NIH Scientific Management Review Board (SMRB) Meeting

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NIH Funding

- Iowa Perspective
- Key Problems
- Training Environment
- Rethinking the NIH Grant
- Review and Evaluation Process

University of Iowa Data

NIH Funding by Grant Type	2012	2013	2014	
R01	228	206	205	(.775 M)
R21	26	28	25	
R03	6	11	12	
R13	1	2	1	
P	23	21	24	(1.17 M)
U	14	19	17	
T	30	24	32	
K	36	37	27	
F	17	24	20	
Other	37	37	48	
Total	418	409	411	

The Funding Problem:

Academic Culture vs Federal Sponsored Research

- Capitalistic Academy: Growth is the only way to achieve distinction
- Tenure based on obtaining grant funding
- Increasing # applicants vs decreasing funding pool
- Fund your own position
- Independent investigator vs multidisciplinary team
- PIs with more grants rewarded by institutions
- Sustaining a large lab requires fulltime grant writing
- Pressure to produce can lead to research misconduct

University Medical Schools

- Measures of productivity, distinction and ranking are based almost exclusively on grant funding.
- Schools of Medicine are heavily leveraged and subsidized by NIH funding.
- Translational medicine is considered second rate compared to bench science.
- The demand for laboratory investigation requires growth in research space.

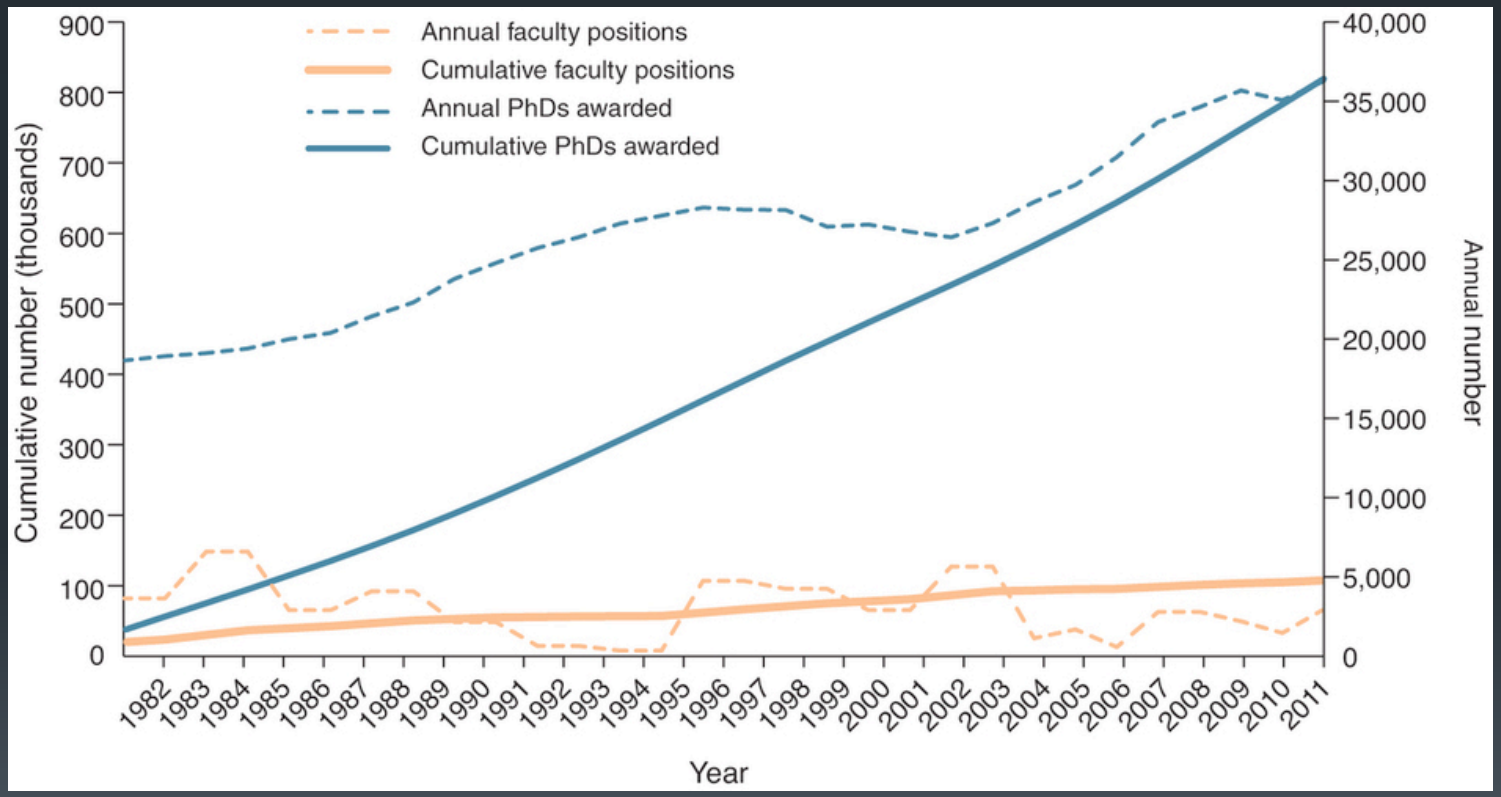
Junior vs Senior Researchers

- How to compete with long standing researchers?
- New ideas vs Incremental research
- Tenure track vs Clinical track
- Protected time vs Accountability for all effort
- Existing lab infrastructure vs Starting-up
- Mentoring and improving competitiveness

The Training Environment

- Trainees vs Employees
- Cloning the faculty
- Predocs vs Postdocs
- Alternative careers
- Developing a career trajectory in a mentored setting
- Infrastructure demands

New Faculty Positions vs New PhDs



Schillebeeckx, et al. Nature Biotechnology, **31** 938-941 (2013)

What’s Needed at NIH

- More grant opportunities
- Different grant opportunities
- Streamlined review process
- Clearer evaluation criteria
- Better reviewer training
- Investment in higher risk research
- Promotion of translational research/clinical trials
- Lead the culture change in academic medicine

Rethinking the NIH grant

- R01, R21 and P01 or what?
- It is about IMPACT. It's all about IMPACT.
- Is there real and identifiable translation in the application?
- Develop a "rapid idea" grant mechanism to quickly test concepts. Short application with equally short review cycle.
- Limit the effort (inclusive of all combined NIH funding) of PI and Investigators to no more than 30%.
- Develop "term limits" on the number of times a grant can be renewed.
- Deliverables (contract) vs Aims (grant)
- Reward success with limited term "add-on" funding

Today's Review Process

<u>What' good:</u>

Bulleted strengths and weaknesses

Availability to read reviewer critiques

Excellent NIH program officers and staff

In-person Study Section review sessions

<u>What's not so good:</u>

Over emphasis on approach

The Big Picture is lost

Too many critiques per reviewer

Inconsistency between reviewers

Critiques highly variable and often provide minimal feedback

Preliminary data interpreted to mean research nearly completed

Too few submission deadlines

Translational research not valued by study sections

Critiques provide minimal feedback to reviewers

Inconsistent scoring

Tomorrow's Review Process

- Timing: Continuous review cycle with manuscript like evaluation
- 2-Step process: Develop a short submission application with invitation to proceed to a full application based on ideas and concepts
- Applicant Feedback: Provide almost immediate feedback
- Risk: Truly endorse new ideas and high risk applications
- Reviewer Feedback: Continuously critique reviewers and provide constructive criticism
- Workshops: Mandatory participation by reviewers to improve critiques and feedback to applicants
- Workload: Reduce grant review workload
- Scoring: Better guidance on review criteria

Evaluation Criteria

- Provide more explicit guidance to reviewers
- Provide examples of excellent applications and poor applications
- Develop clear metrics for success as part of RFAs to assist reviewers in evaluating applications
- Improve evaluation guidance with specific criteria to improve consistency of scoring
- Provide weighting criteria for elements of the review to improve uniformity
- Emphasize Impact and the Big Picture
- Stress Innovation that can lead to economic development and commercialization
- Identify Translation aspects of proposal

Summary

- Current process is neither sustainable nor consistent
- Significant changes are needed
- Many good options exist
- Changes can be accomplished quickly and phased in over time
- NIH must take initiative to change the culture