2022

MD-PhD: Is it Right for me?

Communications Committee of the MD-PhD Section of the Group on Research, Education, and Training (GREAT) AAMC

• Application Process
• Training
• Careers
What distinguishes physician scientists from physicians?

**Physicians**
- Use biomedical knowledge to help individual patients

**Physician Scientists**
- Advance biomedical knowledge through research

**Medical school** prepares people as life-long learners to diagnose and treat patients

**Graduate school** trains people to perform rigorous, hypothesis-driven research

**Physician scientists serve to bridge scientific research and clinical patient care**
MD-PhD graduates sit at the intersection of science and medicine

The physician scientist pipeline is so important that the government and institutions are invested in your education – paying for your tuition and benefits
Physician-Scientists: A Spectrum from Clinician to Scientist

Adapted from McKinney, Acad Med, 2017
How do we train physician-scientists?

Almost 50% of all NIH Research Project Grants with an MD as principal investigator are MD-PhDs, but they are only 3% of medical school graduates.
Where is MD-PhD training done?

- There are ~100 MD-PhD programs affiliated with medical schools:
  - MD-PhD training opportunities can be found in nearly every state.
  - ~50 programs (with ~40-190 trainees) are supported by NIGMS training grants known as **Medical Scientist Training Programs (MSTPs)**
  - Most MD-PhD programs offer **financial support**: stipends, tuition waivers and health insurance
**MD-PhD Program Overview**

**Goal:** Prepare trainees for a career that combines research and clinical care, emphasizing research

<table>
<thead>
<tr>
<th>Years 1-2</th>
<th>Years 3-6</th>
<th>Years 7-8</th>
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</thead>
<tbody>
<tr>
<td>Mostly med school</td>
<td>Mostly grad school</td>
<td>Mostly med school</td>
</tr>
</tbody>
</table>

- Curriculum integrates MD and PhD training
  - complete both in 7 or 8 years
- Many PhD fields are possible
  - Non-traditional PhD training opportunities
MD-PhD Alumni.....

- Choose a variety of residency training specialties
- Do research more than 50% of the time
- Enjoy their careers; more than 80% would choose their career again
MD-PhD Careers: long term outcomes

Brass and Akabas, 2019, JCI Insight 4(19):e133009
The National MD-PhD Program Outcomes Study

MD-PhDs conduct various types of research.

Consulting/Law/Finance, 1%
Private Practice, 24%
Industry, 7%
Institute, 1%
Federal agency, 2%
NIH, 2%
Other, 3%

Academia, 60%

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Elements of a successful MD-PhD application

Holistic review

- Substantive research experience
- Physician scientist career commitment
- Strong academics
- Integrity, maturity, resilience
- Experience in caring for others
- Activities and life experiences

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What constitutes a substantive research experience?

Sustained experience
Familiarity with testing a hypothesis
Experience presenting research
(publications not required)

Types of settings
• Undergraduate research, OR
• Post-baccalaureate research
## To take a gap year or not?

<table>
<thead>
<tr>
<th>Gap year recommended – to fill a gap</th>
<th>Gap year not recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>• I’m not sure I want to do full-time research for my career</td>
<td>• I’ve done a lot of research as an undergraduate and am ready to apply</td>
</tr>
<tr>
<td>• I have not yet engaged in a substantive research experience</td>
<td>• I have a good understanding and ability to communicate the research I have completed</td>
</tr>
<tr>
<td>• I have been involved in technical aspects without thinking about problems broadly or testing hypotheses</td>
<td>• An advisor recommended it but does not frequently advise MD/PhD applicants</td>
</tr>
<tr>
<td>• I need more time before committing to an ~8 year program (and other personal reasons).</td>
<td>• I think I need to get publications</td>
</tr>
</tbody>
</table>

### If I decide to take a gap year, what should I do?

**RESEARCH**

- Full-time as an employed position or part of a program
- Master’s or post-baccalaureate program with research and coursework (if needed to boost academics)
MD-PhD Statistics (2020-21)

- 5,913 MD-PhD trainees nationally

- 2020-2021 Application cycle (matriculated Summer/Fall 2021):
  - 2,091 MD-PhD applicants (>62K straight MD)
  - 15.7 applications submitted/applicant (avg)
  - 750 matriculants: ~1/3 of MD-PhD applicants entered an MD-PhD Program in 2021
    - 50% women
    - 12.5% racial/ethnic URM
    - 9.5% multi racial/ethnicity

*AAMC Table B-7/B-8/B-9/B-12: MD-PhD Matriculant Tables*
## MD-PhD Applicant Statistics (Class entering 2021)

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total applicant pool (n = 2,091)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MCAT</td>
<td>510.5</td>
<td>477 – 528</td>
</tr>
<tr>
<td>GPA</td>
<td>3.65</td>
<td>1.9 – 4.0</td>
</tr>
<tr>
<td><strong>Matriculants (n = 750), 36%</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MCAT</td>
<td>516</td>
<td>499 – 528</td>
</tr>
<tr>
<td>GPA</td>
<td>3.79</td>
<td>2.76 – 4.0</td>
</tr>
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</table>
Self-identification of MD-PhD matriculants:
goal to increase the physician scientist workforce diversity

- White: 45%
- Asian: 26%
- Hispanic, Latino, or of Spanish Origin: 4%
- Black or African American: 8%
- Native Hawaiian or Other Pacific Islander: 0%
- Unknown Races/ethnicities: 10%
- Other: 2%
- American Indian or Alaska Native: 0%

*AAMC Table B-7/B-8/B-9/B-12: MD-PhD Matriculant Tables
Application Timeline
Candidates Matriculating in the Summer of 2023

Pre-application preparation (2-3 years)
- Courses
- Research
- Clinical exposures
- Activities and life experiences

~1.5 year process

Winter-Spring 2022
Preparing a strong application

Summer 2022
Apply

Fall 2022
Interview

Winter 2022/23
Acceptance

Summer 2023
Start
What should you look for in a MD-PhD program?

- Environment (research and academic)
- Students, program activities & professional development, community involvement
- Support during transitions through phases of training
- Alumni achievement
- Location
- A sense of inclusion
Myths: Successful MD-PhD applicants:

<table>
<thead>
<tr>
<th>Myth: Need higher scores than MD applicants</th>
<th>Myth: Must take at least one gap year after college</th>
<th>Myth: Must have publications</th>
</tr>
</thead>
<tbody>
<tr>
<td>FACT: Review of MD/PhD applicants is holistic, the most important part of the application is physician-scientist potential.</td>
<td>FACT: A gap year is not necessary - it can help inform a career path or enrich a research experience for someone who did not have enough time during college.</td>
<td>FACT: Publications are not necessary; applicants should demonstrate independence; dissemination of work can be with posters, talks, and publications.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Myth: Have always known about this career path</th>
<th>Myth: Start independent research careers later than MD graduates</th>
<th>Myth: Wait to start a family until completing training</th>
</tr>
</thead>
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<td>FACT: Successful MD/PhD applicants arrive via diverse and meaningful pathways; those who have not had exposure previously should seek out opportunities.</td>
<td>FACT: MD/PhDs and MDs receive their first NIH R01 award at the same average age.</td>
<td>FACT: MD/PhD students find ways to incorporate life throughout, and many start families during training.</td>
</tr>
</tbody>
</table>
For more information:

www.aamc.org/mdphd

nih.gov/training

www.physicianscientists.org

Role models

Knowledgeable people who care about you:

• Directors and Mentors (Summer Program and Post-Bac)
• Professors, Lab Heads and Department Chairs
• MD-PhD Students, Graduate Students and Post-Docs
• Career Advising Offices
• PhD and MD-PhD Program Directors