

HISTORICAL PERSPECTIVE: PHYSICIAN INVESTIGATOR WORKFORCE: THEN AND NOW

APM/AAIM Third Consensus Conference
on the Physician Investigator
Washington DC – November 12, 2015

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Physician-Scientists

- Conduct medical research along entire continuum
- Devote majority of effort to research
- Vital and unique role in medical research enterprise

Physician-Scientists

They bring to medical research the unique perspective of being able to ask questions that are inspired by their personal experience of caring for patients

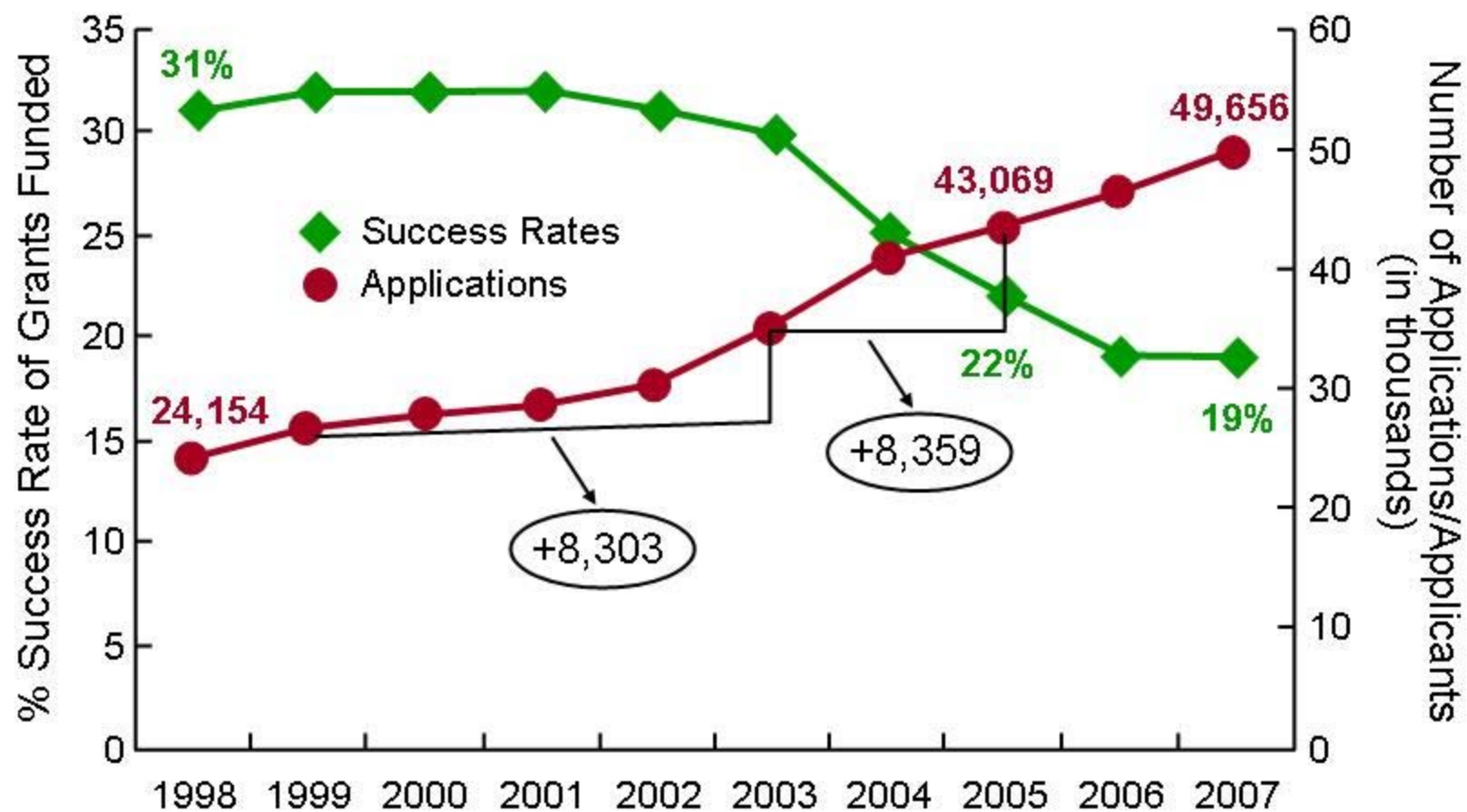
Schafer AI, ed. *The Vanishing Physician-Scientist?* 2009.

Two Fundamental Misconceptions About the Physician-Scientist Workforce

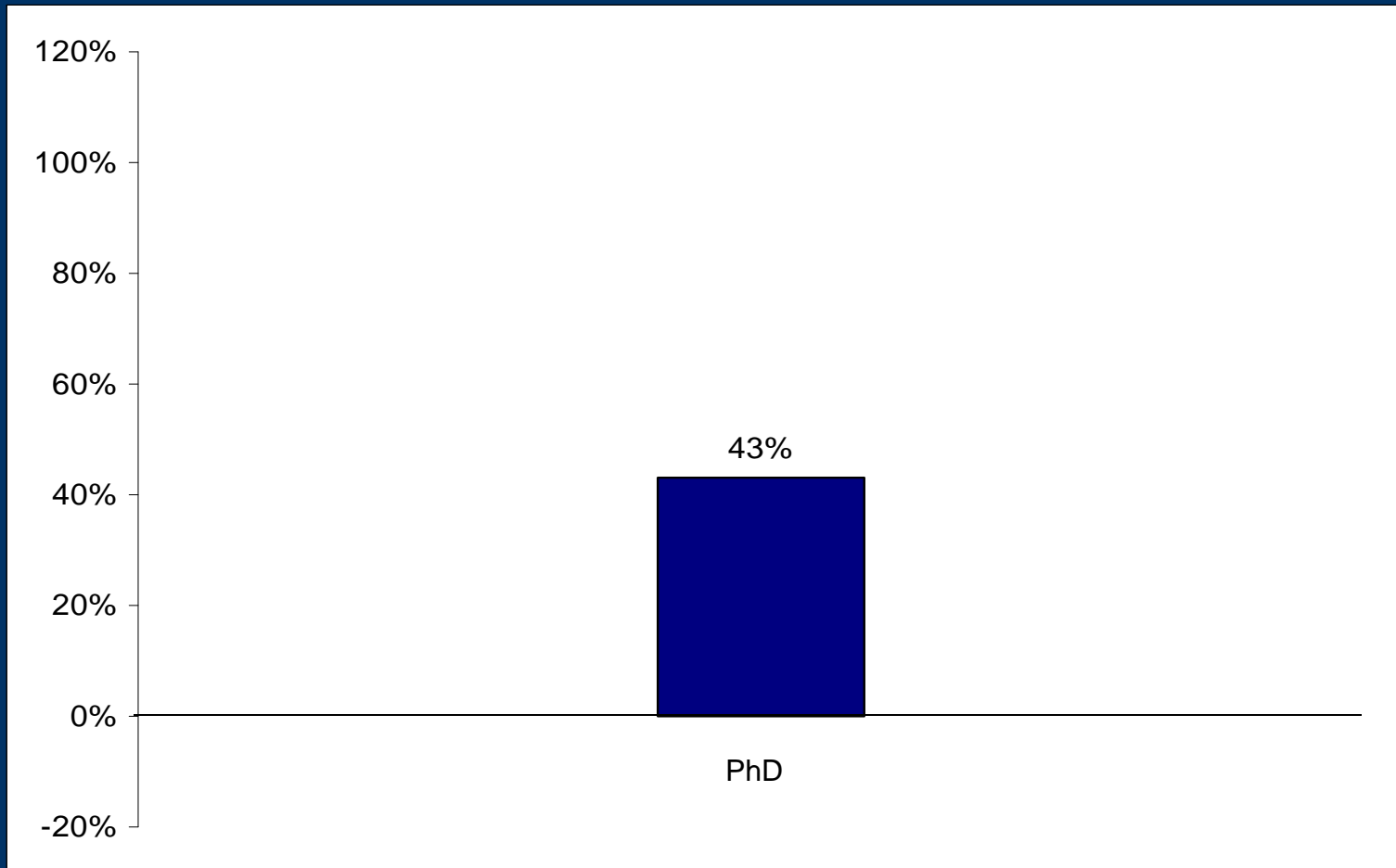
- Increasing opportunities for funding will fix the workforce problem

National Research Capacity and Demand for Grants

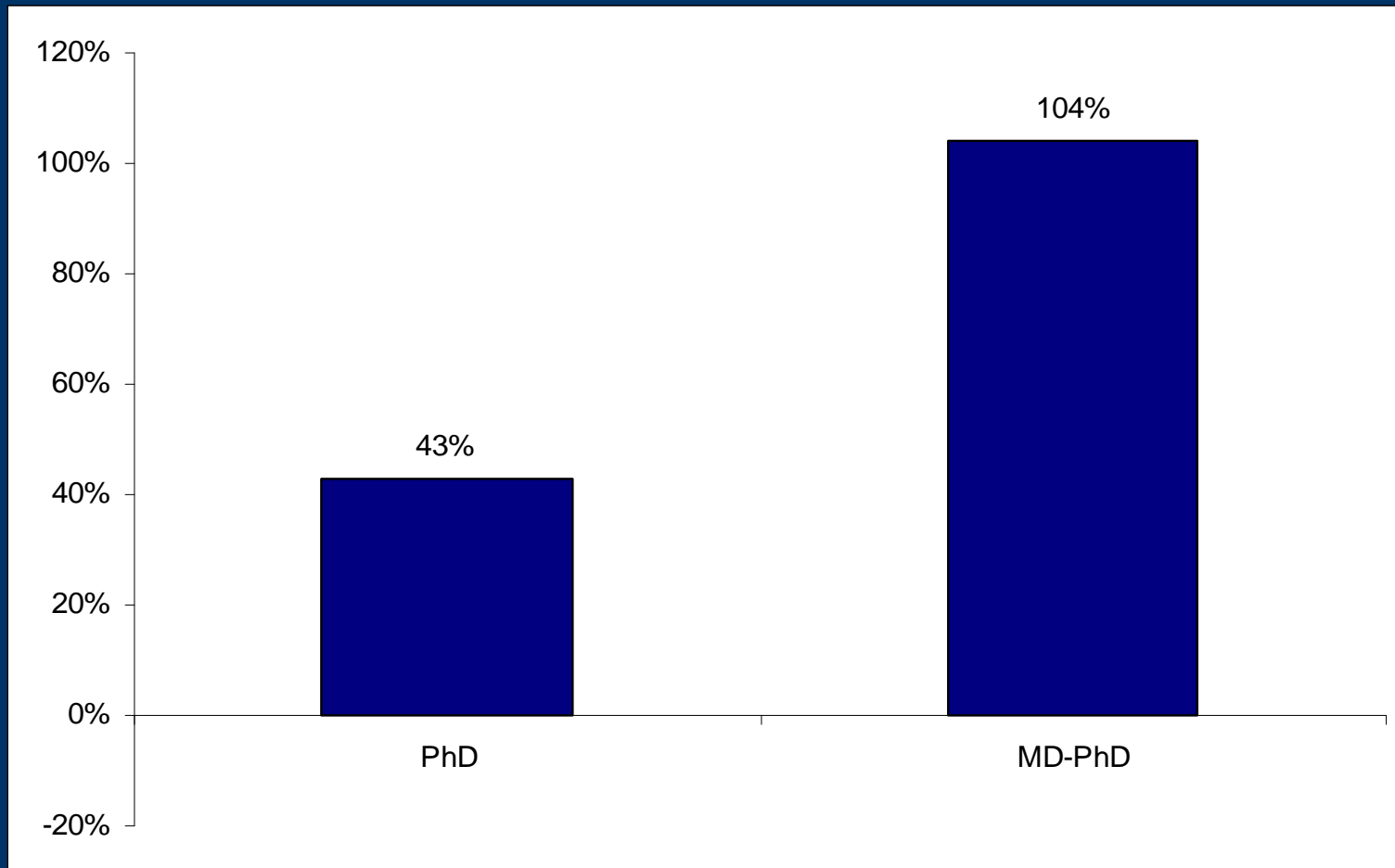
Surges at End of Doubling Period: Success Rates Fall



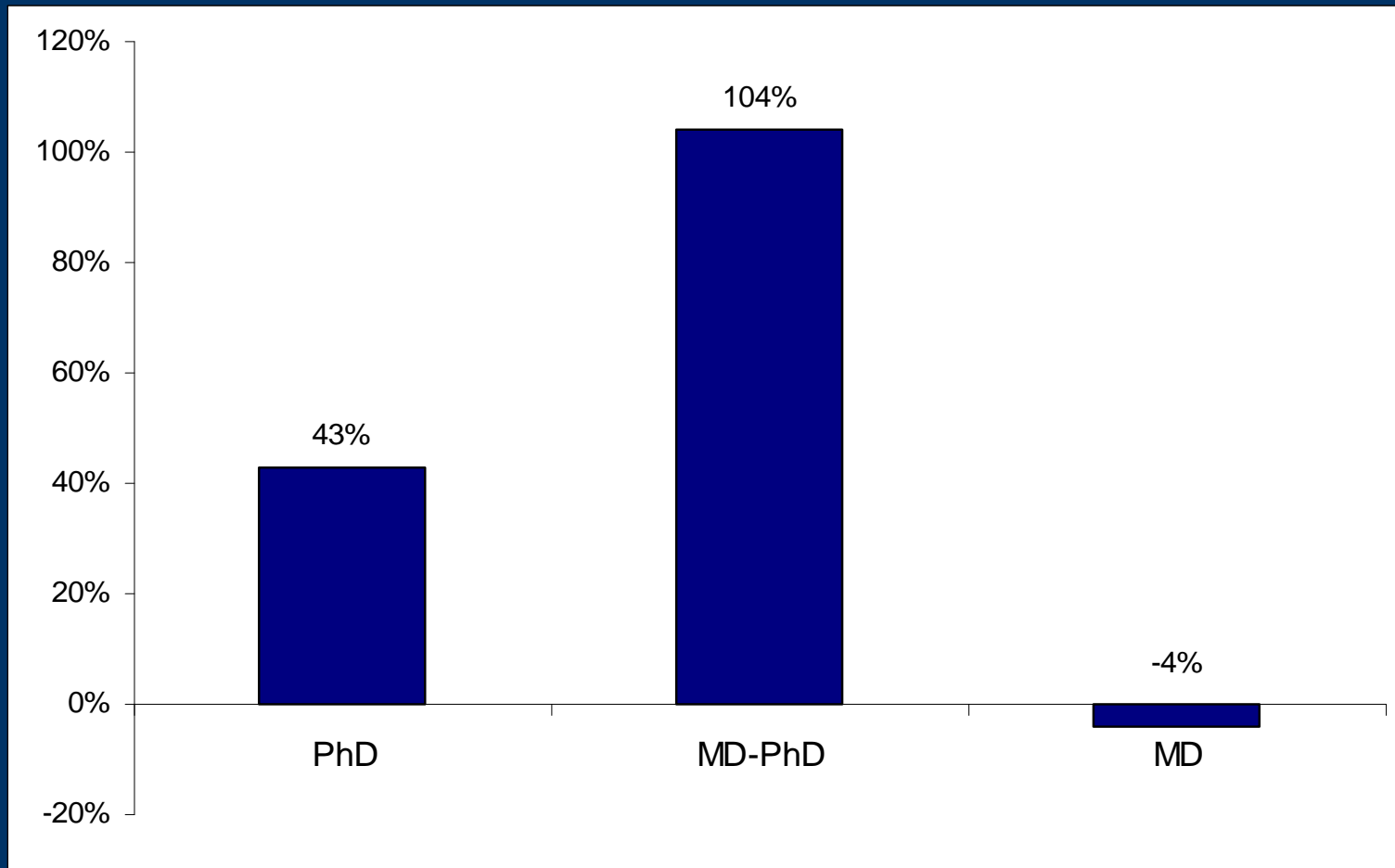
Percentage Increase in First Time R01 Applicants (1998-2003)



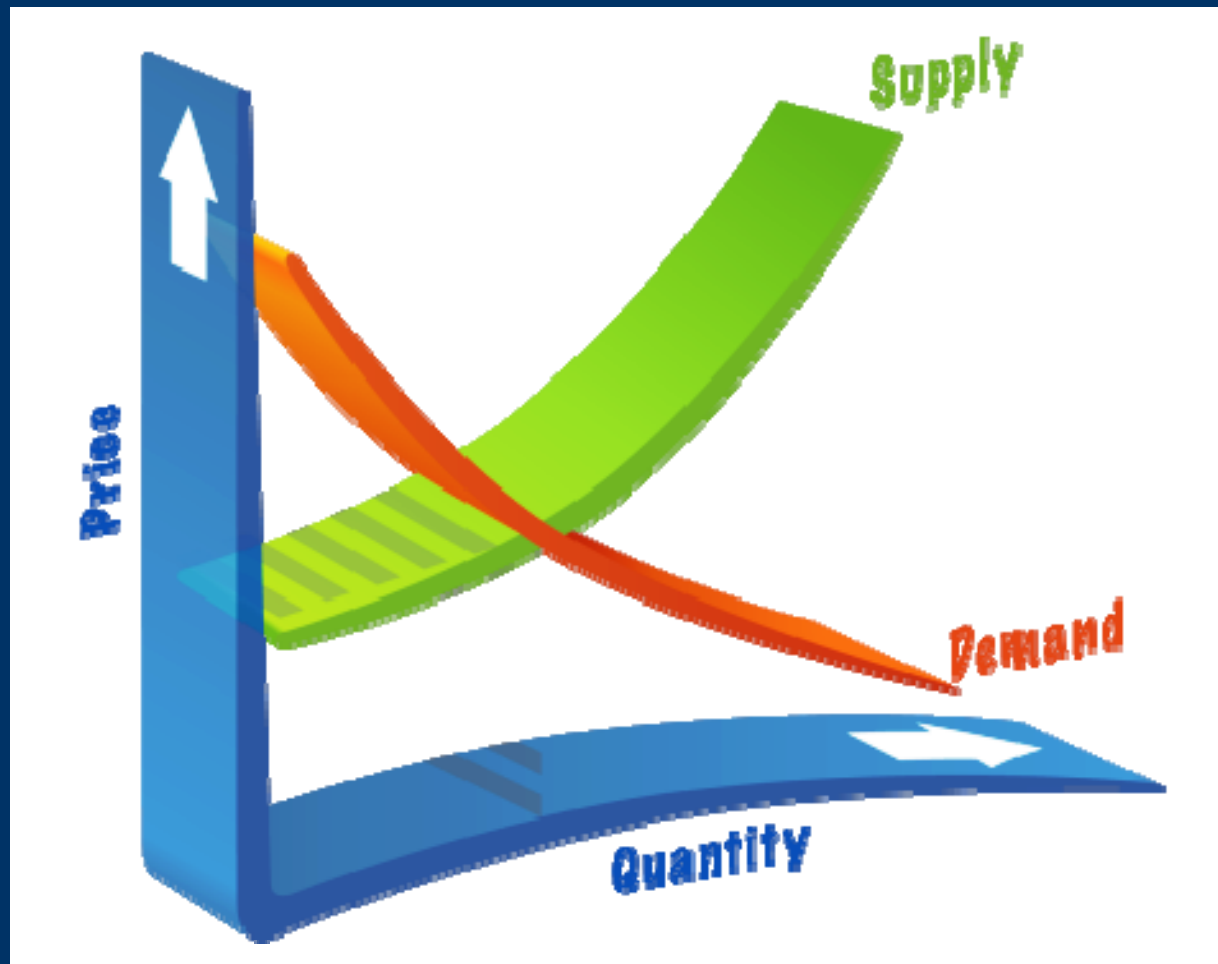
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The Law of Supply & Demand Does Not Apply to the Physician-Scientist Workforce



Two Fundamental Misconceptions About the Physician-Scientist Workforce

- Increasing opportunities for funding will fix the workforce problem
- Attracting more trainees into physician-scientist careers is the biggest workforce challenge

Attrition of NIH-Funded MD-Scientists

- 34% of MDs with KO8 (mentored clinical scientist development) awards do not even apply for a subsequent R01 grant; 20% have no subsequent NIH activity at all. (Reported in 2011 for 1990-2005.)
- First-time unsuccessful MD applicants for an R01 grant are consistently less persistent than PhD applicants in reapplying.
- MD applicants with an R01 grant are less likely than PhD applicants to apply for a subsequent R01 grant.
- At every point in the early life cycle of NIH funding, MD-scientists are more likely than PhD-scientists to leave the R01 grant application pool.

Attention and Resources Should Be Directed at Repairing the Leaking Physician-Scientist Pipeline

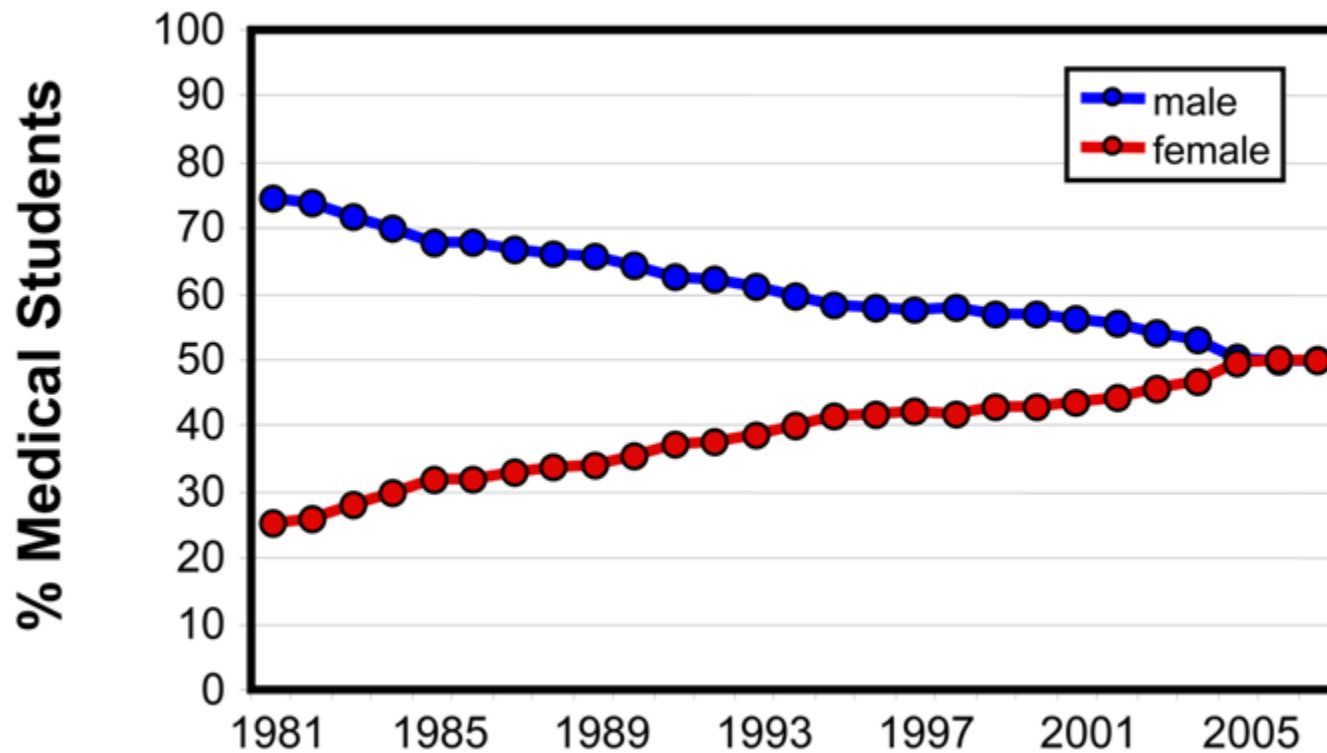


Major Contemporary Issues in Physician-Scientist Career Development

1. Women physician-scientists

Women Physician-Scientists

Gender Distribution of Matriculated Medical Students



Why Women Find Physician-Scientist Careers Less Attractive Than Do Men

- Concerned that it will be impossible to combine a successful career with childbearing and family life
- Feel that they have to be better than their male counterparts to be considered equal
- Receive little encouragement to become physician-scientists
- Lack compelling role models

Major Contemporary Issues in Physician-Scientist Career Development

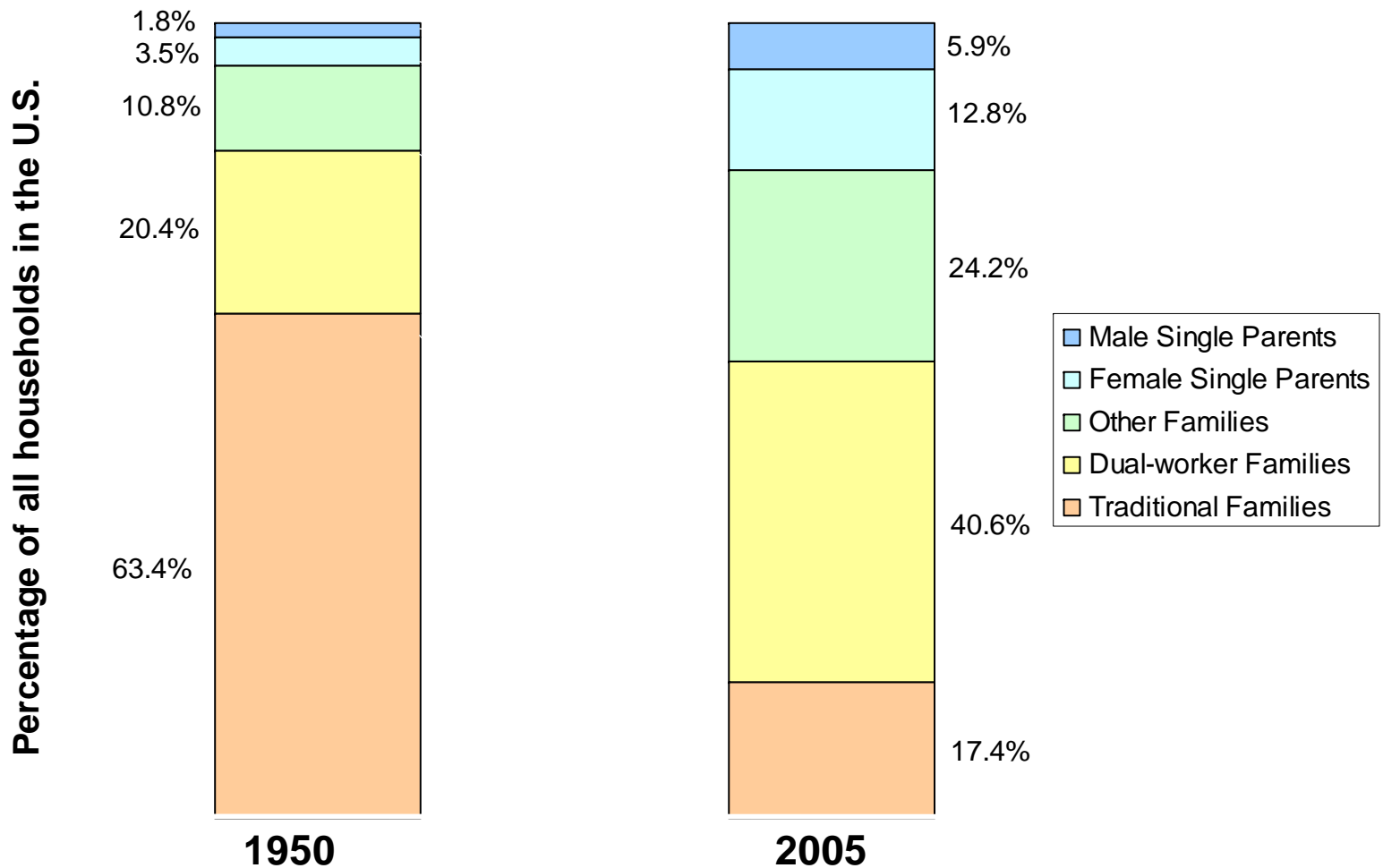
1. Women physician-scientists
2. Generation gap in expectations



“There’s a tremendous generation gap between what the current generation of junior faculty want and what the current generation of senior faculty perceive as correct.”

*-Junior male faculty MD-scientist,
Duke Faculty Focus Group*

Changing Family Structures



Source: Benko C, Weisberg A. Mass Career Customization: Aligning the Workplace with Today's Nontraditional Workforce, 2007.

Memorandum from Einstein to Mileva Einstein-Maric

18 July 1914

- A. You will see to it that:
 - 1. My clothes and laundry are kept in good order;
 - 2. I will be served three meals regularly in my room;
 - 3. My bedroom and study are kept tidy, and especially that my desk is left for my use only.
- B. You will Relinquish all personal relations with me insofar as they are not completely necessary for social reasons. Particularly, you will forgo my:
 - 1. Staying at home with you;
 - 2. Going out and traveling with you.
- c. You will obey the following points in your relations with me:
 - 1. You will not expect any tenderness from me, nor will you offer any suggestions to me;
 - 2. You will stop talking to me about something if I request it;
 - 3. You will leave my bedroom or study without any back talk if I request it.

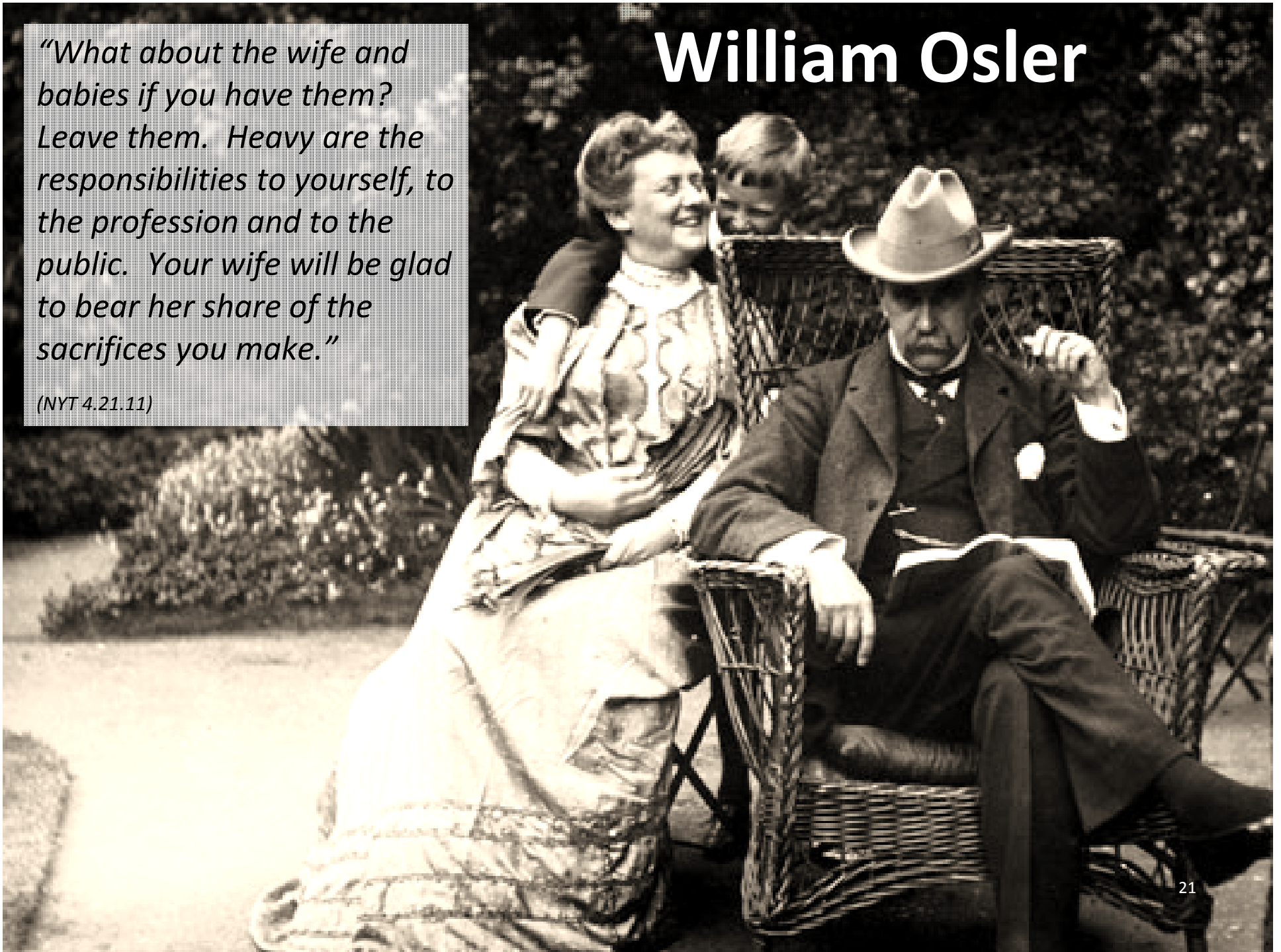
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(reference: Collected Papers of A. Einstein, Vol. 8, p. 32)

William Osler

“What about the wife and babies if you have them? Leave them. Heavy are the responsibilities to yourself, to the profession and to the public. Your wife will be glad to bear her share of the sacrifices you make.”

(NYT 4.21.11)



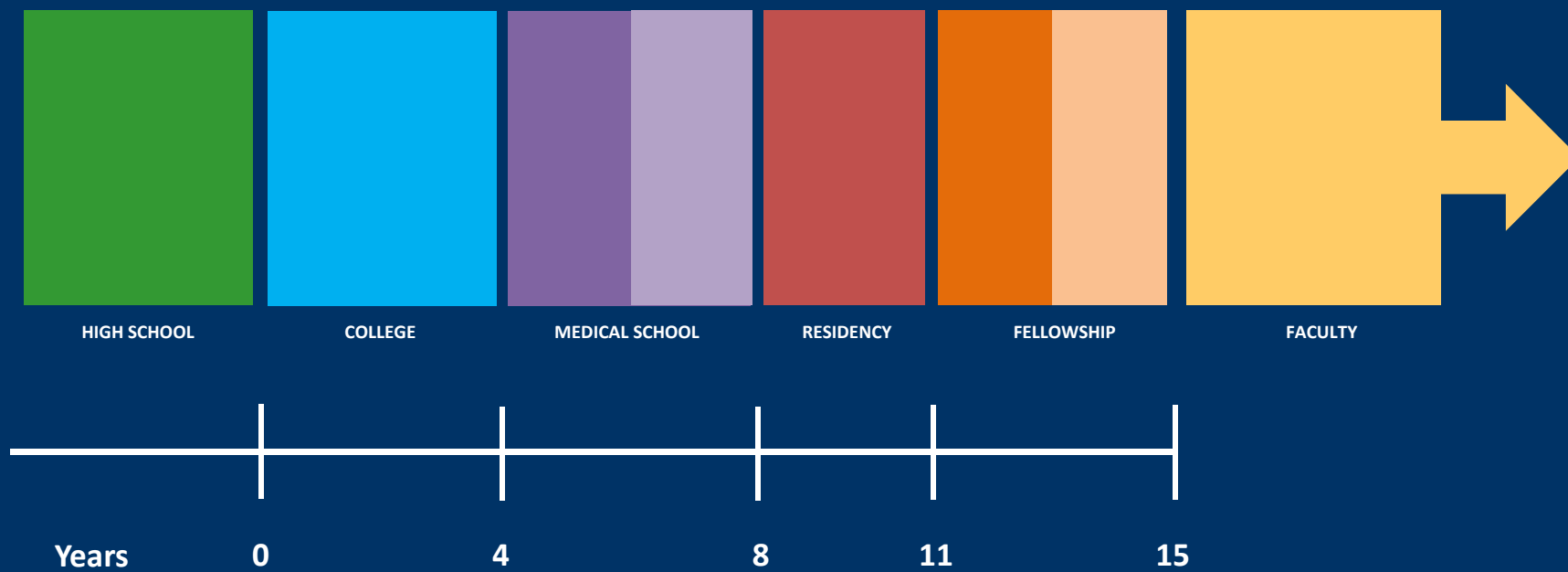
Major Contemporary Issues in Physician-Scientist Career Development

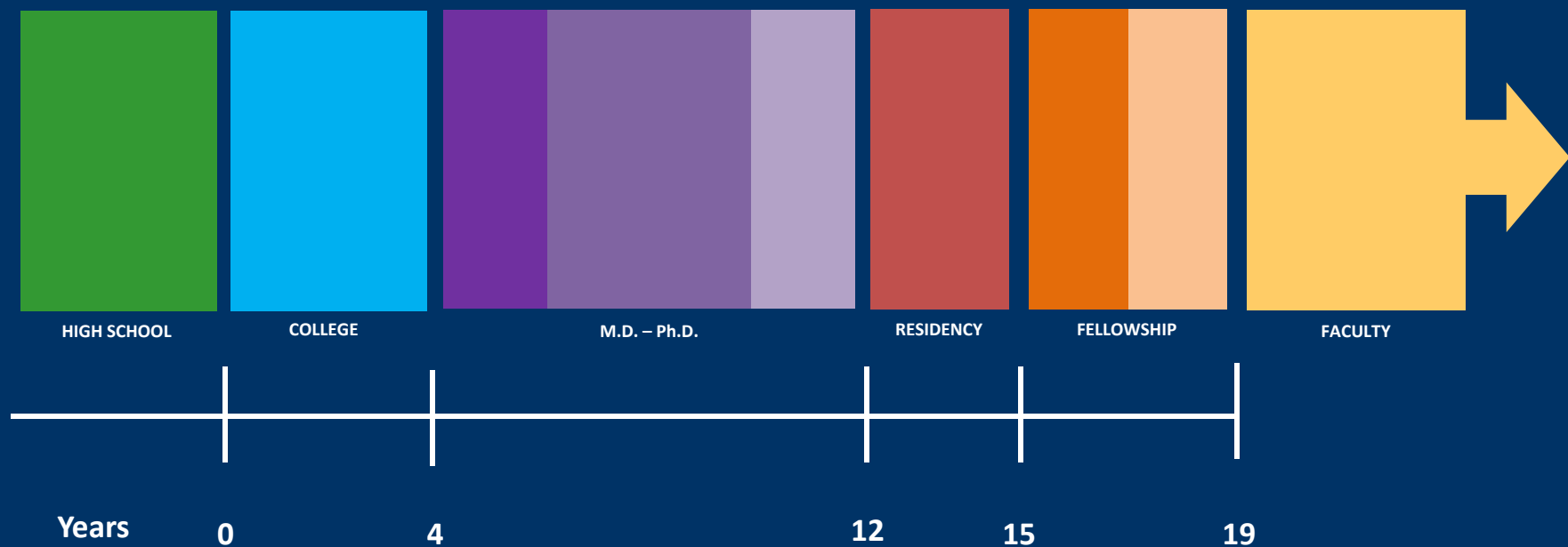
1. Women physician-scientists
2. Generation gap in expectations
3. Breakdown in mentoring and traditional role models



Major Contemporary Issues in Physician-Scientist Career Development

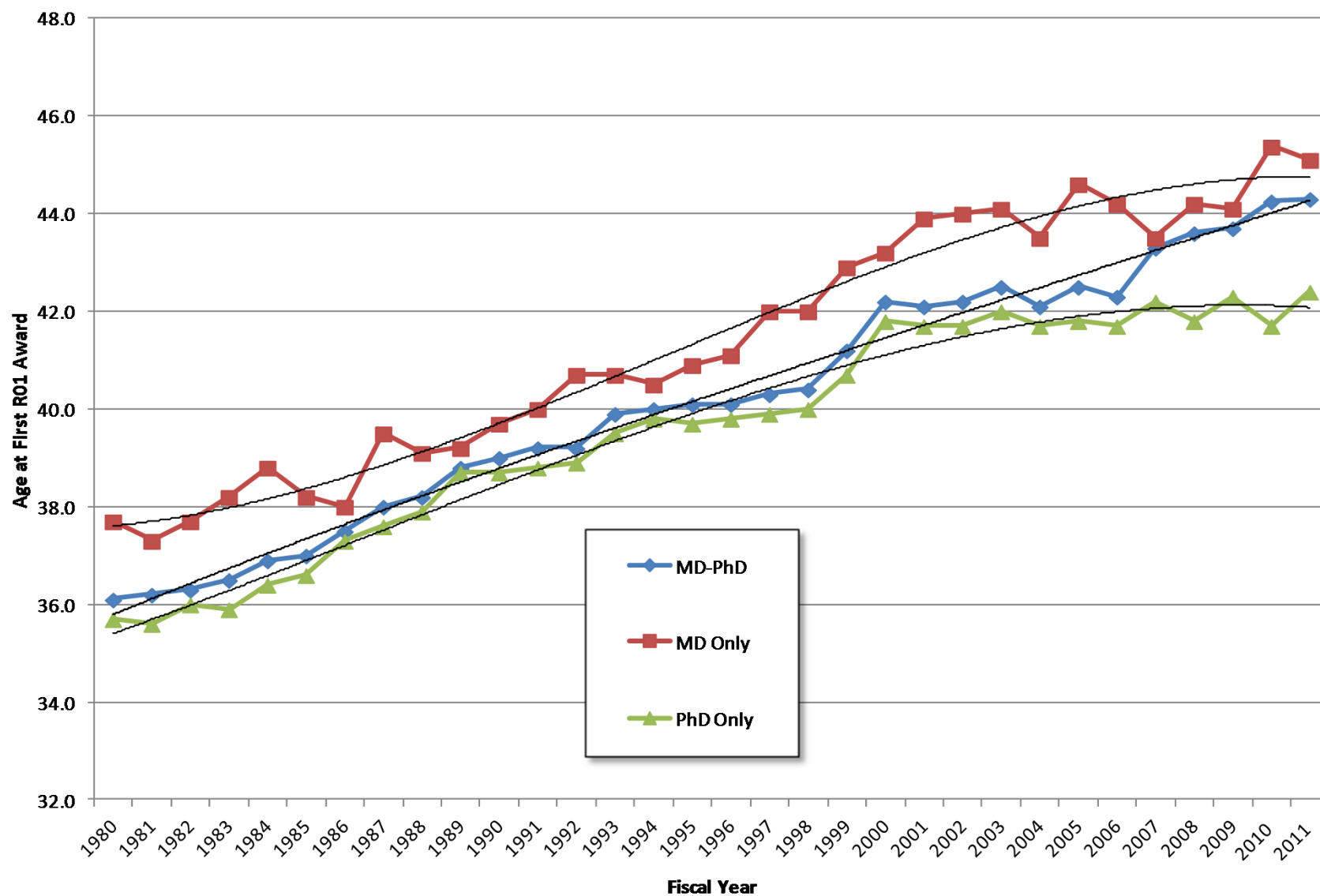
1. Women physician-scientists
2. Generation gap in expectations
3. Breakdown in mentoring and traditional role models
4. Length of training





An individual student choosing to also pursue a Ph.D. degree in a combined M.D.-Ph.D. program, the current scheme would typically appear as above.

Figure 1. Average Age of Principal Investigators with MD, MD-PhD, or PhD at the time of First R01 Equivalent Award from NIH, Fiscal Years 1980 to 2011



Ages at Which Individuals Produced Nobel Prize-Winning and Great Technological Contributions in the 20th Century

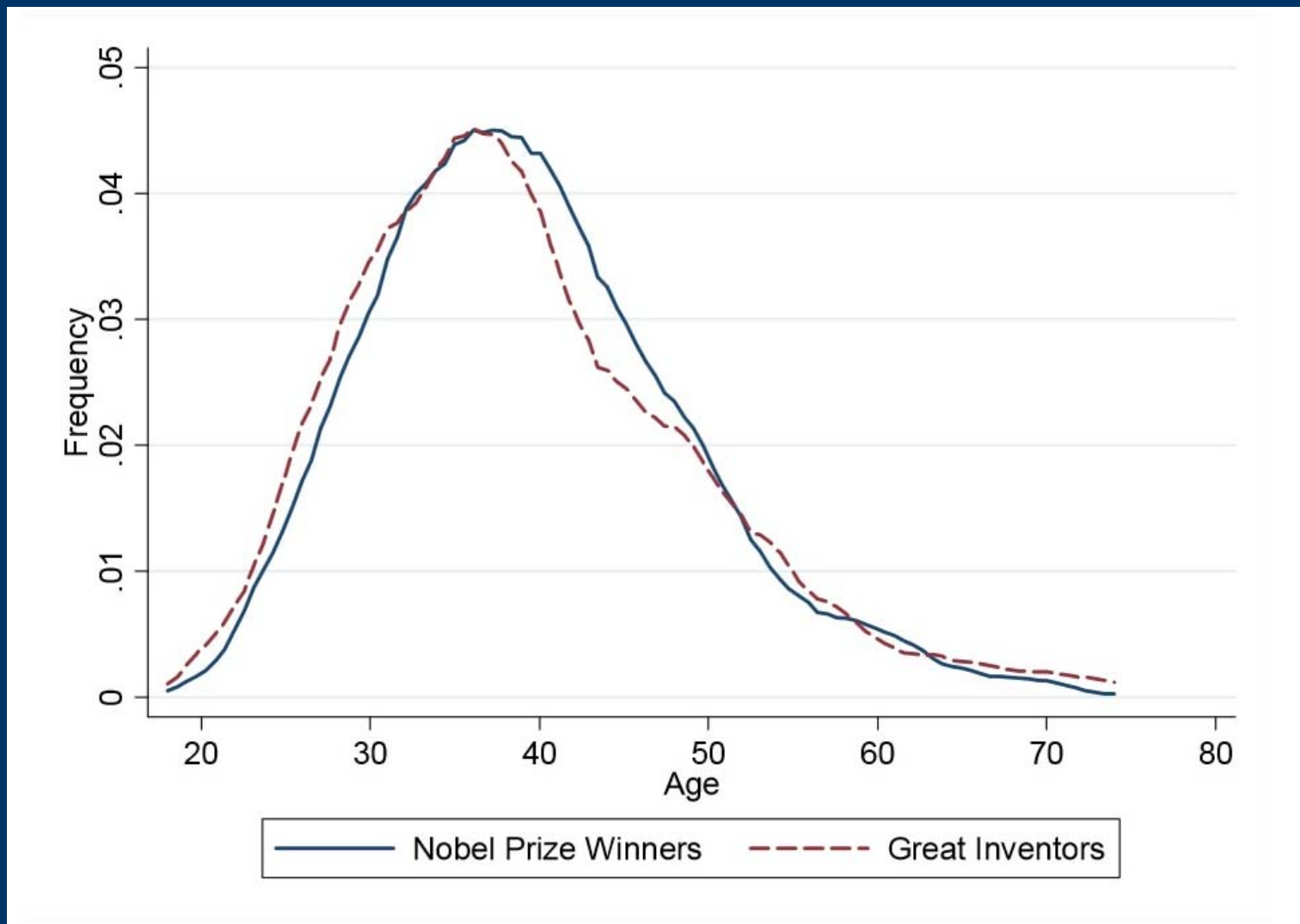
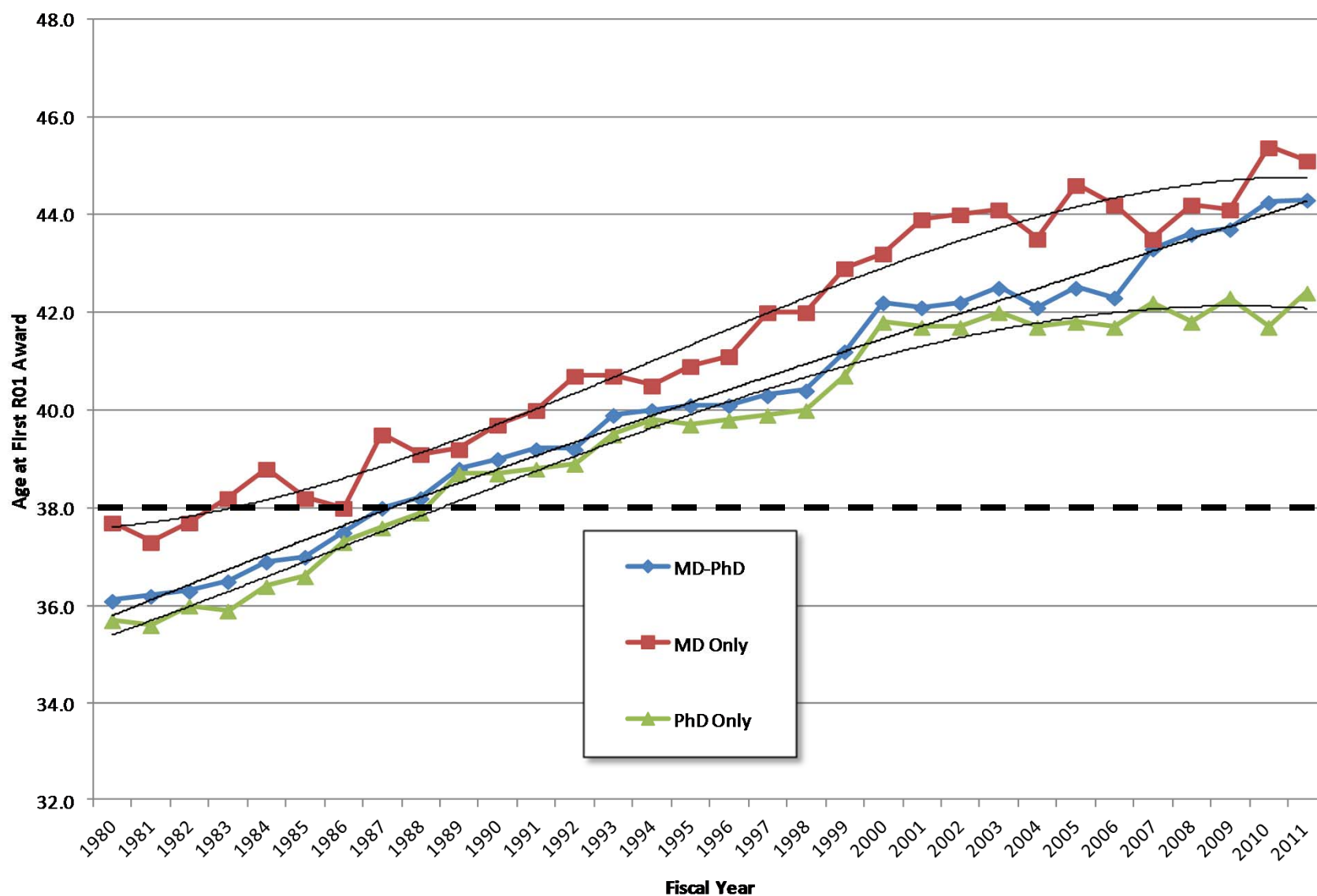


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Debt-ridden students forced to cut back on food

30 September 2013

Students from the UK are on average £16,000 in debt after just one year at medical school, a major BMA survey has revealed.

First years are increasingly using commercial loans and credit cards to plug gaps and more than two thirds reported cutting back on food, heating and other essentials.

One first year, who had taken a degree in another subject before studying medicine, owed a staggering £84,500, and another was working more than 40 hours a week alongside studying in order to make ends meet.



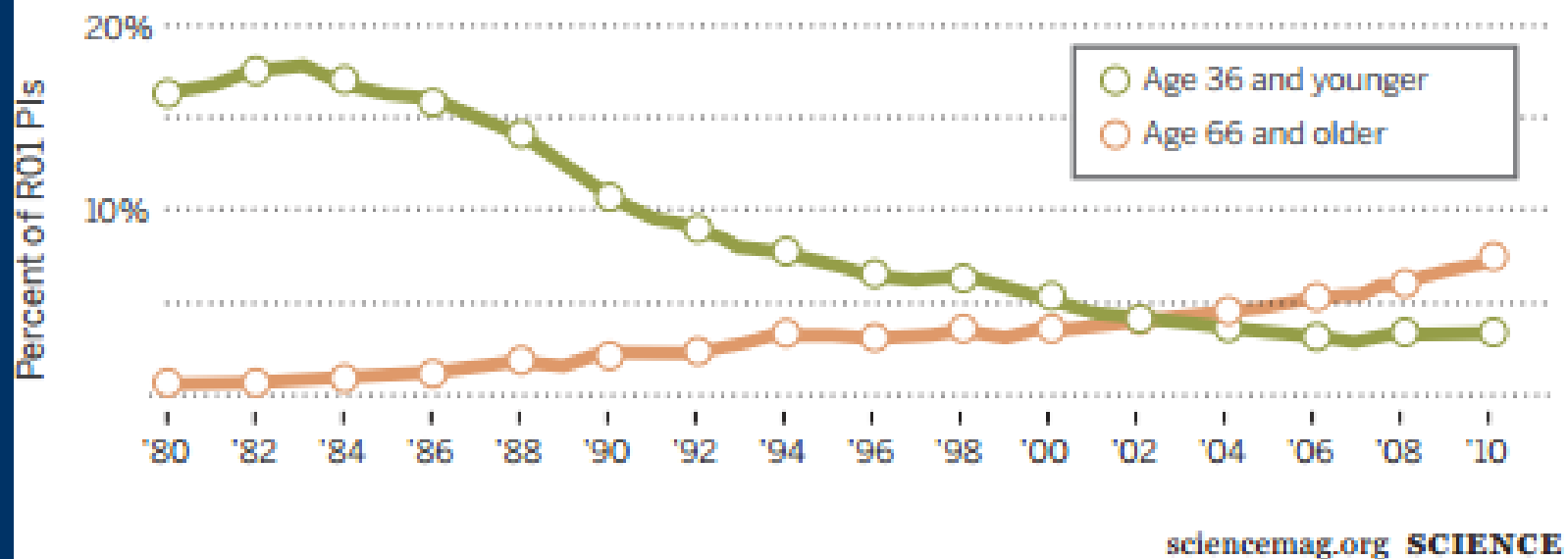
National Institutes of Health (NIH) Advisory Committee to the Director on the Physician-Scientist Workforce

NIH Director's Advisory Task Force on the Physician-Scientist Workforce 2014

- The halt in NIH's budget growth in 2004 has led to last year's NIH budget being 21.9 percent below its 2003 level (after adjusting for inflation using the Biomedical Research and Development Price Index)
- Lack of growth in the total number of physician-scientists over recent decades has been accompanied by a steadily increasing average age of entry into the independently funded workforce . . . and progressive aging of the physician-scientist workforce “presaging a significant decline in the physician-scientist workforce as the current cohort of senior physician-scientists retires.”

In with the old, out with the young

NIH-funded investigators eligible for retirement now outnumber those under 36.



NIH Director's Advisory Task Force on the Physician-Scientist Workforce 2014

- Sustain strong support for training of MD/PhDs
- Test novel approaches to shorten training
- Expand Loan Repayment Programs
- Establish a new physician-scientist-specific granting mechanism to facilitate transition to independence
- Continue to address the gap in RPG award rates between new and established PIs
- Intensify efforts to increase diversity
- Develop more effective tools for tracking career development and progression





Chasm between Basic Science and Clinical Practice

Shouldn't we be also concerned about the changing *composition* of the physician-scientist work-force?

- MD-scientists overall are increasingly engaged in only clinical patient-oriented research
 - often without any active contact with or even past exposure to the laboratory
- MD-scientists doing laboratory research are increasingly removed from clinical medicine
 - Increasingly removed physically and chronologically

We must develop substantive mechanisms to bridge the chasm between laboratory research and clinical practice *given the realities of today's environment of academic medicine.*