

The NIH and New Opportunities for Training

Neil R. Aggarwal, M.D.

Chief, Lung Biology and Disease Branch
Division of Lung Diseases
National Heart, Lung, and Blood Institute

Alliance for Academic Internal Medicine
Research Pathways Directors Workshop
March 18, 2018



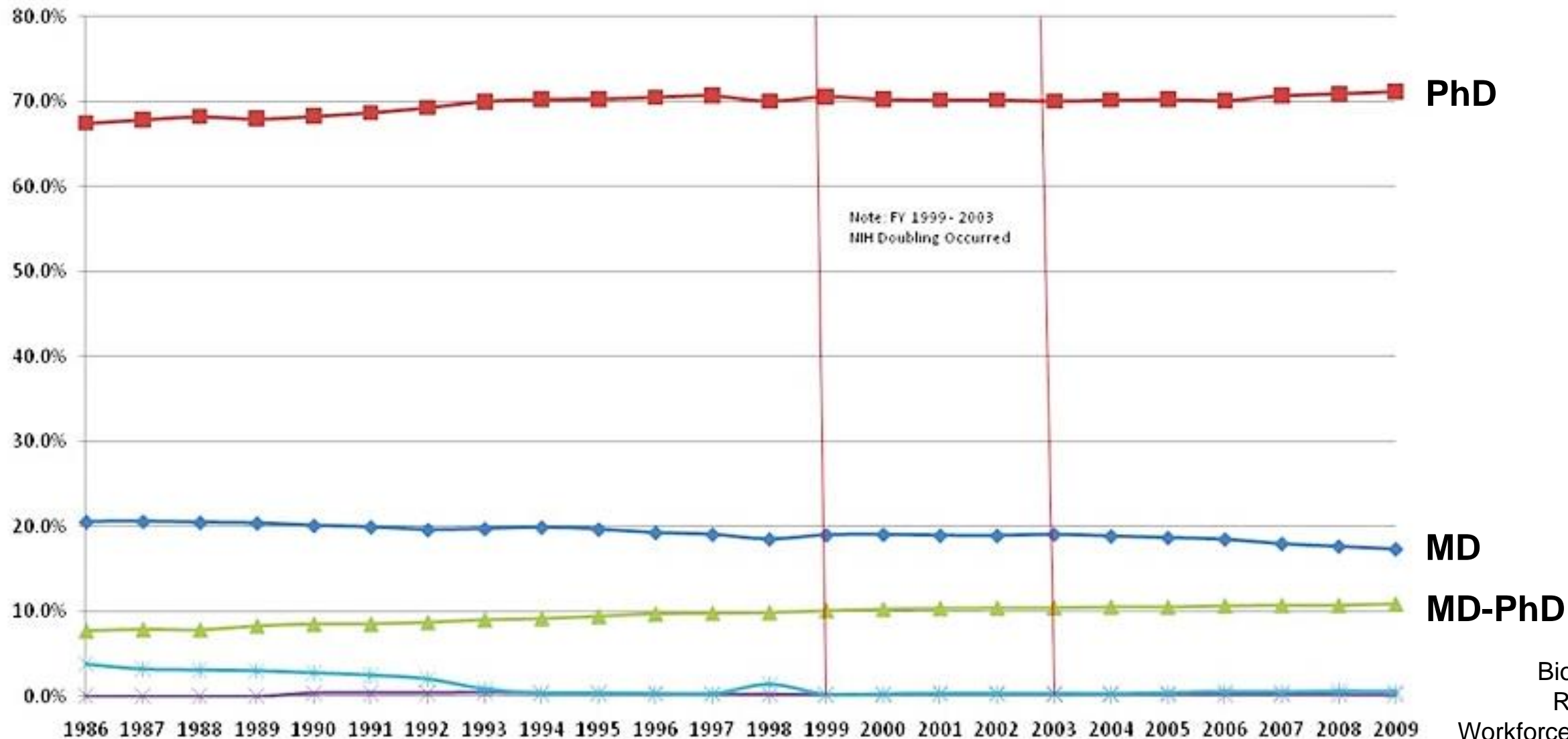
Disclosures

- No relevant disclosures for this speaker

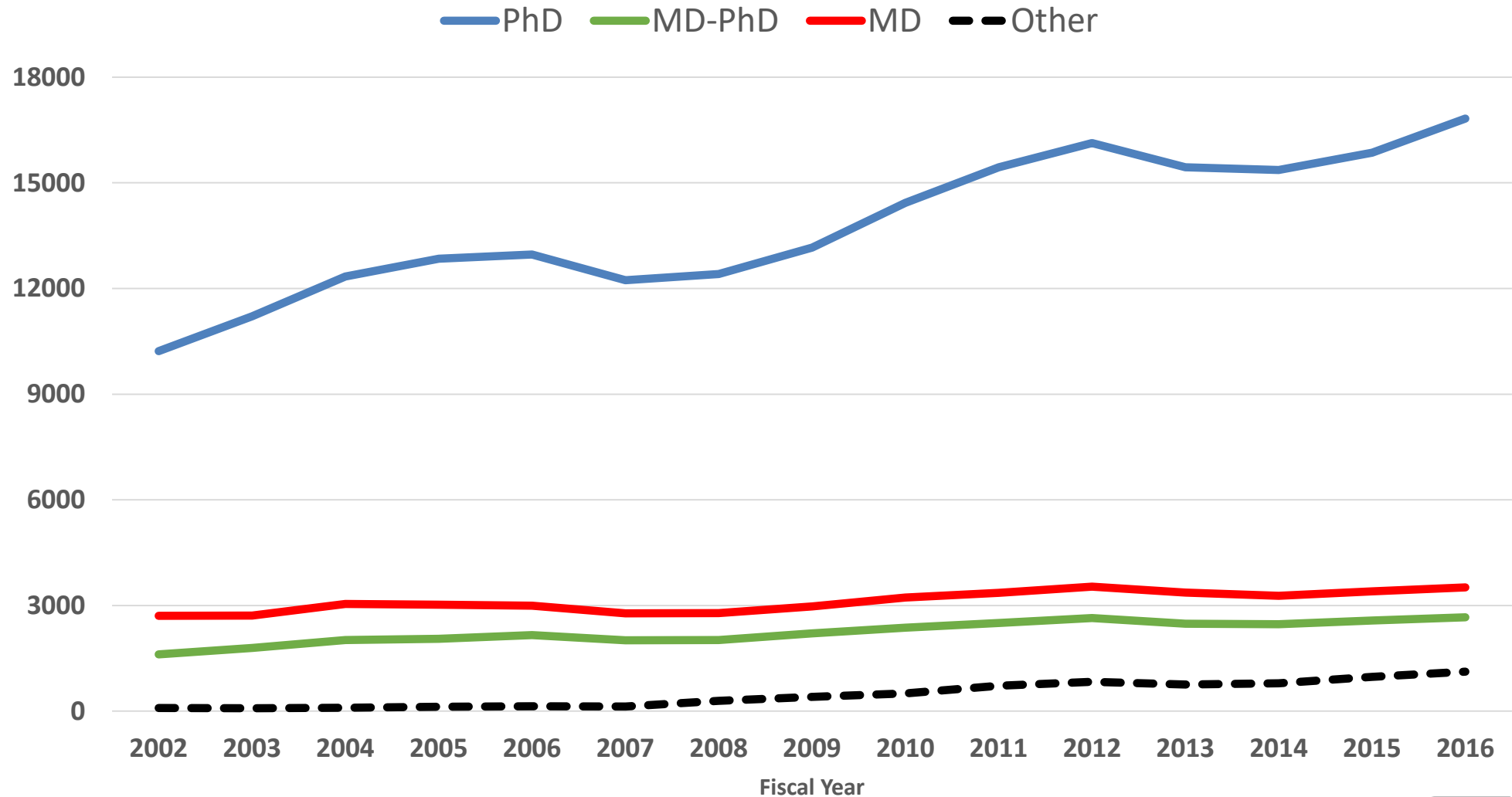
Outline

- Historical data on physician-scientists at NIH and NHLBI
- NIH-sponsored programs in response to observed trends
- NIH/NHLBI StARR (R38) and StARRTS (K38) programs

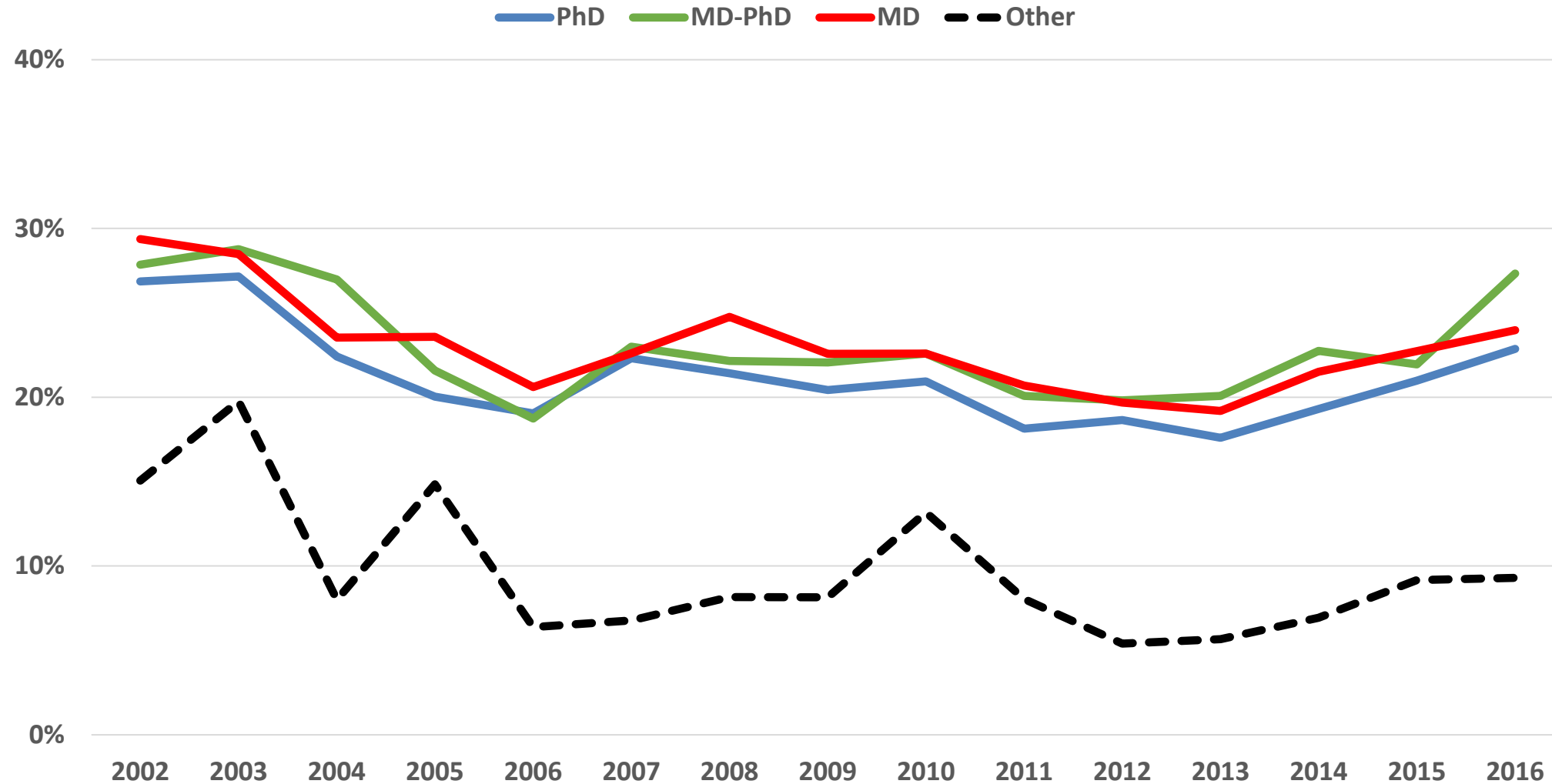
% NIH-funded Principal Investigators by Degree-type



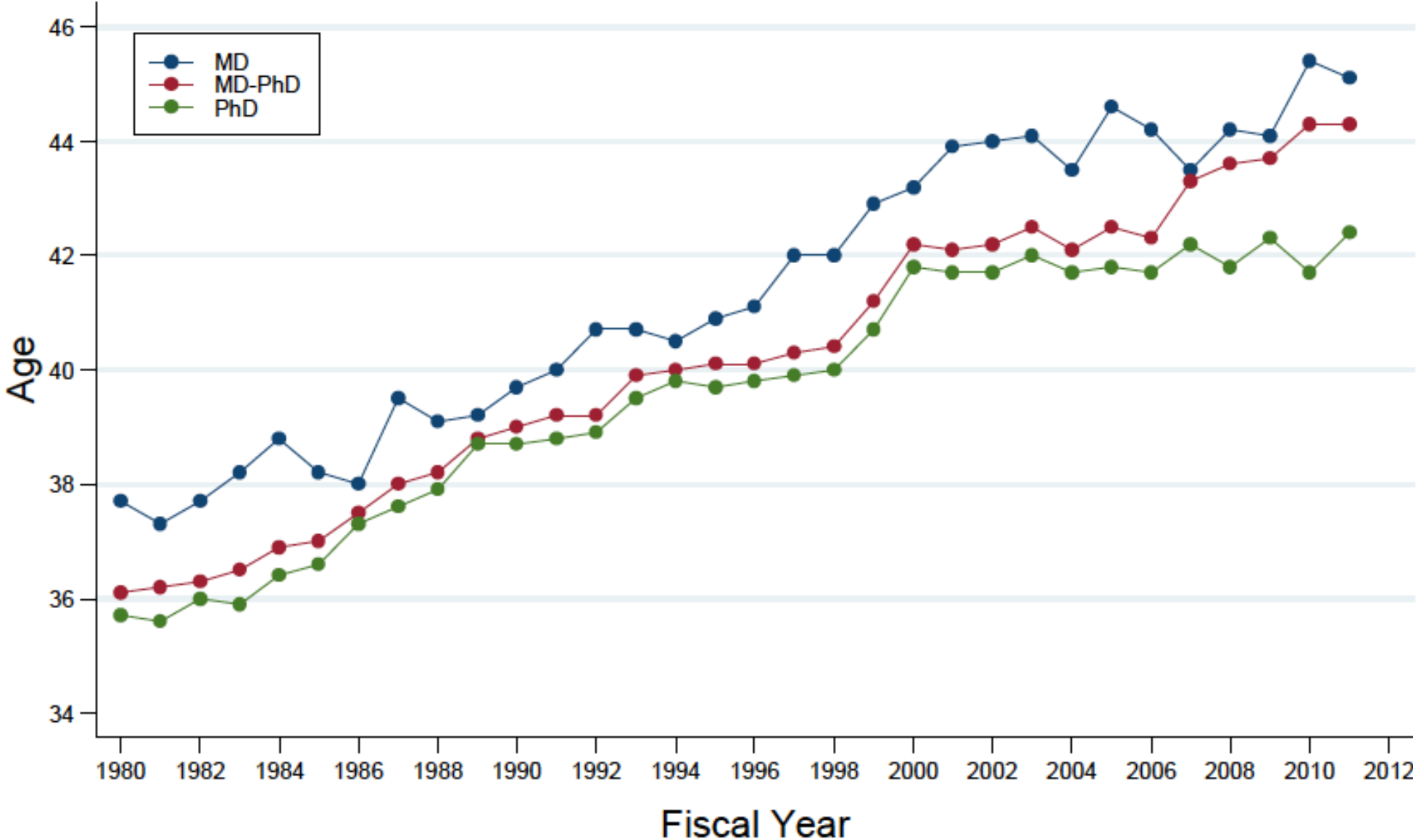
Distribution of NIH competing first-time R01 applications



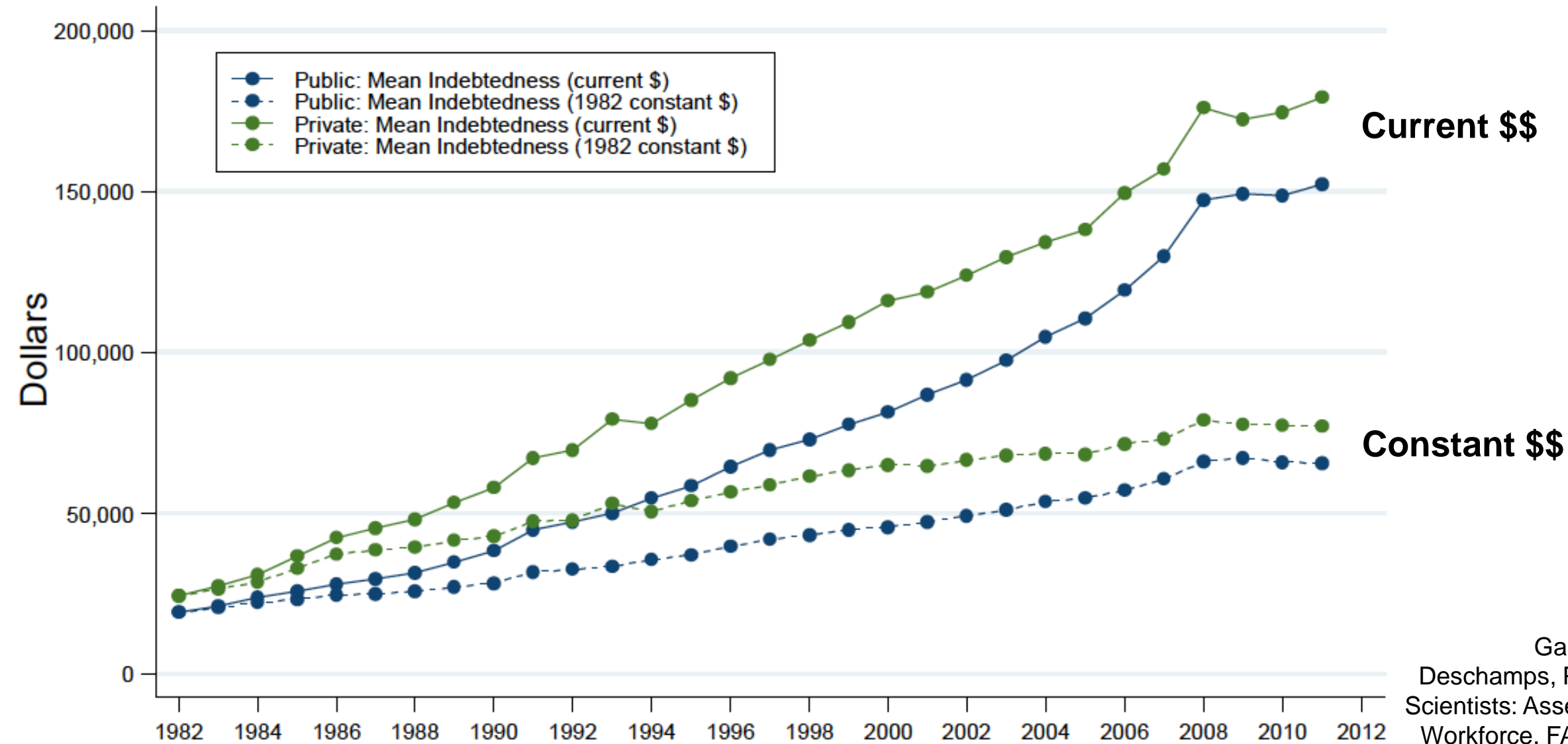
NIH competing first-time R01 success rates (2002-2016)



Average age for first R01-equivalent grant (1980-2011)



Average debt of medical school graduates

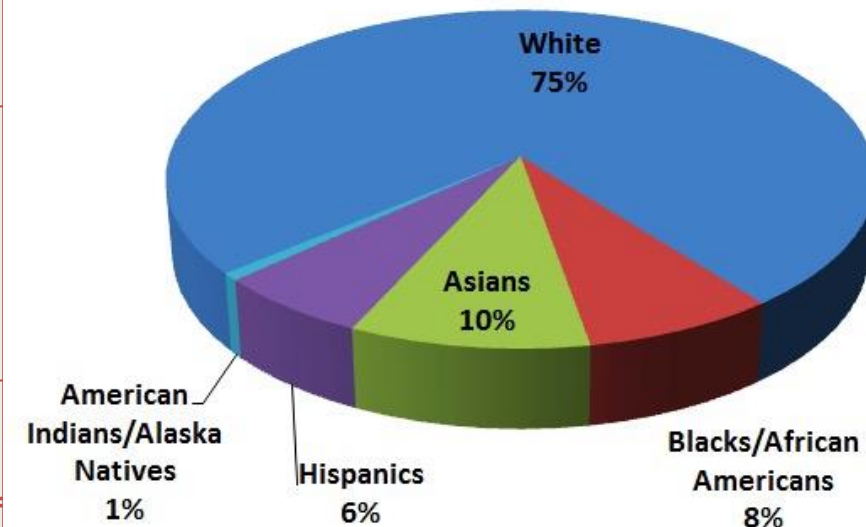
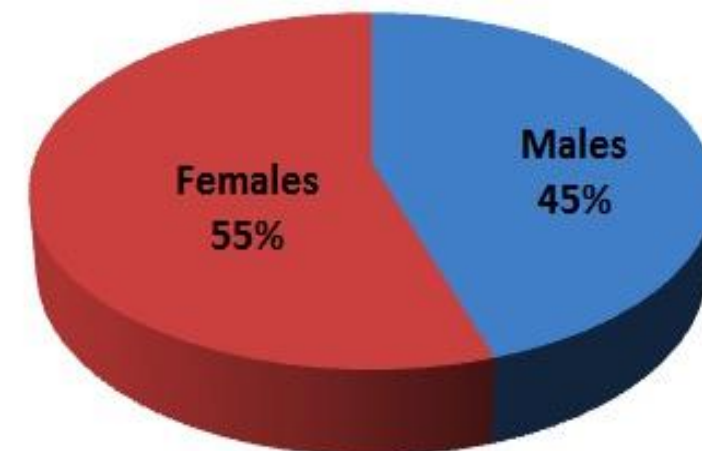


Expansion of the NIH Loan Repayment Program (LRP)

- NIH Director's Panel on Clinical Research (1997) recommended expansion of the LRP to offset financial barriers
 - Pediatric researchers
 - Extramural scientists in clinical research
 - Health disparities researchers
 - Clinical researchers from disadvantaged backgrounds
- Since 2004, LRP has made 1200-1600 awards per year

NIH LRP characteristics (FY 2013)

LRP	Applications (New and Renewal)	Awards	Success Rate
Clinical Research	1,508	771	51%
Pediatric Research	642	294	46%
Health Disparities Research	493	228	46%
Clinical Research for Individuals from Disadvantaged Backgrounds	36	18	50%
Contraception and Infertility Research	42	17	40%
Total	2,721	1,328	49%



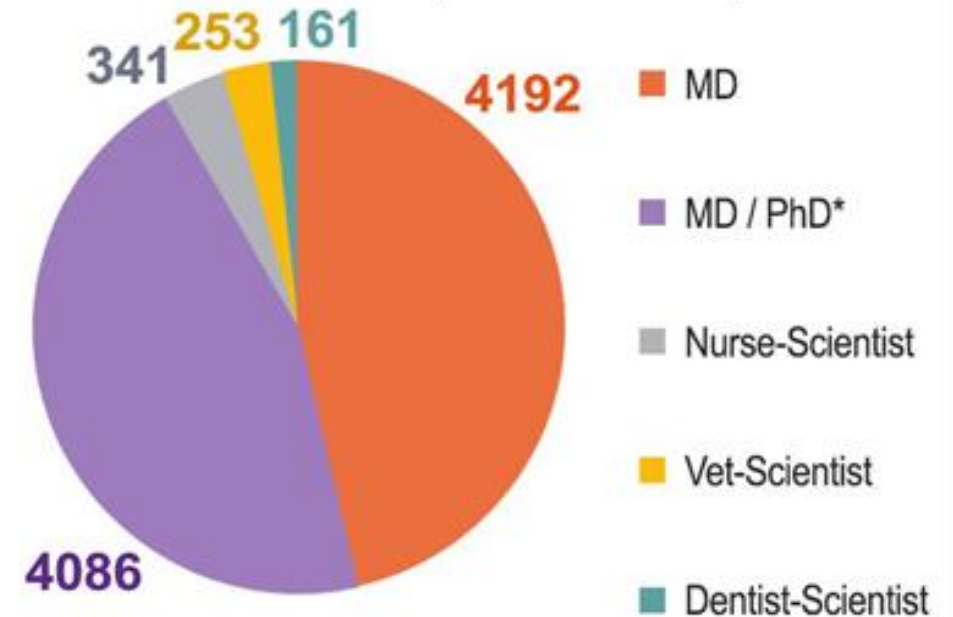
External advisory committees have helped NIH support the physician scientist pipeline

- 1995 – NIH Director’s Committee on Clinical research
 - Expand the LRP
 - Establish the K23 to give protected time for individuals with a clinical doctorate to do patient-oriented research
 - Establish the K24 program to support mid-career mentored research
- 2011 – NIH Director’s Committee on Biomedical Workforce
 - MD-PhDs with 75-80% retention as independent academic faculty
 - Reduced K/LRP applications suggests reduced MD workforce
- 2014 – NIH Director’s Committee on Physician-Scientist Workforce
 - NIH, academic, industry, and professional organization representation

NIH Committee for Physician-Scientist Workforce

- Physician scientists defined as those that are clinically-trained and engaged in independent biomedical research with professional degrees
- ~9000 physician-scientists in NIH-funded workforce from 2008-2012
- % of overall biomedical workforce has declined, but the # is constant
- % of female MDs with RPG grant increased from 17% (~1995) to 29% (2012); MD-PhD % increase slower

Figure 2.1. NIH-funded Physician-Scientist Workforce (FY2008-2012)



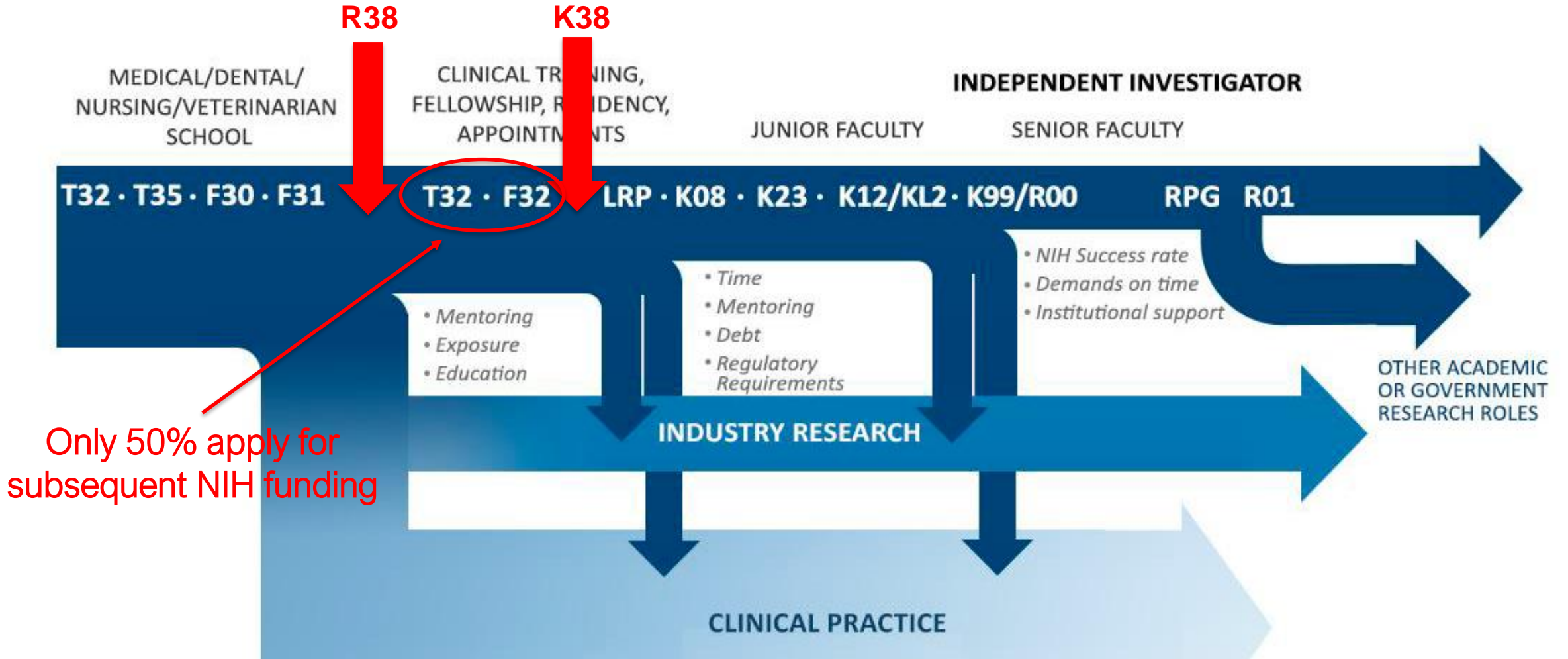
NIH Committee for Physician-Scientist Workforce

- Challenges to expanding the PS workforce
 - Medical education costs
 - Lengthened training to obtain clinical / scientific research competency
 - Need to support higher % of salary with clinical time that strain work-life balance
 - More robust financial opportunities in practice
 - Vulnerable transition between fellowship and independent research endeavor
 - Difficulty finding mentors who can support and guide early career investigators

Key recommendations for the Physician-Scientist Workforce

- Sustain strong support for MD/PhD training
- Shift NRSA postdoctoral training so that a greater proportion are supported through individual fellowships
- Establish a new physician-scientist-specific granting mechanism to facilitate transition from training to independence
- Develop rigorous and effective tools for assessing the strength and tracking the career development of the biomedical workforce
- **Support pilot grant programs to rigorously test existing and novel approaches to improve and/or shorten research training for physician-scientists**
 - Explore timing and space of the research and clinical components of post-graduate training

Career timeline of NIH-funded mechanisms



R38 Stimulating Access to Research in Residency (StARR)

- Goal to provide an opportunity to identify and support physician-scientists early in training for Resident-Investigators (RIs)
- Institutional award to support mentored research activities to foster physician-scientist careers for RIs
 - Residency training that would occur directly after completion of medical (or eq.) school and prior to subspecialty training (fellowship)
 - RIs are expected to pursue subsequent subspecialty training
- Research areas should be within Institute-mission (HLBS diseases for NHLBI) with the expectation that RIs will continue research in these disease areas during subspecialty training (K38)
- Current participating ICs – NHLBI, NIAID, NCI

NIH/NHLBI R38 StARR Program

- RIs should pursue a minimum of 12 months of research at 80% effort (> 3 mos. consecutive) during their residency training
 - Timeline of defined planned periods of research and clinical responsibilities
- The PD/PI and research preceptor team should provide an environment conducive to maximizing the learning experience for the RIs across or within a clinical discipline (IM, pediatrics, etc)
- A plan for recruitment, selection, matching, and assessment of a diverse cadre of RIs should be in place, and should include research training and skill-building tailored to the RI pool
- NHBLI upcoming receipt dates (Oct 2018, 2019)

K38 Stimulating Access to Research in Residency Transition Scholar (StARRTS)

- Provide a continuum of NIH-funded research support for residents who matriculated through the R38 program (transition scholars)
- An individual award offering up to 2 years of support (80% effort) during subspecialty training (e.g. fellowship)
- Research within IC mission with the same or new mentor, department, or institution
 - Career sponsor to facilitate access to professional societies
- Plan to help foster the K38 awardee's subsequent career development (e.g. K08, K23) or independent research awards (e.g. R21, R01, R34)
- Additional funds to facilitate research and professional development
- Anticipated first receipt date: October 2020
 - <https://grants.nih.gov/grants/guide/notice-files/NOT-HL-17-533.html>

How can you help the NIH / NHLBI?

- How should individual R38 programs be evaluated for success?
- What competencies should Residence-Investigators possess having completed the program?
- What metrics should we track for the R38 residents that matriculate through the program?
- What elements of the R38 program should be conserved in the K38 StARRTS program, and what is the optimal timing?

Summary

- The decline of physician-scientists is a real and complicated problem
- The NIH continues to identify strategies to target "leaky" pipes in the pipeline
- The NIH hopes to continue to engage academic institutions, professional organizations, industry, foundations, and other interested parties to help grow the pool of physician-scientists



National Heart, Lung,
and Blood Institute