

THE ALLIANCE Even Better Together

Breakout Group #9
The Role of the NIH MSTP and the ABIM Research
Pathway in Fostering Careers of Physician-Investigators

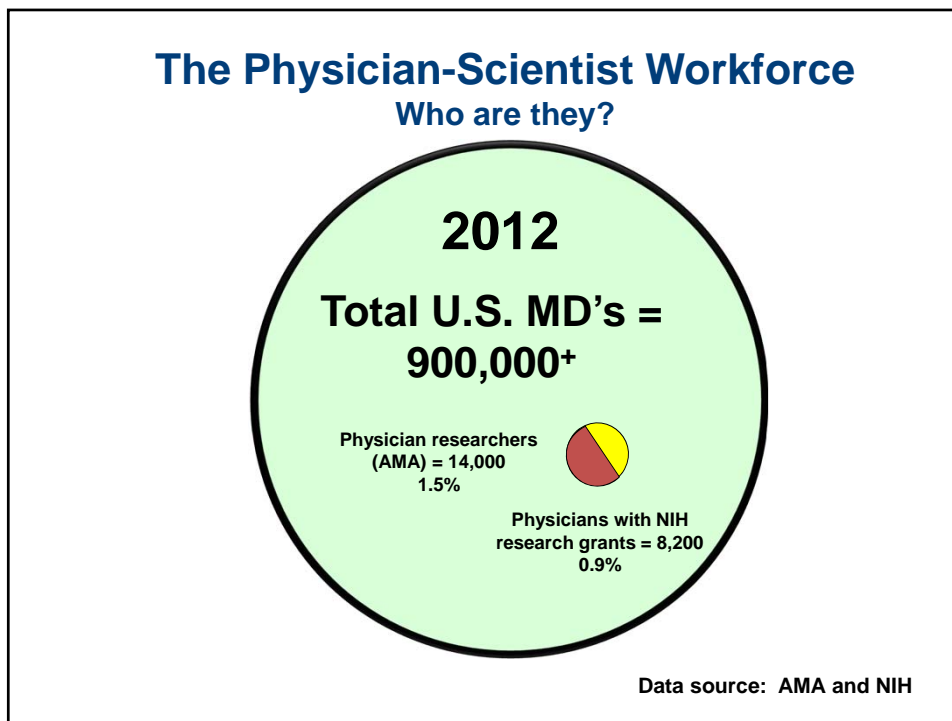
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**THE ROLE OF MSTP AND ABIM RESEARCH PATHWAYS IN
FOSTERING CAREERS OF PHYSICIAN-INVESTIGATORS**

EXISTING VEHICLES FOR DEVELOPING THE CAREERS OF PHYSICIAN-INVESTIGATORS

- I. MD-PhD Training Programs (MSTP)
- II. ABIM Research Pathway
- III. Other medical school research training programs for undergraduate medical students and postgraduate trainees

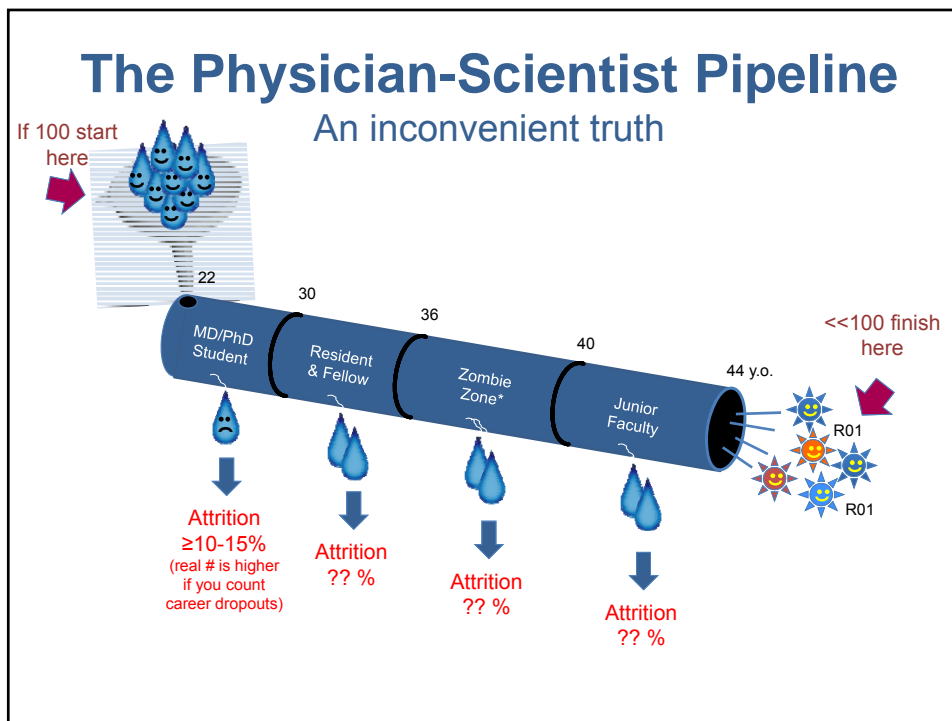
A critical question: What should be the definition of success?



Findings in the NIH PSW report

- **Mostly white men**
 - Minimal diversity
- **Growing older**
 - Steady increase in the average age of investigators
- **Increasing time to independence**
 - Age 1st faculty appointment in 2010: 39 MD's, 43 MD/PhD's
 - Age 1st R01 in 2012: 44 MD's, 45 "MD/PhD's"
- **Training takes longer**
 - MD/PhD program TTD 6.6 years in 1980; 7.8 in 2007
 - Typical age at graduation = 31
- **Slow growth on the input side**
 - MD/PhD applicant pool rising slowly compared with MD-only
- **Attrition: The leaky pipeline...**

Data sources: PSW report 2014
 Garrison and Deschamps. FASEB report 2013
 AAMC trainee tables
 Brass, et al. Acad. Med. 85: 692, 2010

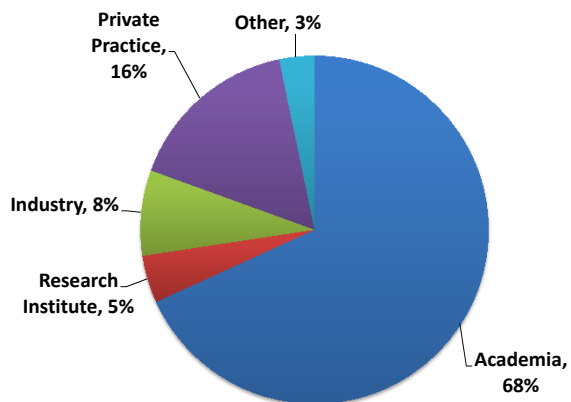


THE ROLE OF MSTP AND ABIM RESEARCH PATHWAYS IN FOSTERING CAREERS OF PHYSICIAN-INVESTIGATORS

I. MD/PhD programs (including the NIH NIGMS MSTP)

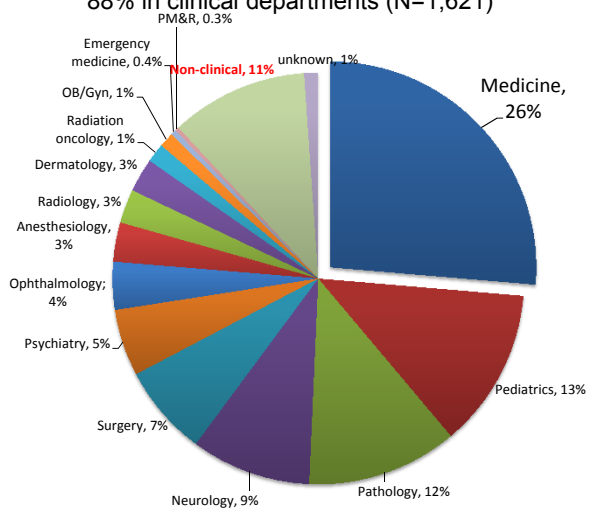
- Integrated medical and graduate education leading to an MD and PhD
 - Mostly laboratory biomedical sciences
- Goal: foster the careers of physician-scientists
- Inception: MD/PhD programs 1950's; MSTP T32 grants 1964
- Total alumni (thru 2014): approx. 10,500
- MSTP T32 currently supports 900+ trainees in 45 programs annually
- Average time to both degrees: 8 years
- Average attrition rate: 10-15%
- 1800 applicants, 600 matriculants and 550 graduates annually
 - 2:1 men:women, 11% UIM
- 95% do residencies

Graduates of 24 MD-PhD Programs Long term outcomes



Data source: Brass, Akabas, Burnley, Engman, Wiley & Andersen. Acad. Med 85: 692 (2010)

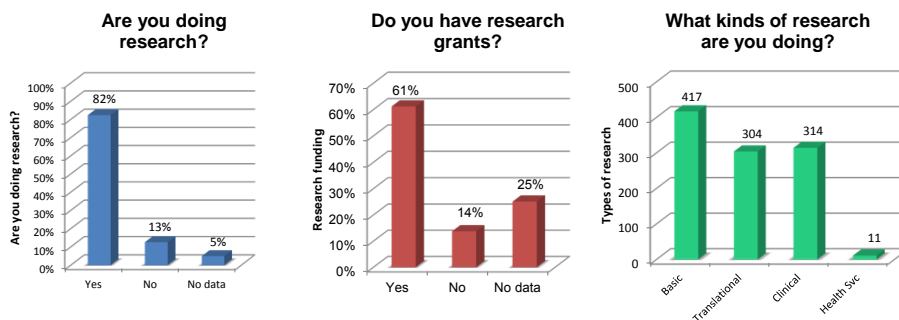
MD-PhD program graduates in academia 88% in clinical departments (N=1,621)



Brass et al., Acad. Med 85: 692 (2010)

Graduates of 24 MD-PhD Programs

Research profiles



Brass et al., Acad. Med 85: 692 (2010)

THE ROLE OF MSTP AND ABIM RESEARCH PATHWAYS IN FOSTERING CAREERS OF PHYSICIAN-INVESTIGATORS

II. ABIM RESEARCH PATHWAY

- Integrated internal medicine residency curriculum including both clinical and research training
- Goal: foster the careers of physician-scientists
- Inception: 1985 (selected programs); 1995 (formalized and open to all programs)
- Clinical (IM) training : 24 months
- Research training: 36 months (80% research effort)
- Can be integrated with subspecialty fellowship training
- Total duration of combined training: 5-7 years
- 1009 participants in 140 programs completed Pathway training between 1992-2008

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II. ABIM RESEARCH PATHWAY

Survey of 813 research pathway graduates who completed pathway, 1995-2007[^]

- 47% response rate
- 78.9% male; 21.1% female
- Median year of medical school graduation: 1999

[^] Todd et al, *Academic Medicine* 2013; 88:1747

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II. ABIM RESEARCH PATHWAY

Survey findings:

- 97% respondents completed Pathway training
- 91% respondents report some research effort
- 58% effort spent in research (group median), mostly in basic/translational research
- 72% respondents hold positions in academic medicine; 8.6% in biomedical industry; 2.1% in nonmilitary government medical service
- >85% respondents report extramural research, among whom 81.4% report federal research support

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II. ABIM RESEARCH PATHWAY

Survey finding, continued:

- Among the training variables most associated ($p < 0.05$) with ultimate success in biomedical research career:
 - Previous graduate-level research training
 - Any 1st author publications arising from Pathway research
 - Receipt of individual CDA funding

Conclusion: the ABIM Research Pathway provides an excellent training opportunity for a successful career in biomedical research

THE ROLE OF MSTP AND ABIM RESEARCH PATHWAYS IN FOSTERING CAREERS OF PHYSICIAN-INVESTIGATORS

III. Other medical school research training programs for undergraduate medical students and post-graduate trainees

- Year of mentored research for undergraduate medical students (e.g., programs funded by HHMI, DDCF, Sarnoff Foundation, NIH, etc.)
- Post-graduate research training leading to certificate, Master's degree, or Ph.D. (e.g., NIH K12-funded programs)

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III. Other medical school research training programs for undergraduate medical students and post-graduate trainees

Undergraduate programs supported by HHMI (Medical Fellows and Cloister Programs)^

- Participation in HHMI pre-doctoral programs increased likelihood of receiving NIH postdoctoral support, and participants were not less likely to receive postdoctoral support than MSTP participants
- Participation in the HHMI Cloister Program increased the likelihood of receiving a faculty appointment with research responsibility at a medical school, and participants were not less likely to receive such appointments than non-MSTP MD-PhD students
- Conclusion: one year intensive HHMI-supported training programs represent an effective strategy for training physician-scientists

[^]Fang and Meyer, *Academic Med*, 2003; 78:1271

THE ROLE OF MSTP AND ABIM RESEARCH PATHWAYS IN FOSTERING CAREERS OF PHYSICIAN-INVESTIGATORS

III. Other medical school research training programs for undergraduate medical students and post-graduate trainees

Clinical Scientist Training Program at Baylor College of Medicine^

- I. Since inception in 1999,
 - 85 trainees have received Certificates of Added Qualification
 - 45 trainees have received MSc degree
 - 15 trainees have received PhD degree
 - 91% of MSc and PhD graduates have remained in academic medicine including 4 professors, 6 associate professors, and 36 assistant professors
- II. Grants awarded to CSTP graduates within 5 years of graduation
 - 29 NIH K awards and 4 VA CDAs
 - 15 NIH R awards (including 8 R01s) and 3 VA Merit Awards

[^]Balasubramanyam, unpublished

Discussion topics

- Defining success for the physician-scientist career path at all stages
 - What works well and what can be improved?
- Shrinking the Zombie Zone
 - Should independence come earlier?
 - What are the obstacles?
- Organizing local and national efforts to improve the path to independence and reduce attrition.
 - Shouldn't we be sharing best practices?
- How best to help future physician-scientists outside of MD/PhD programs?

The end