2014

AAMC
Tomorrow's Doctors, Tomorrow's Cures

Learn
Serve
Lead

MD-PhD: Is it Right for Me?

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

Association of
American Medical Colleges

Biomedical Scientists: Multiple Pathways

- **MD graduates pursue research training during fellowship years**

- **PhD graduates conduct research with clinical translational training**

- **MD-PhD graduates combine careers of the MD and PhD**
  - **Mentored, integrated research and medical training**
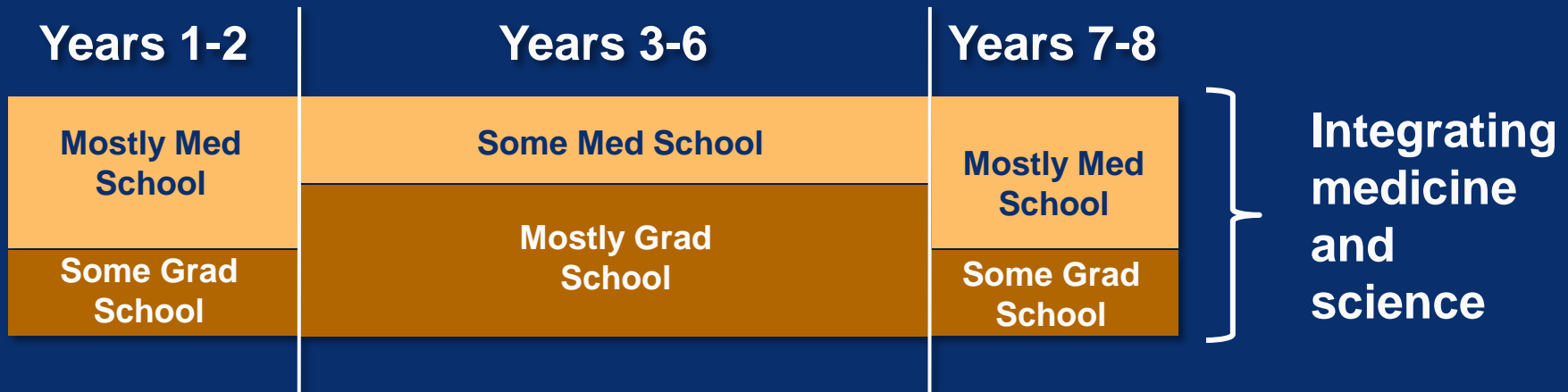 - **Conduct mechanism-based research**

AAMC

MD-PhD's are <u>chimeras</u> who blend the discovery of new knowledge with clinical medicine <u>at the intersection of science and medicine</u>

Science   **Medicine**
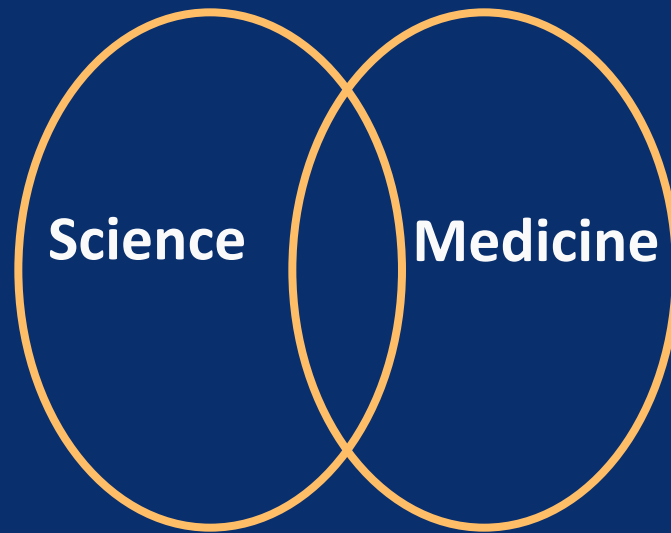
How is MD-PhD training done?

- There are over 100 MD-PhD programs affiliated with medical schools
    - 44 programs are partially supported by training grants from NIGMS known as Medical Scientist Training Programs or MSTPs

- Most MD-PhD programs offer financial support: stipends and tuition waivers

- Curricula mix MD and PhD training to complete both degrees in ~ 8 years

AAMC

MD-PhD curriculum is a continuum

Years 1-2	Years 3-6	Years 7-8	
Mostly Med School	**Some Med School**	**Mostly Med School**	Integrating medicine and science
Some Grad School	**Mostly Grad School**	**Some Grad School**	

Preclinical (years 1 - 2) Complete Step 1 exam
- Medical sciences & explore research opportunities (lab rotations)

Research (years 3 - 6) Complete PhD degree
- Conduct dissertation research with opportunities for clinical experiences

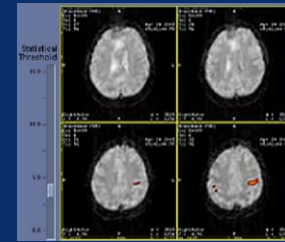- **Clinical (5 - 7 or 6 - 8) Complete MD degree**
  - Clinical clerkships
  - Additional research experiences

PhD is awarded in a wide variety of disciplines

AAMC

PhD Disciplines

Biomedical Sciences, include:

- **Biochemistry & Macromolecular Biophysics**
- **Cell & Developmental Biology**
- **Immunology**
- **Molecular Biology & Genetics**
- **Microbiology & Infectious Disease**
- **Neuroscience**
- **Pathology & Mechanisms of Disease**
- **Pharmacology**
- **Physiology**

Other choices, include:

- **Bioengineering & Biomedical Imaging**
- **Chemical and Physical Sciences**
- **Computational Biology & Bioinformatics**
- **Public Health, Epidemiology & Preventative Medicine**
- **Social and Behavioral Sciences**
- **Bioethics**

Not every program offers every PhD, so ask to be sure

**Eric C. Wong, MD, PhD
Biophysicist-develops
fMRI Instrumentation
UC-SD**

Program Opportunities

- **Student Council**

- **MD-PHD specific courses and workshops**

- **Visiting scholar seminars**

- **Retreats**

- **National conferences and organizations**

- **Mentoring for Graduate and Residency Training**

A community, not just a "program"

AAMC

Post-Training Pathways

- **~ 95% of graduates pursue residencies/fellowship training:**
  - *3 to 7+ years of training, varies with specialty*
  - *fellowship offers opportunity to return to research*

- **~75% of graduates become medical school faculty**

- **~65% of graduates continue to do significant (> 50%) research**

- **~40% of NIH grants to MDs are received by MD-PhD**

- **Many graduates fill academic leadership roles**

- **Alternate pathways include working in industry and at research institutions (NIH, HHMI, etc.).**

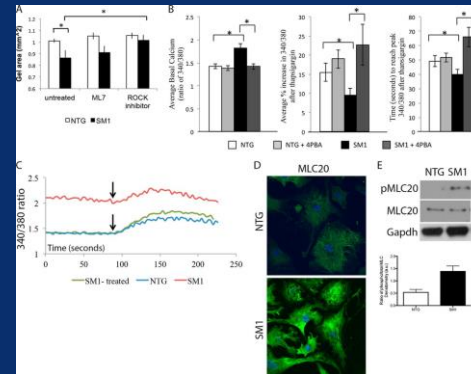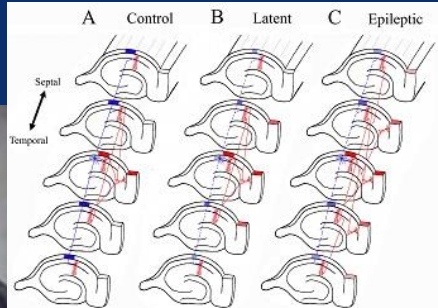# MD-PhD program graduates: long term outcomes
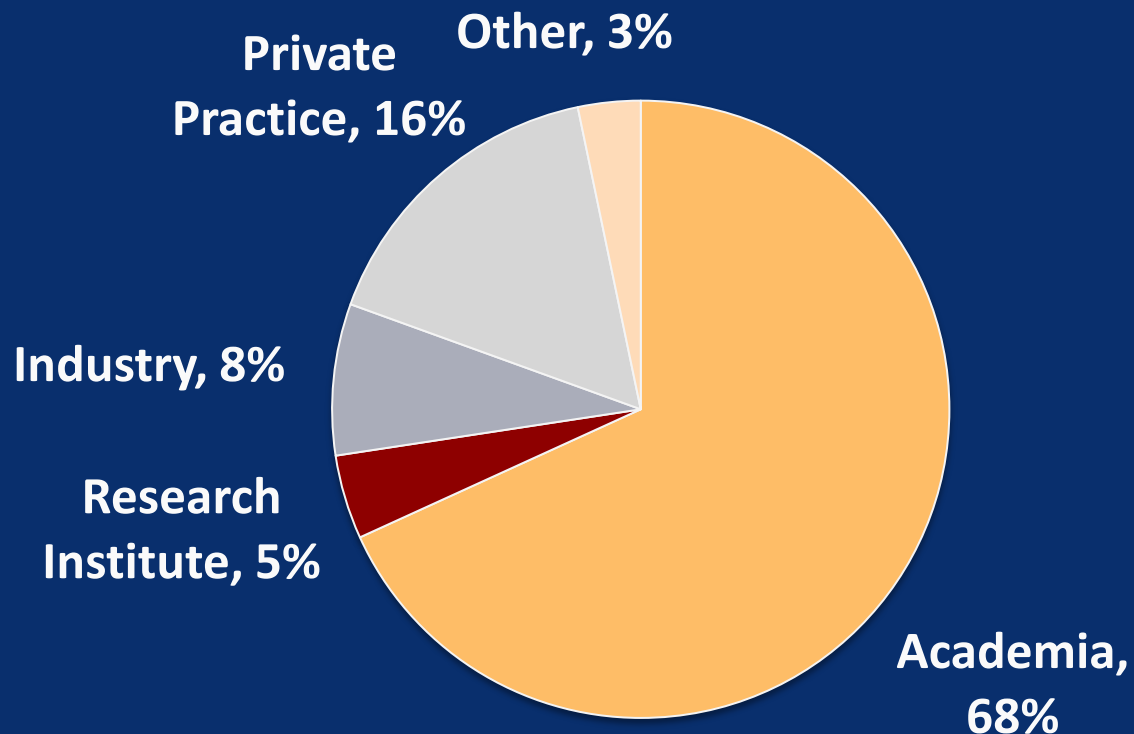
Brass et al., Acad. Med 85: 692 (2010)
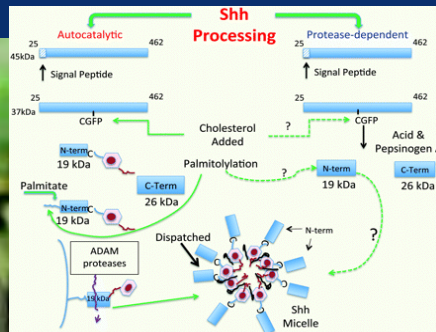
Careers of Biomedical Scientists

José E. Cavazos, MD, PhD, Neurologist, studies plasticity of the brain to better treat seizures and epilepsy

Juanita Merchant, MD, PhD, Internal Medicine, studies transcriptional control of gastrointestinal peptides that regulate cell growth and cancer

Dianna Milewicz, M.D., Ph.D., Internal Medicine, studies cardiovascular medicine and genetic diseases of the vascular system

AAMC

Whom do MD-PhD Programs seek?

- Applicants with integrity and maturity who show:
  - Creativity
  - Leadership potential and the ability to work with others
  - Aptitude to address big questions in biomedical research
- Research experiences
- Academic record including MCAT scores
- Personal statement – why MD-PhD?
- Letter of recommendation from research mentors
- Experience in caring for others
- Extracurricular activities and life experiences

AAMC

What constitutes a substantive research experience?

- Sufficient research experience to understand what you are getting into:
    - Multiple summer projects
    - Senior thesis research
    - One or more years pursuing research activities after undergraduate degree

- Familiar with the idea of testing a hypothesis

AAMC

MD-PhD Statistics -2012*

- **Nationally, there are ~ 5,000 MD-PhD trainees**

- **In the 2012 entering MD-PhD class**
  - **37% were women**
  - **16% were students of diversity**

- **~1/3 of MD-PhD applicants entered an MD-PhD Program**

AAMC

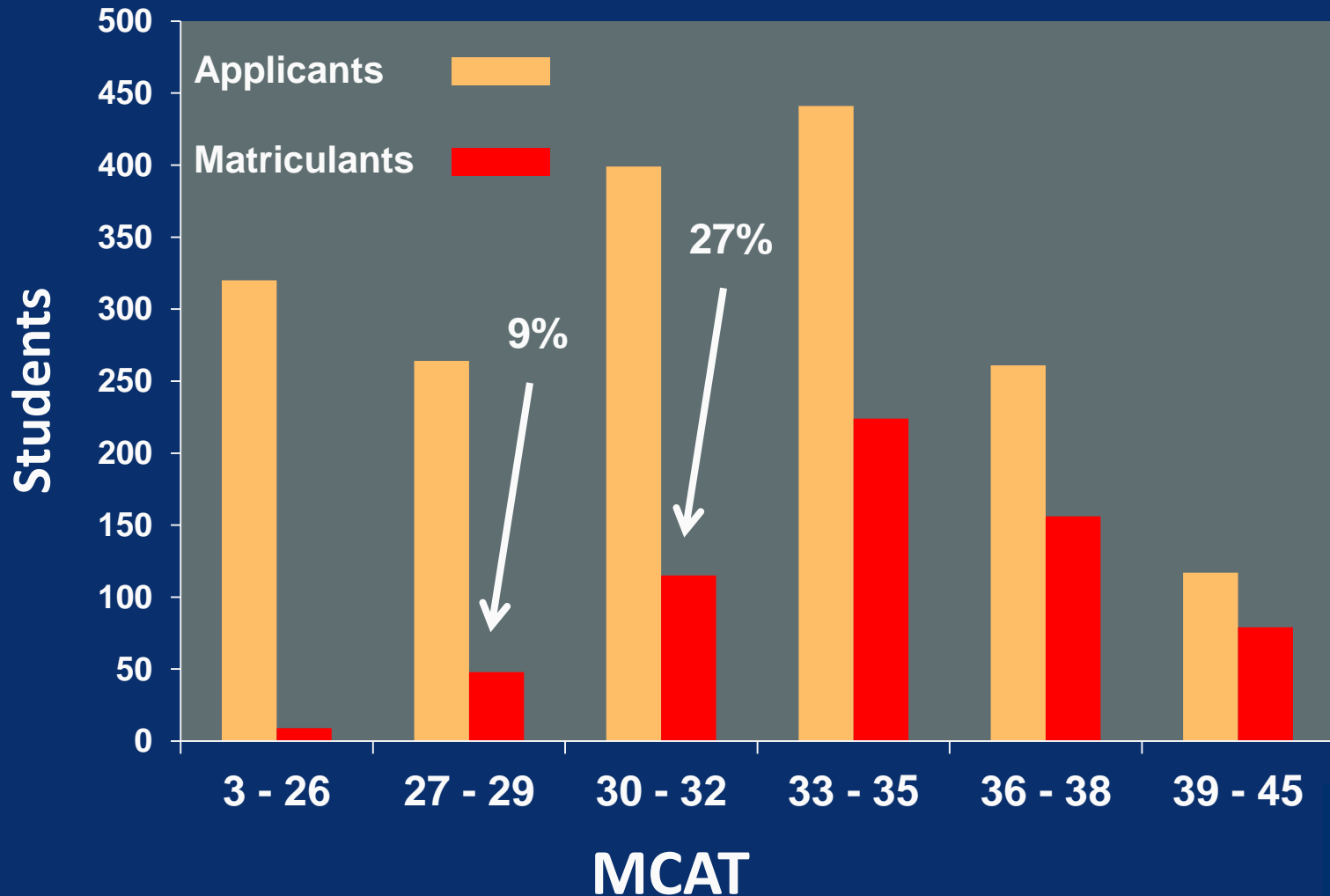# MD-PhD Applicant Statistics (2013)*

- **Total Applicant Pool**   (n= 1,937) 100%

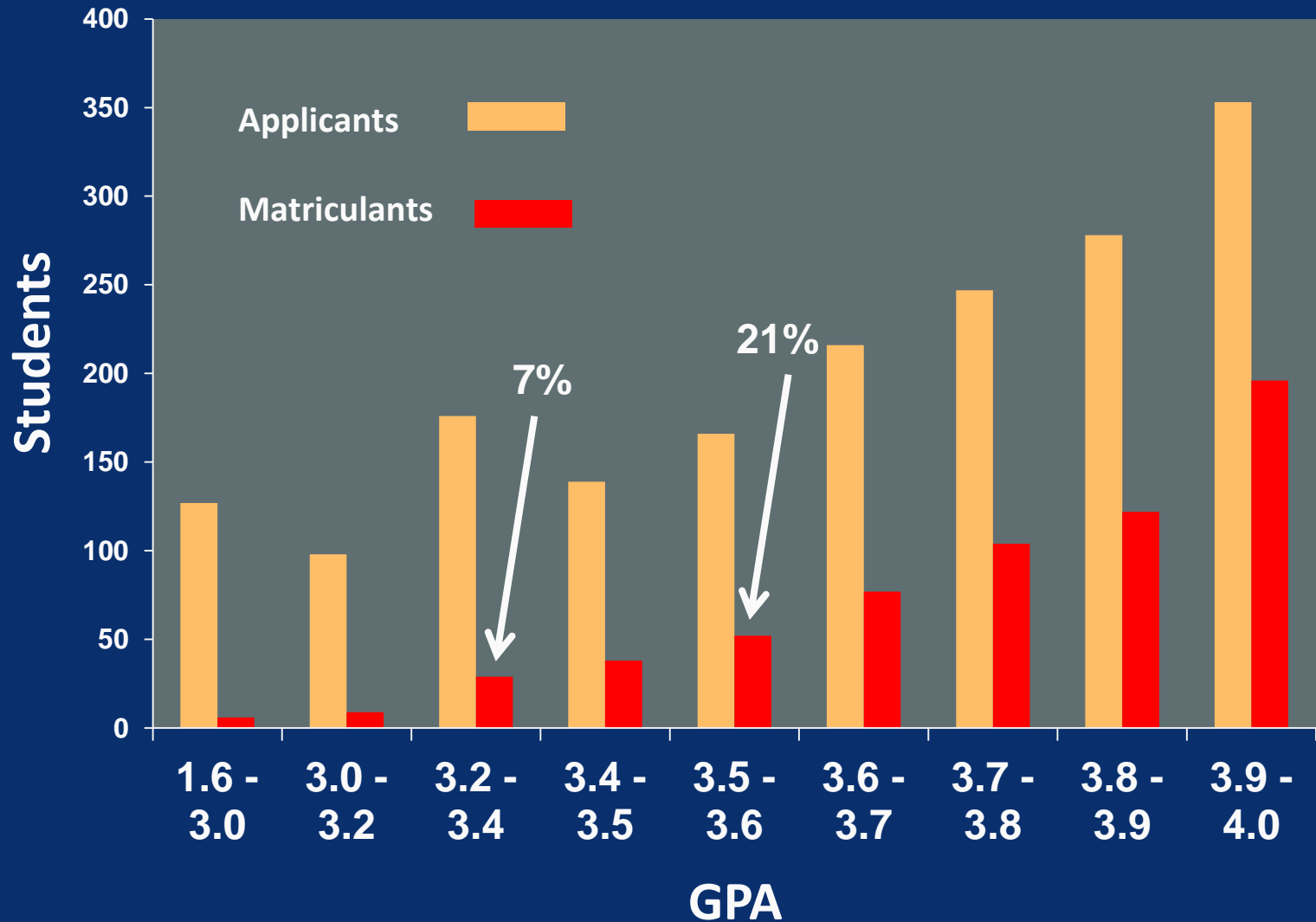|	Mean	Range
MCAT	31.1	6 - 44
GPA	3.6	2.0 - 4.0

- **Matriculants**   (n= 609) 31%

	Mean	Range
MCAT	34.5	23 - 44
GPA	3.8	2.8 - 4.0

*AAMC Table 35: MCAT/GPA for MD-PhD Applicants/Matriculants

AAMC

Application Timeline

Application to AMCAS - Summer before entry year
- **Secondary applications**
- **Letters of recommendation**

Interviews - October to February

Final decisions - November to March

Revisit programs – March and April

Process complete – April 30

Start program - June to August

AAMC

What should you look for in an MD-PhD program?

- **Research environment**
  - program activities, faculty, students and research opportunities
- **Academic environment**
  - science and clinical curricula, program integration
- **Alumni achievement and community involvement**
- **Location**
- **A sense of belonging or "good fit"**

AAMC