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**

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Tomorrow's Doctors, Tomorrow's Cures®

Learn
Serve
Lead

Association of American Medical Colleges

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

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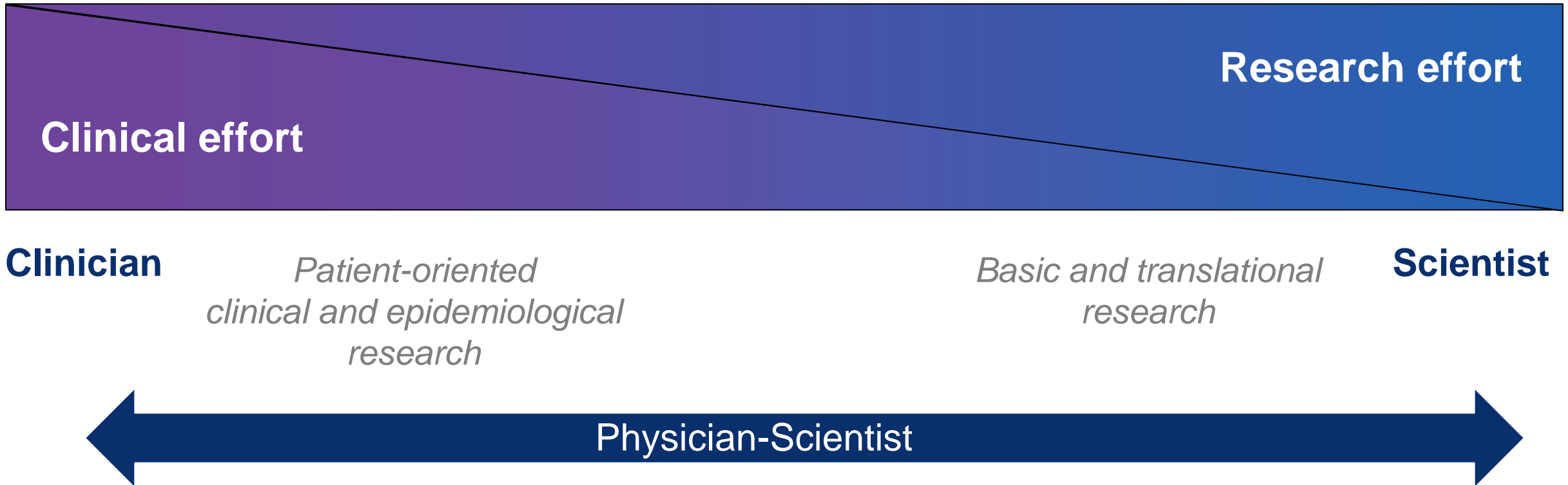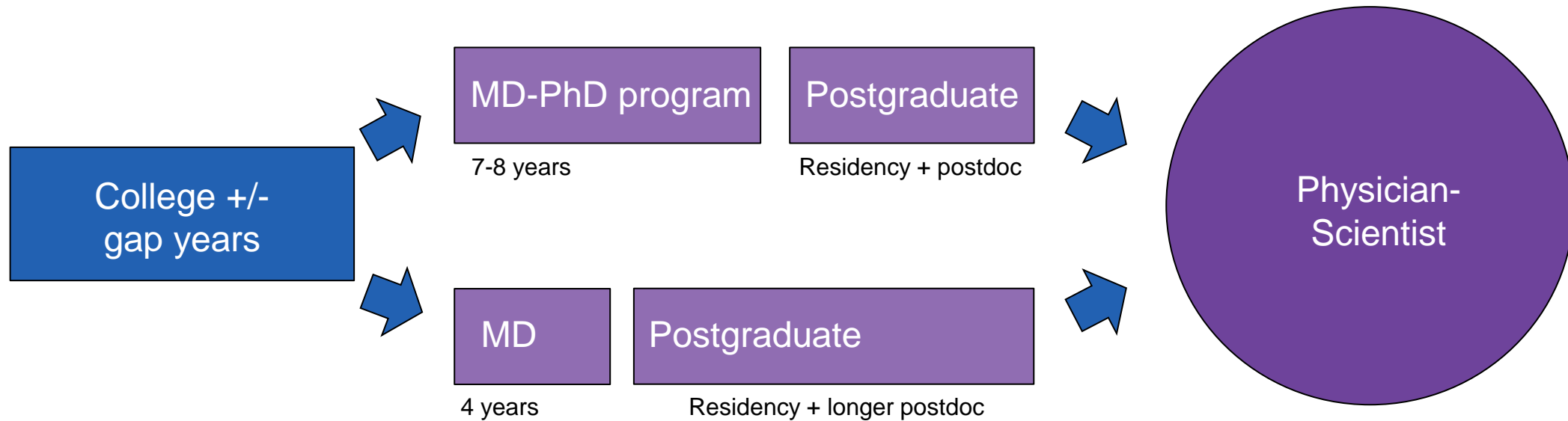# MD-PhD graduates sit at the *intersection of science and medicine*

Science

Medicine

The physician scientist pipeline is so important that the government and institutions are invested in your education – paying for your tuition and benefits

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Physician-Scientists:
A Spectrum from Clinician to Scientist

Research effort

Clinical effort

Clinician

Patient-oriented clinical and epidemiological research

Basic and translational research

Scientist

Physician-Scientist

Adapted from McKinney, Acad Med, 2017

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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

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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 Programs
in 46 states, DC, and PR

PR

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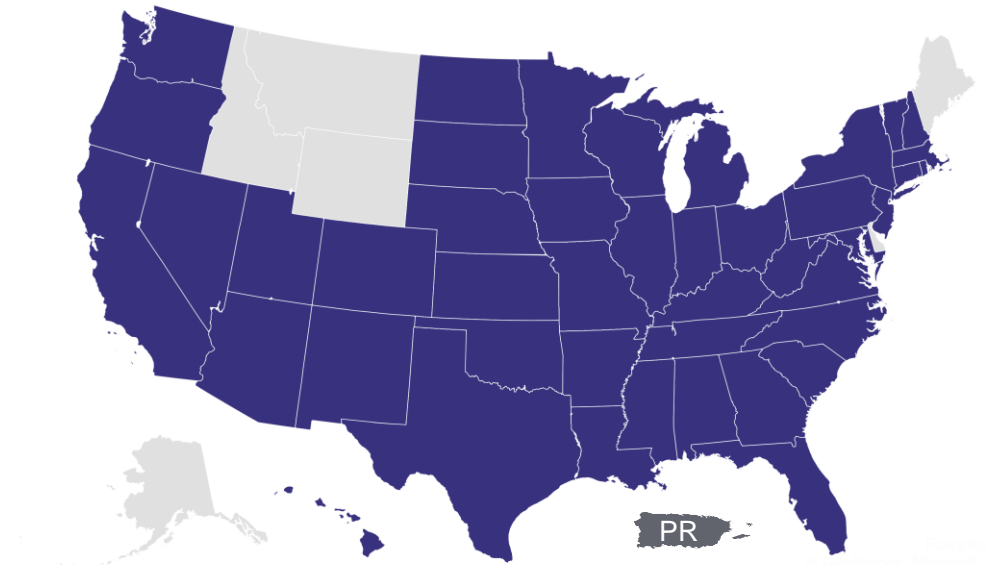
MD-PhD Program Overview

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

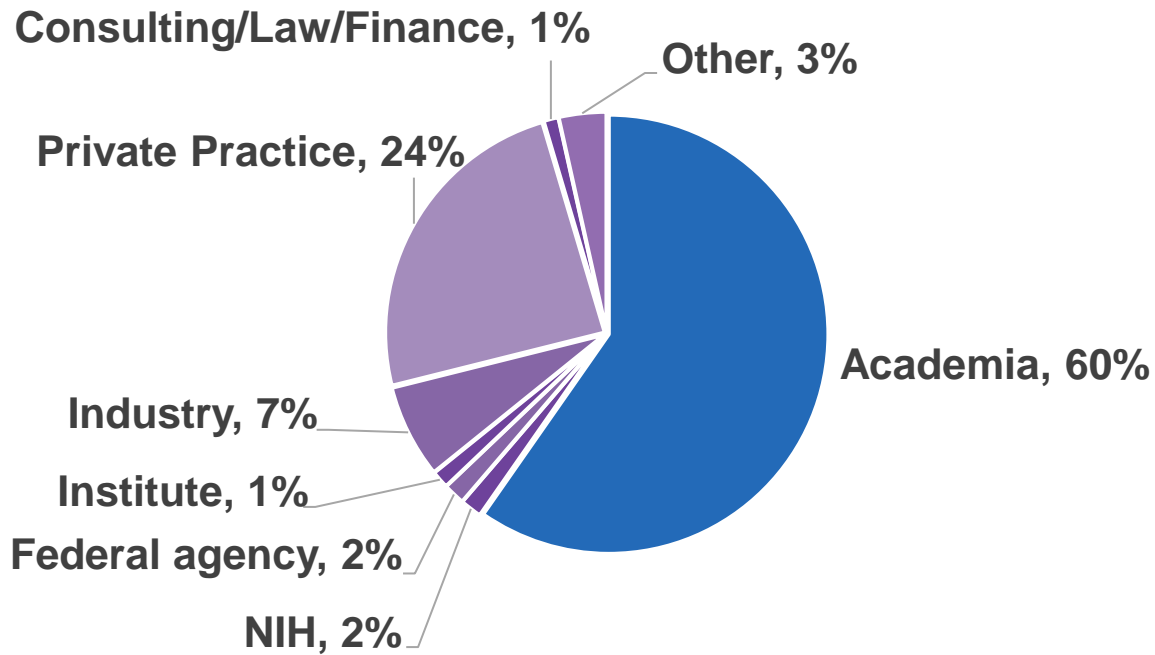| Years 1-2	Years 3-6	Years 7-8
Mostly med school	Mostly grad school	Mostly med school

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

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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
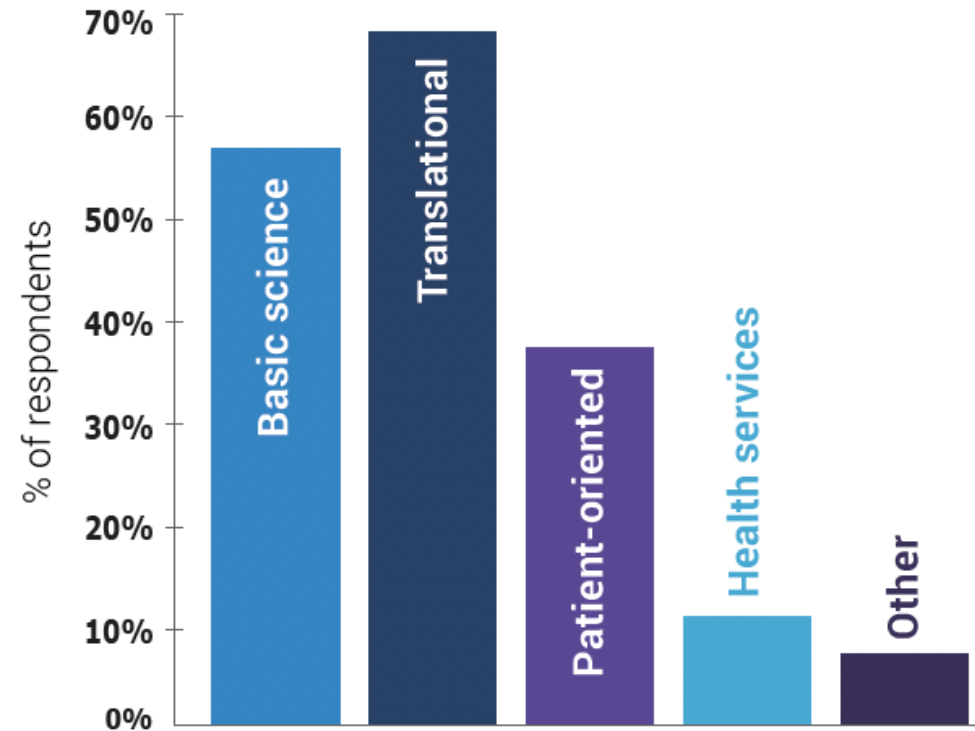
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MD-PhD Careers: long term outcomes

Pie chart — MD-PhD career outcomes:
- Consulting/Law/Finance, 1%
- Other, 3%
- Private Practice, 24%
- Academia, 60%
- Industry, 7%
- Institute, 1%
- Federal agency, 2%
- NIH, 2%

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

MD-PhDs conduct various types of research.

Bar chart — % of respondents:
- Basic science
- Translational
- Patient-oriented
- Health services
- Other

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Preparing for and Applying to MD-PhD Programs

Elements of a successful MD-PhD application

Holistic review

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

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To take a gap year or not?

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

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)

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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

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MD-PhD Applicant Statistics (Class entering 2021)

	Mean	Range
Total applicant pool (n = 2,091)		
MCAT	510.5	477 – 528
GPA	3.65	1.9 – 4.0
Matriculants (n = 750), 36%		
MCAT	516	499 – 528
GPA	3.79	2.76 – 4.0

AAMC Table B-10: MCAT® Scores and GPAs for MD-PhD Applicants and Matriculants to U.S. Medical Schools, 2021-2022

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Self-identification of MD-PhD matriculants:
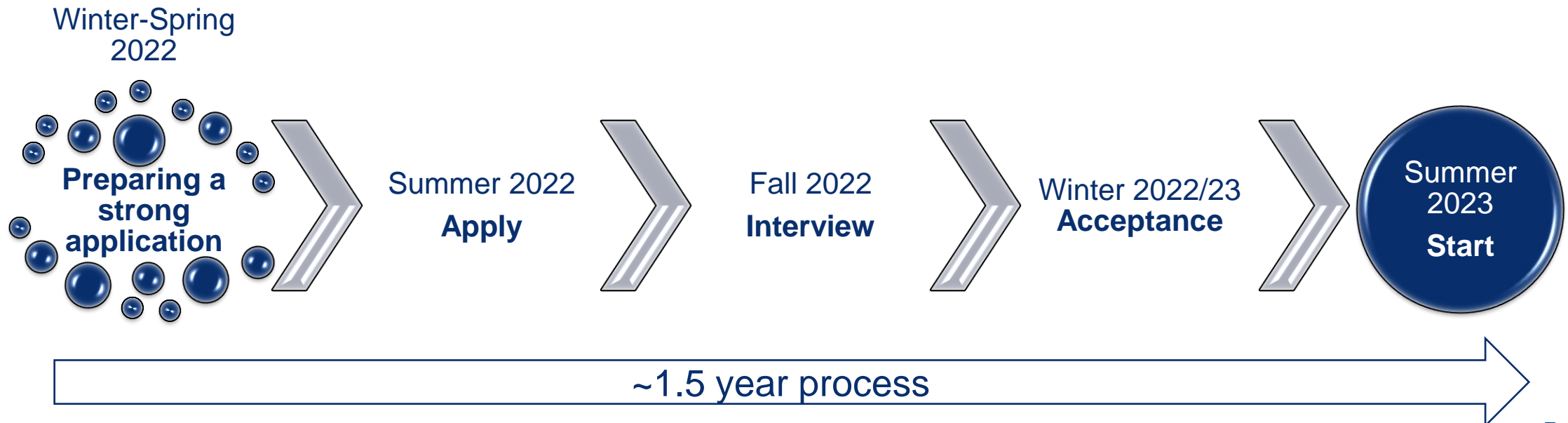## goal to increase the physician scientist workforce diversity
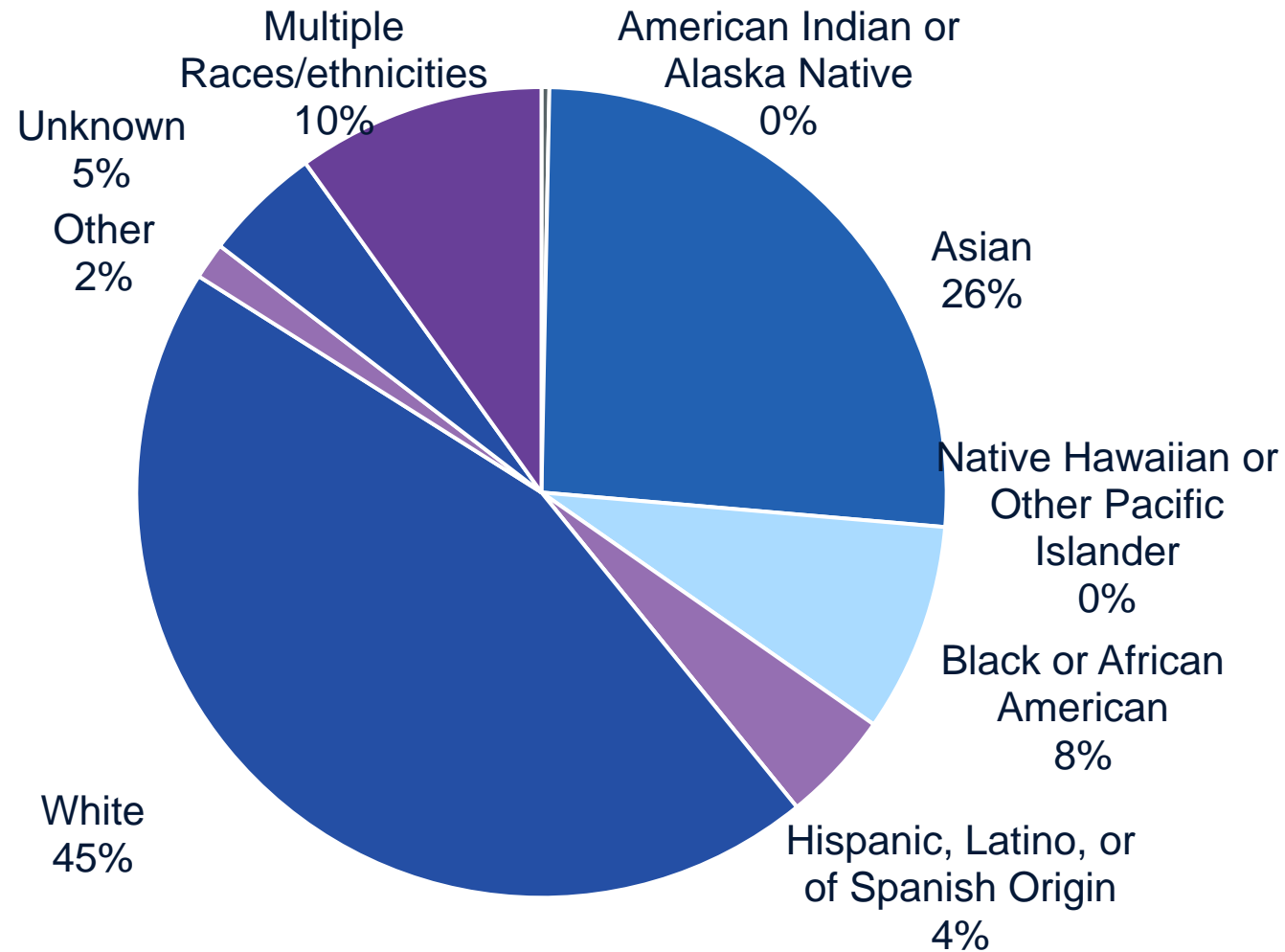
*AAMC Table B-7/B-8/B-9/B-12: MD-PhD Matriculant Tables

Application Timeline
Candidates Matriculating in the Summer of 2023

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

Winter-Spring 2022

Preparing a strong application

Summer 2022 **Apply**

Fall 2022 **Interview**

Winter 2022/23 **Acceptance**

Summer 2023 **Start**

~1.5 year process

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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

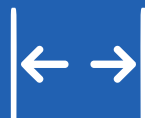- A sense of inclusion

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Myths: Successful MD-PhD applicants:

...need higher scores than MD applicants

FACT: Review of MD/PhD applicants is holistic, the most important part of the application is physician-scientist potential

...must take at least one gap year after college

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

...must have publications

FACT: Publications are not necessary; applicants should demonstrate independence; dissemination of work can be with posters, talks, and publications

...have always known about this career path

FACT: Successful MD/PhD applicants arrive via diverse and meaningful pathways; those who have not had exposure previously should seek out opportunities

...start independent research careers later than MD graduates

FACT: MD/PhDs and MDs receive their first NIH R01 award at the same average age.

...wait to start a family until completing training

FACT: MD/PhD students find ways to incorporate life throughout, and many start families during training

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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

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