

Will schools consider me for admission as “MD-only” if I apply unsuccessfully to them as an MD-PhD candidate?

Often they will, but not necessarily automatically. The wisest thing to do is to ask them what their policy is and let them know whether you might be willing to consider an offer to enter as a medical student – perhaps with a plan to apply for transfer into the MD-PhD program later.

Financial issues

Medical school is expensive. How much will it cost me to complete an MD-PhD program?

The answer varies at different programs. In general, the intent is to enable future physician-scientists to complete their training as debt-free as possible. Some schools may award you an all-expense paid fellowship that includes full tuition, fees and a stipend. Other programs may expect you to pay all or part of the costs of your education, particular the parts when you are in medical school. Be sure to ask what the policy is at each school that you are considering.

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