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?
The Physician-Scientist Workforce
Who are they?

2012
Total U.S. MD’s = 900,000+

Physician researchers
(AMA) = 14,000
1.5%

Physicians with NIH
research grants = 8,200
0.9%

Data source: AMA and NIH

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
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

Academia, 68%
Industry, 8%
Research Institute, 5%
Private Practice, 16%
Other, 3%


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

Medicine, 26%
Pathology, 12%
Pediatrics, 13%
Neurology, 9%
Surgery, 7%
Psychiatry, 5%
Ophthalmology, 4%
Radiation oncology, 1%
Anesthesiology, 3%
Radiology, 3%
Dermatology, 3%
Gynecology, 1%
Emergency medicine, 0.4%
PM&R, 0.3%
Non-clinical, 11%
unknown, 1%

Graduates of 24 MD-PhD Programs
Research profiles

Are you doing research?

- 82% Yes
- 13% No
- 5% No data

Do you have research grants?

- 61% Yes
- 14% No
- 25% No data

What kinds of research are you doing?

- 504 Basic
- 354 Translational
- 354 Clinical
- 11 Nanotech


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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
II. ABIM RESEARCH PATHWAY

Survey finding, continued:

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

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

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

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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