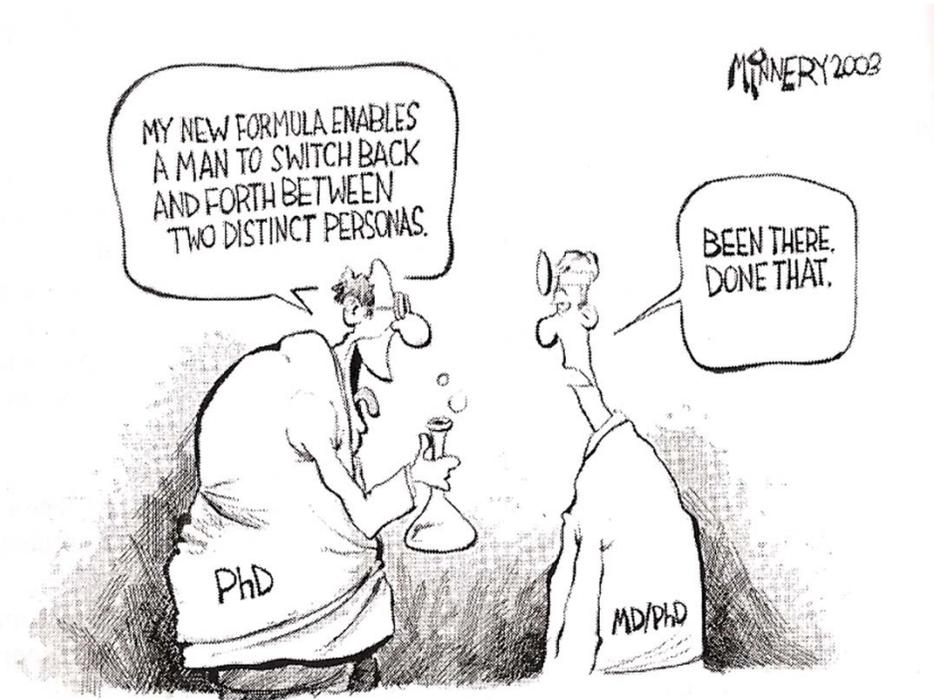
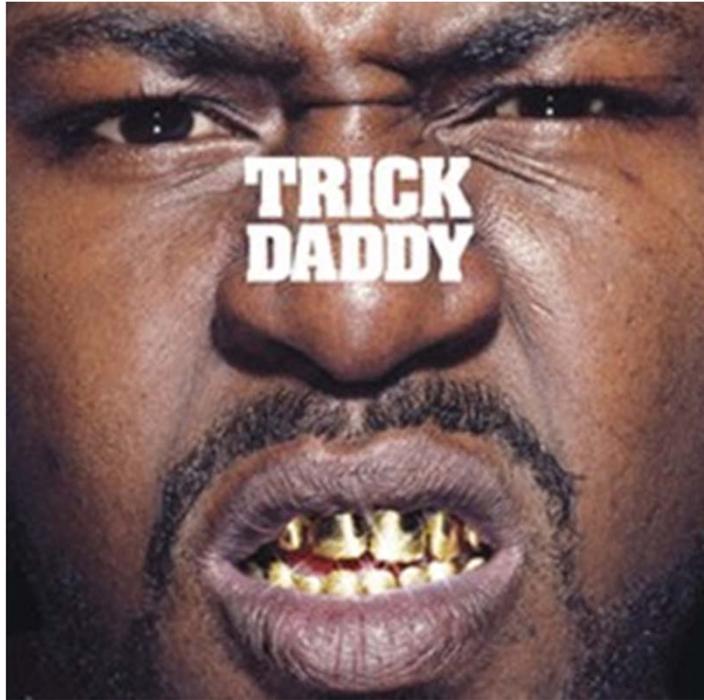


All About MD-PhD Programs: Who, What, Where, When, Why?



From 'Let's Go' (ft. Lil Jon and Twista):
"I want answers [about MD-PhD programs]
now: **who, what, where, when, why!?**"

Figure 1.2. Dr. Jekyll/Dr. Hyde. The split personality of the M.D./Ph.D.

Peter Kundert
Joe Cannova

Outline

1. What does an MD-PhD degree entail? What can I do with it?
2. What are the pros and cons of doing an MD-PhD?
3. How does the application process work? Where should I apply?

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What is the structure of an MD-PhD degree?

...or **where** are the remainder of my 20's about
to go?

What is the structure of an MD-PhD degree?

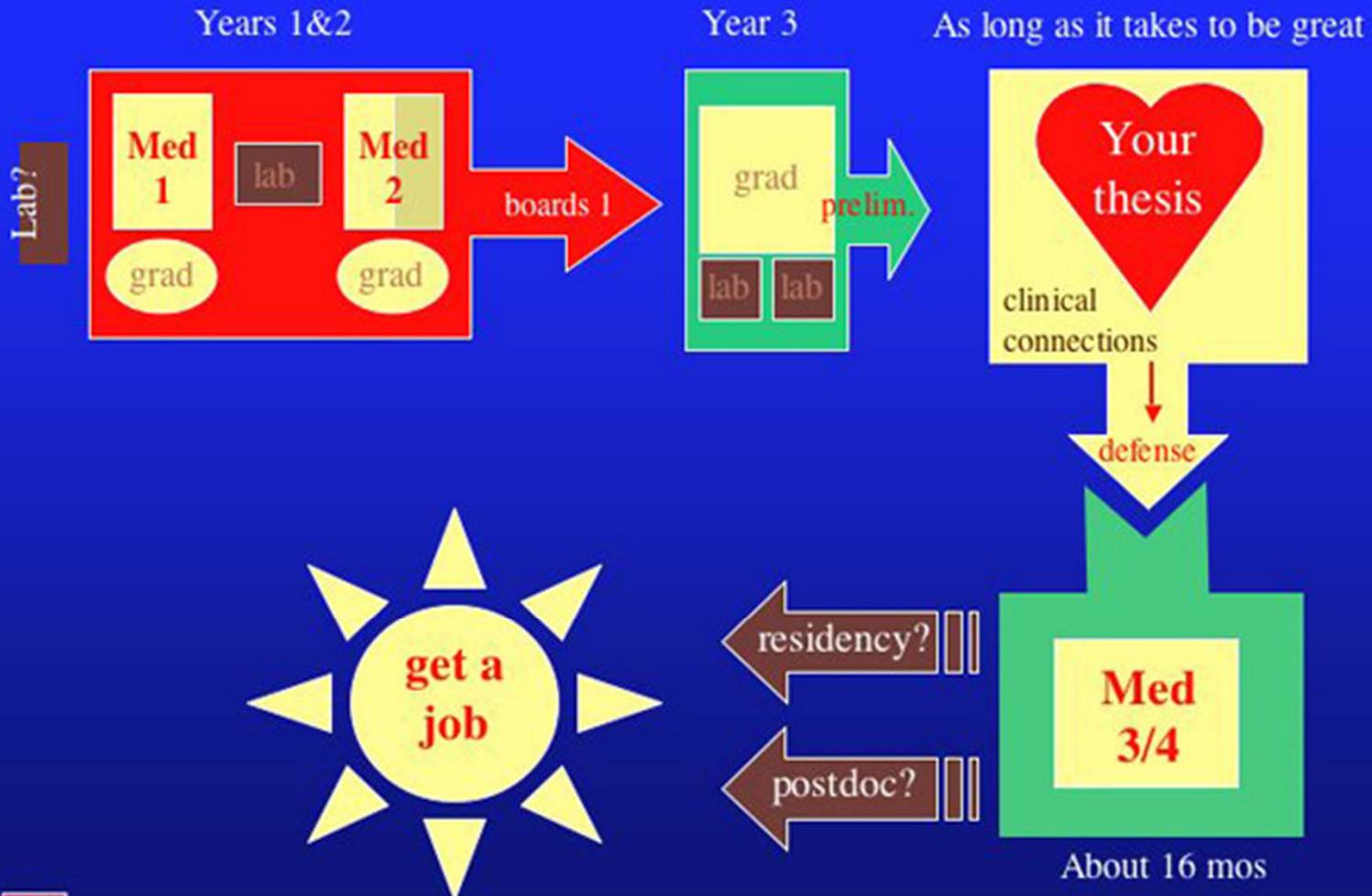
1. First 2 years of medical school*
 - Mostly lecture-based, basic and clinical science
 - End with USMLE Step 1 (read: MCAT on crack)
 - Laboratory rotations? Graduate courses?
2. ~4 years of graduate school
 - Early: laboratory rotations, courses, preliminary exam
 - Interminably: thesis research, writing, defense
3. Final 2 years of medical school
 - Clinical rotations
 - Residency/Post-doc applications**

*Some schools (Penn, Baylor, others) now have an 18 mo. basic science curriculum, then 6 mo. clinical rotations, then Step 1 exam, then PhD phase.

**Many schools are now offering research-residency programs tailored to physician-scientists, which provide advanced clinical and research training in ~5 years, as opposed to 3+ year residency then 3-4 years post-doc/fellowship before finally securing a faculty position.

Pictorial example...

Learning to be a physician-investigator at Penn



What areas do MD-PhD's pursue for thesis work?

- Biomedical sciences: 86%
 - e.g. genetics, immunology, molecular/cell biology, microbiology, neuroscience, biochemistry, etc.
- Engineering: 9%
 - Primarily biomedical
- Other disciplines: 5%
 - health policy, epidemiology, public health, anthropology, sociology, chemistry, mathematics, philosophy, marine biology, population health, psychology, history and sociology of science

Where do MD-PhD graduates end up?

Anywhere they want in medicine!

- Academic medical centers: 67%
- Industry: 8%
- Research institutes: 4%
 - e.g. NIH
- Private practice (boo! ☹️): 16%

...wait, that only adds up to 95%. What happened to the other 5%?



They just sort of wandered off...

What do MD-PhD grads do in academic medicine?

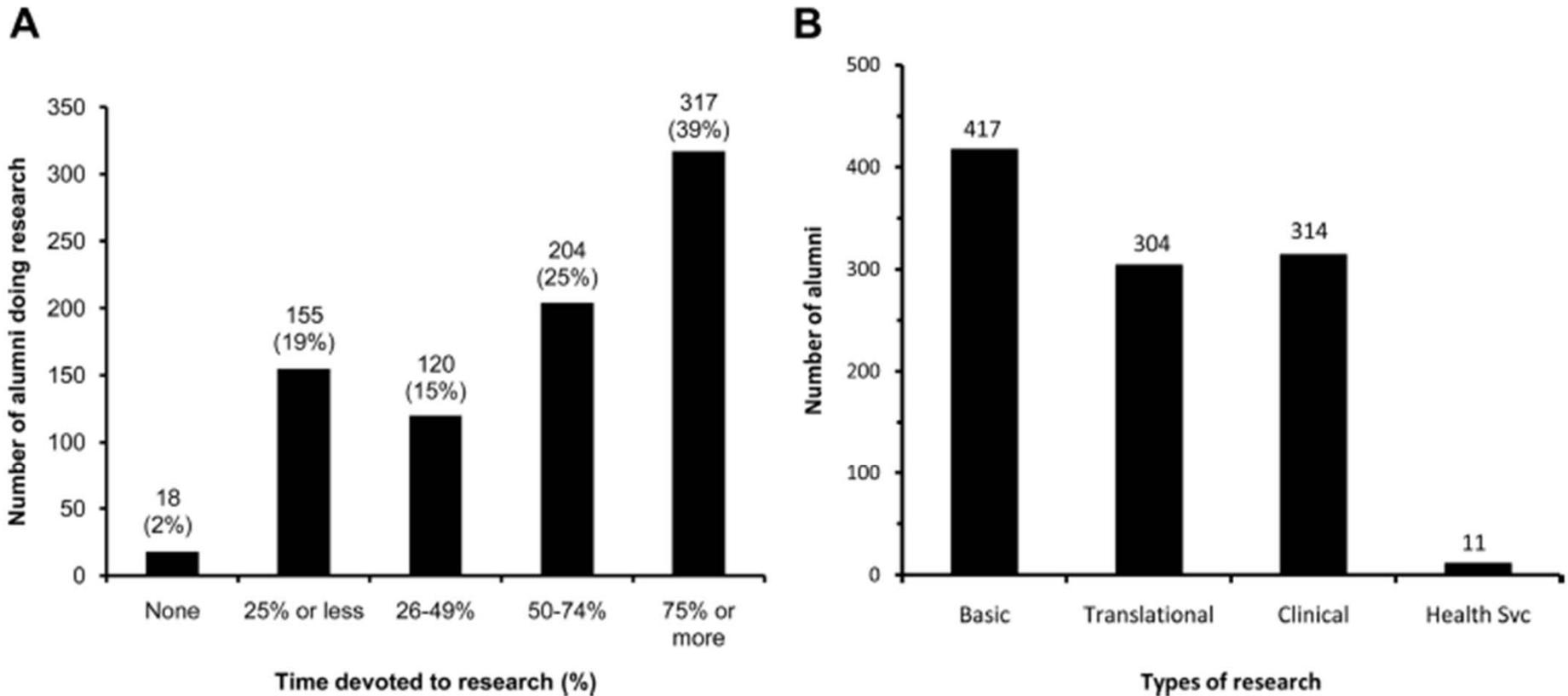
- Internal med + peds + path + neuro = 60%
- 88% with primary clinical appointments
- Many with secondary basic science appointments

Table 1

Primary Department of MD-PhD Program Alumni in Academia*

Department	MD-PhD program alumni No. (%)
Internal medicine	427 (26.3)
Pediatrics	203 (12.5)
Pathology	192 (11.8)
Neurology	153 (9.4)
Surgery	116 (7.2)
Psychiatry	85 (5.2)
Ophthalmology	61 (3.8)
Anesthesiology	50 (3.1)
Radiology	43 (2.7)
Dermatology	43 (2.7)
Radiation oncology	24 (1.5)
Obstetrics-gynecology	19 (1.2)
Emergency medicine	7 (0.4)
Physical medicine and rehabilitation	5 (0.3)
Nonclinical	175 (10.8)
Unknown	18 (1.1)
Total	1,621 (100.0)

What do MD-PhD grads do in academic medicine?



- 82% doing research
- Between 61% and 73% in academia have funding
- Avg. age of first R01 grant acceptance is the same for MD's and MD-PhD's (43 y.o.)

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1. What does an MD-PhD degree entail? What can I do with it?
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Why should you do an MD-PhD?

- You want to **live the academic medical ideal.**
 - Take scientific discoveries from the bench to the bedside; conduct translational research
 - e.g. human trials
 - Run your own lab at an academic medical center, perhaps while seeing patients and teaching

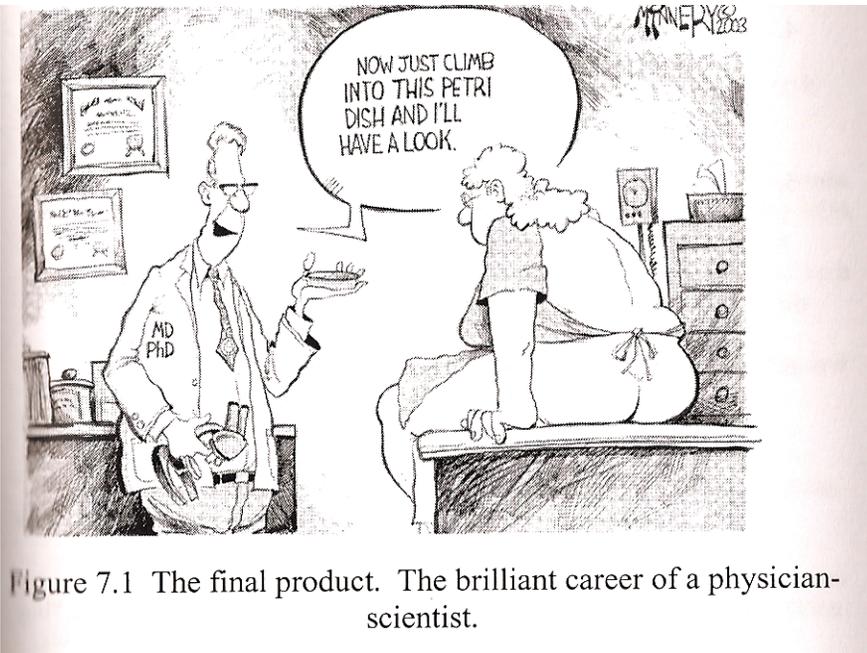


Figure 7.1 The final product. The brilliant career of a physician-scientist.

Why should you do an MD-PhD?

- You want the **skills to ball so hard in industry.**
 - MD-PhD's generally start higher and ascend quicker than MD's and PhD's.

The Lilly logo is written in a red, cursive script font.

Why should you do an MD-PhD?

- You want **options**.
 - take the time to experience all realms of medicine so you can find the best fit for you in terms of subject material and clinical/research balance.



Why should you do an MD-PhD?

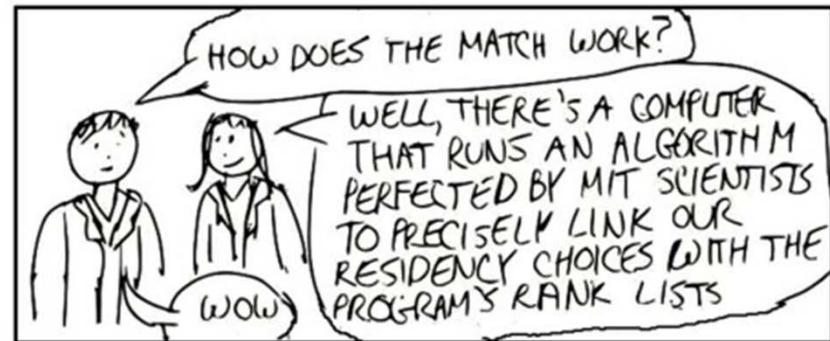
- You want the best medical education in the world **fo free!!**



Why should you do an MD-PhD?

- You want a better shot at your residency of choice.

THE SCIENCE BEHIND THE RESIDENCY MATCH



MEANWHILE, IN RESIDENCY MATCH HEADQUARTERS . . .



Why should you do an MD-PhD?

- You want a better shot at **research funding**.



Why should you do an MD-PhD?

- You want **clout**.



Why shouldn't you do an MD-PhD?



Figure 4.1 When your child's mispronunciation rings a little *too* true.

- It's **loooooong**: 8 years then residency and/or post-doc and/or fellowship (13+ yrs total)
- **Delayed gratification**: no degree awarded until 6+ years in.

Why shouldn't you do an MD-PhD?

- The **transitions** are liable to **suck**.
 - Year 3: into the lab, year ~6: into the clinic

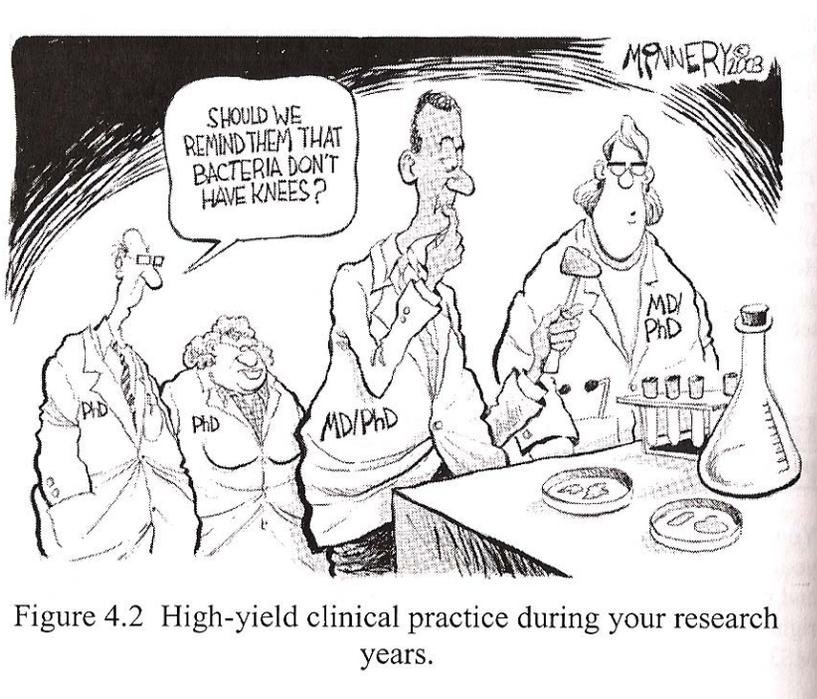


Figure 4.2 High-yield clinical practice during your research years.



Figure 5.1 The difficult transition from med school to clinic.

Why shouldn't you do an MD-PhD?

- The long hours can easily be **rough on your personal life.**
 - Difficult to start a family, but certainly possible



Figure 3.2 Personal life warning signs.

Why shouldn't you do an MD-PhD?

- **Disjointed friendships:** your med school friends will move onto residency without you and not infrequently drop out of your life.



Why shouldn't you do an MD-PhD?

- You'll be **different**.
 - “You will sometimes fall through the cracks between worlds, a condition that neither administrators nor fellow students will always understand.”
 - **Ben Rosner**, M.D., Ph.D. and author of *The Complete Guide to the MD/PhD Degree*

Why shouldn't you do an MD-PhD?

- Chimera **doesn't necessarily mean master** in both arenas.

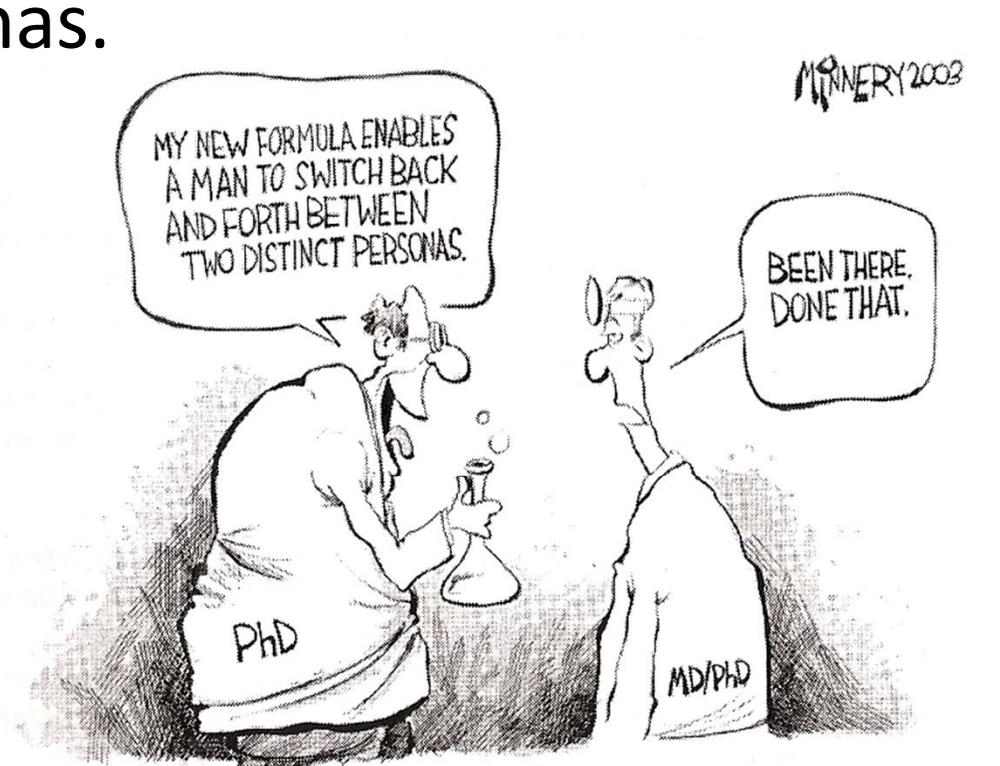


Figure 1.2. Dr. Jekyll/Dr. Hyde. The split personality of the M.D./Ph.D.

Ultimately, **what** are your goals in life?

- Are you a sprinter or a steady marathon runner?
- Are medicine and research really your passions?
- Imagine 15 years from now w/out MD-PhD. Could you still be doing what you want to do?
- If you have a strong desire to be in both the clinic and the lab, are you comfortable with likely being less clinically astute and less productive in lab than your peers?

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Where should I apply?**

What characterizes a successful MD-PhD applicant?

(S)he is a **sextuple threat** who has...

- 1+ academic years and summers of research experience
- Stellar letters of recommendation
- An undergrad. GPA above 3.6
- An MCAT score above 34
- Significant leadership experience in 1+ extra-curricular activities
- Well-composed personal statements

How do I get into a lab at ND?

- Take Drs. Whaley and Gursky's 'Introduction to Undergrad. Research' course next spring.
 - 1 credit, pass-fail
 - Small group, independent research projects in ND labs guided by research faculty
- Take Dr. Whaley's 2-credit Cell Bio lab next spring
- Alternatively, email potential mentors directly

What should I do in research at ND once I'm in a lab?

- Present your findings at the College of Science Joint Annual Meeting (COS-JAM).
- Stay for the summer.
 - After 1 academic year in your lab, apply for the \$4,500 College of Science Summer Undergrad. Research Fellowship (COS-SURF).
 - If you don't yet have a year under your belt, the Career Center provides other sources of summer funding (Eli Lilly Indiana Careers Grant, etc.).

What should I do in research beyond ND?

- Seek out off-campus summer REU opportunities with the Career Center, the Pre-Professional Office, the Biology Department, etc.
- Take advantage of the Center for Undergraduate Scholarly Engagement (CUSE) and the College of Science Undergrad. Research Travel Grants for off-campus research and/or presentations.

What makes a good recommendation?

- Letter(s) from your primary research mentor(s) is/are the most important.
 - Should comment on your talents, skills, and potential for success as an independent investigator
- For best results...
 - make an effort to get to know your research mentor personally
 - frequently go A&B the COD in lab.
- For all recommenders, be sure to ask if they can write you **strong** letters.

What do a high GPA and MCAT score really do for me?

- Contrary to popular belief, they aren't everything.
- In isolation, they'll often get you into the interview room, but they won't often take you beyond it.
- Your personal skills, informed by the insights and maturity you gain through extra-curriculars and hobbies, will usually be what seals the deal.

What is a good activity?

- http://www.youtube.com/watch?v=e4lGldoXP6A&feature=player_embedded#!
 - 3:27-4:27



Figure 2.1 Making the most of the interview.

For real now, **what** about extra-curriculars?

- Clinical experience is imperative...
 - Shadowing docs through the Tom Dooley Society, personal contacts, and/or the Career Center's ND Job Shadow Program
 - Volunteering at a local clinic
 - Reflecting on these experiences
- ...otherwise, anything goes.
 - Pursue your passions and, just like in lab, go A&B the COD
 - Take at least one leadership role.

What is different about MD-PhD personal statements?

- There are 3 of them, as opposed to 1 for MD-only.
 1. Why MD? (5,300 character limit)
 2. Why MD-PhD? (3,000 character limit)
 3. Comment on your research. (10,000 character limit)*
- For #1, see Fr. Foster's advice in 'Preparing Health Professions' class
- For #2, answer why you need both degrees; why you want to be a chimera.
- For #3, focus on your contributions (esp. intellectual) in the lab(s) in which you've worked.
- Email Joe and I for examples before May:
pkundert@nd.edu, jcannova@nd.edu

*All character limits include spaces.

What about the interviews?

- MD-PhD interviews
 - Some will be with faculty who you select. Do your homework on who they are, recent developments in their professional lives, recent publications, etc.
 - Show enthusiasm and a deep understanding of your own research.
 - At a minimum, appear interested in their research and follow along with their description of it so you can ask pertinent questions about it.
 - Know what you want to know from this person before you step into the room and extract that info without going about it pushily.

What about the interviews?

- MD interviews
 - Sometimes, your interviewers won't know you're applying for the MD-PhD program. Make them aware of this.
 - If it comes up, discuss your research even here.
 - Follow Fr. Foster's advice and don't fret.
 - Some examples of what they're trying to figure out:
 - Why medicine?
 - Do you engage intellectually outside of the classroom?
 - Do you have solid leadership skills?
 - Are you culturally and emotionally sensitive? Are you willing to evaluate touchy issues from others' perspectives? (Fr. Foster's clinical ethics course is great for this).
 - Can you think creatively on your feet?
 - Do you have a basic knowledge of the healthcare system? (Dr. Navari's Introduction to the American Healthcare System course is great for this).

When does all of this need to happen?

- Freshman and sophomore year
 - Get involved in extra-curriculars.
 - Get into a lab.
 - Shadowing, clinical volunteering
- Summer before junior year
 - Start research if you haven't already.
 - Write up your curriculum vitae, resumé.
 - Start to research MD-PhD programs to find those that interest you.

When does all of this need to happen?

- Fall junior year
 - Enroll in an MCAT prep course or begin studying on your own, register for MCAT.
 - Volunteering
- Spring junior year
 - COS-JAM
 - Letters of recommendation
 - MCAT studying in high gear
 - Draft personal statements.

When does all of this need to happen?

- Summer before senior year
 - Submit AMCAS, preferably before July 1st
 - Latest July 15th
 - Secondaries
- Senior year
 - More secondaries
 - Interview prep

What are some factors I should consider when choosing where to apply?

- Research infrastructure
- Presence of role-models
- Training support (NIH Medical Scientist Training Program [MSTP] vs. MD-PhD)
- Curriculum integration
- Presence and strength of your PhD area(s) of interest
- Reach schools to safety schools
- Location
- Program size
- Community
- Outcomes
- Prestige

**What are some factors that should
NOT influence my decision?**

- The program that accepts you first
- Size of the stipend
- Time to degree
- The presence of a certain individual faculty member

Who should I contact with questions?

- For anything about MD-PhD (before May!):
 - Us: pkundert@nd.edu, jcannova@nd.edu
- For finding a lab:
 - Drs. Whaley and Gursky: Michelle.A.Whaley.3@nd.edu, Susan.K.Gursky.2@nd.edu
- For research funding:
 - Dr. Dom Chaloner (College of Science): dchalone@nd.edu
 - Career Center: ndcps@nd.edu
 - Robyn Centilli: robyn.o.centilli.1@nd.edu
 - Laura Flynn: lflynn@nd.edu
- For all things pre-professional and application-based
 - Fr. Foster: foster.34@nd.edu

What are some good general resources?

- *The Complete Guide to the MD/PhD Degree* by Ben Rosner and Jayakar Nayak. ISBN: 1-888308-16-8
 - A little dated, but very comprehensive
- Anything by Dr. Skip Brass
 - http://sciencecareers.sciencemag.org/career_magazine/previous_issues/articles/2009_10_16/caredit.a0900124
 - www.med.upenn.edu/mstp/applicantfaq.pdf
- <http://biology.nd.edu/undergraduate-program/research/mdphd-resources/>
- studentdoctor.net