

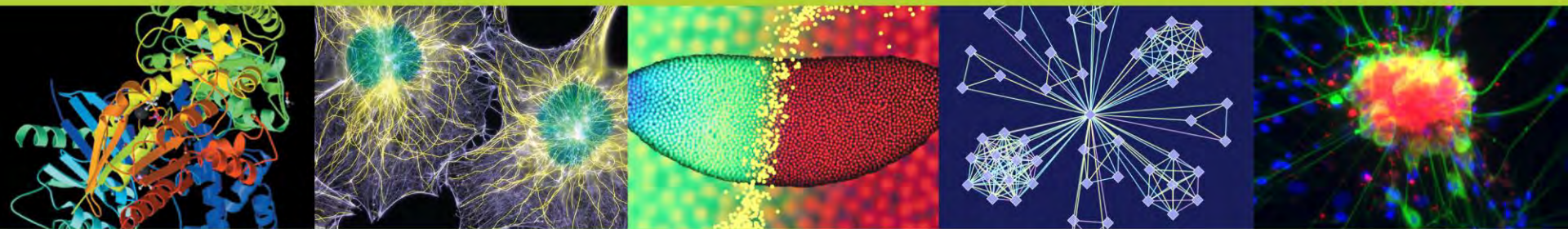


National Institute of
General Medical Sciences



Developing a More Productive, Efficient and Sustainable Biomedical Research Enterprise

Jon Lorsch



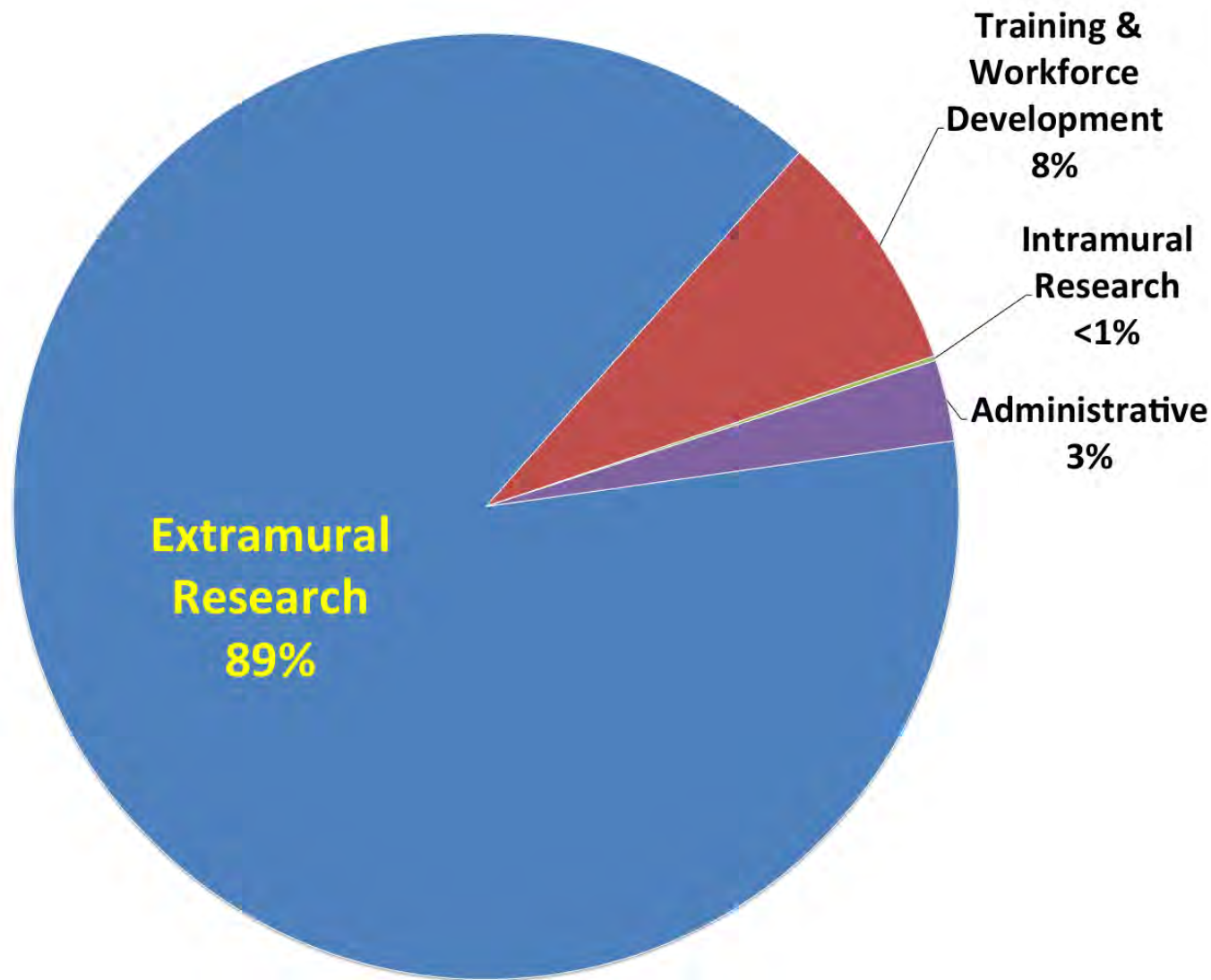
NIGMS Mission

- Promote fundamental research on living systems to lay the foundation for advances in disease diagnosis, treatment and prevention.
- Enable the development of the best trained, most innovative and productive biomedical research workforce possible.

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2015 NIGMS budget is \$2.37 Billion





**Our job is to ensure that the taxpayers' money is
invested in fundamental biomedical research in the
most **efficient** and **effective** way possible**



National Institute of
General Medical Sciences

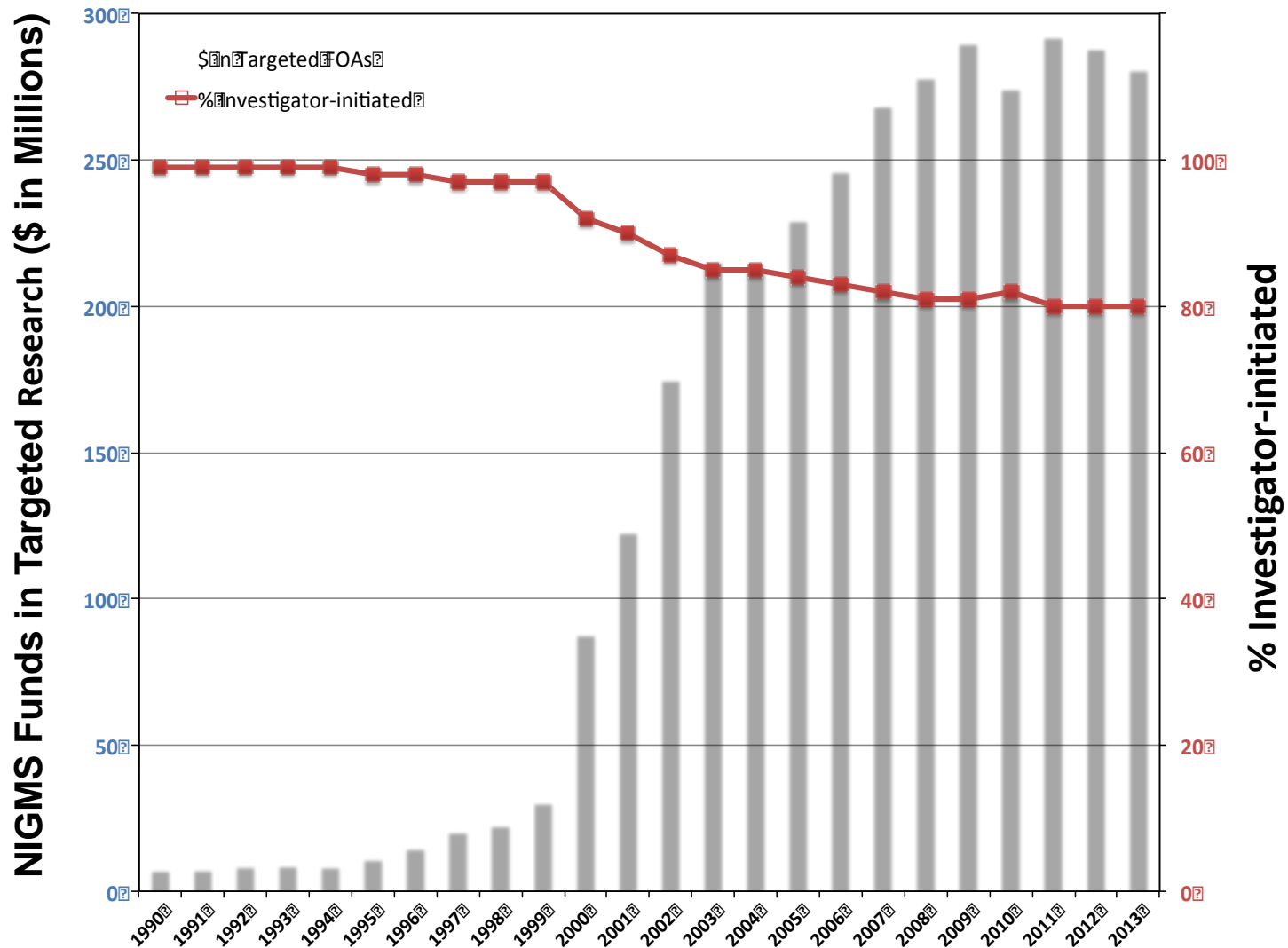
Basic Discoveries for Better Health

National Institute of General Medical Sciences 5-Year Strategic Plan

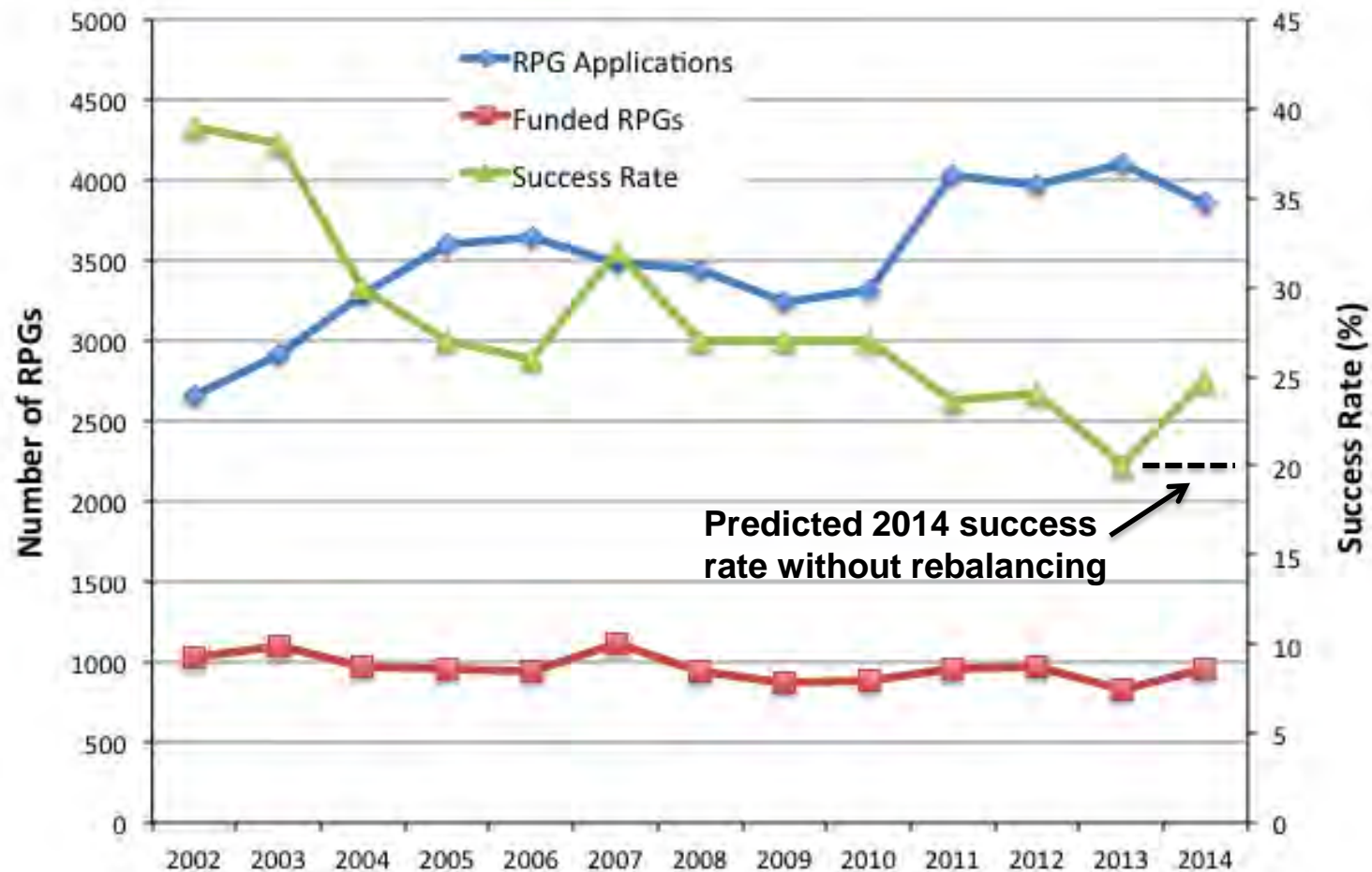
March 2015



A Major Strategic Goal for NIGMS Is to Refocus Our Portfolio on Investigator-Initiated Research



Portfolio Rebalancing Contributed to a Jump in Success Rate in FY 2014



**Early career
investigators**

Reproducibility

Peer review

Diversifying Research

**Distribution
of funding**

Size of workforce

Efficiency

**Promoting
creativity and
innovation**

**Academic
business model**

**Stability and
sustainability**

**Are trainees students
or workforce?**

Optimizing education

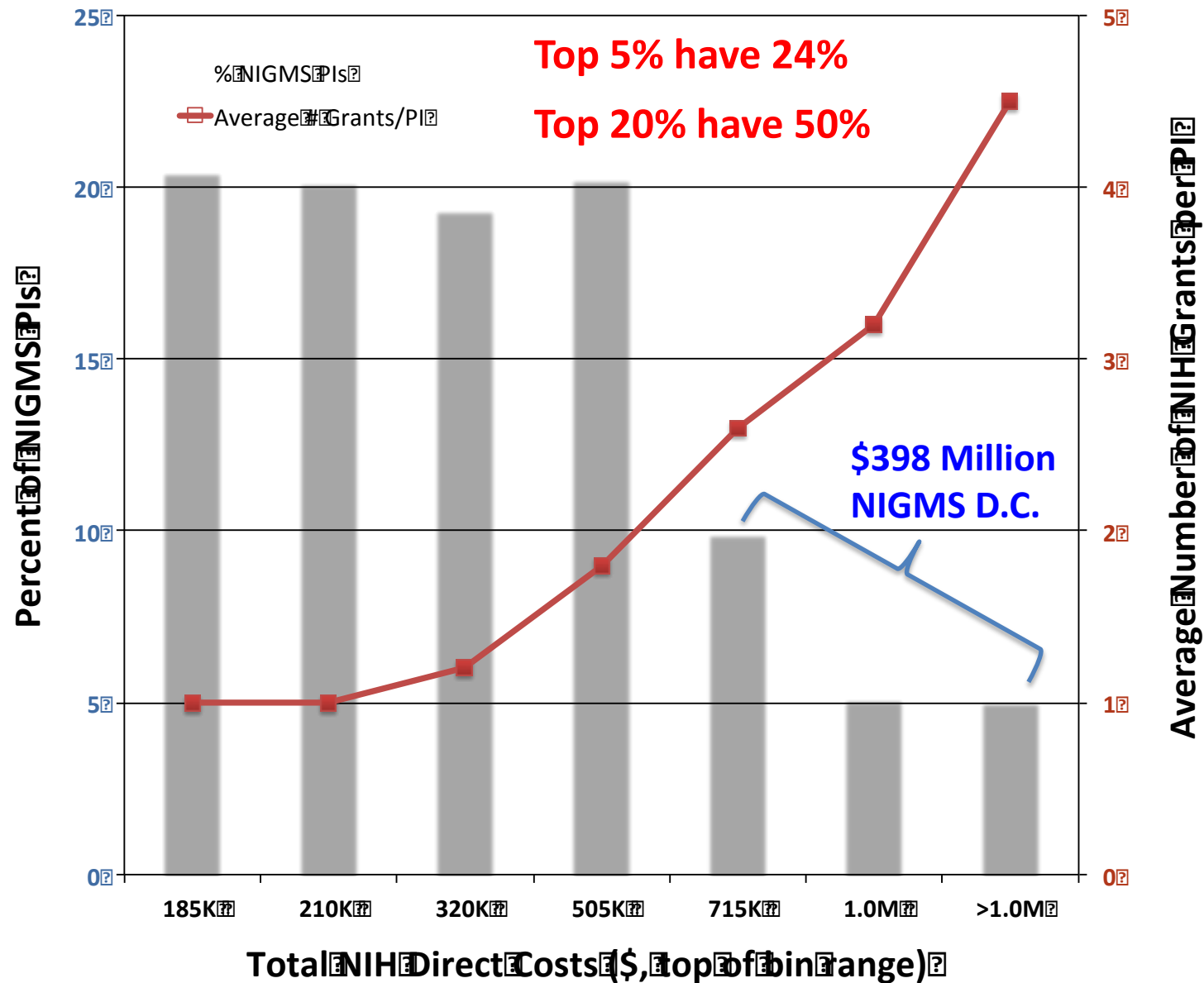
**Maximizing chances
for discoveries**

**Post-doc.
holding tank**

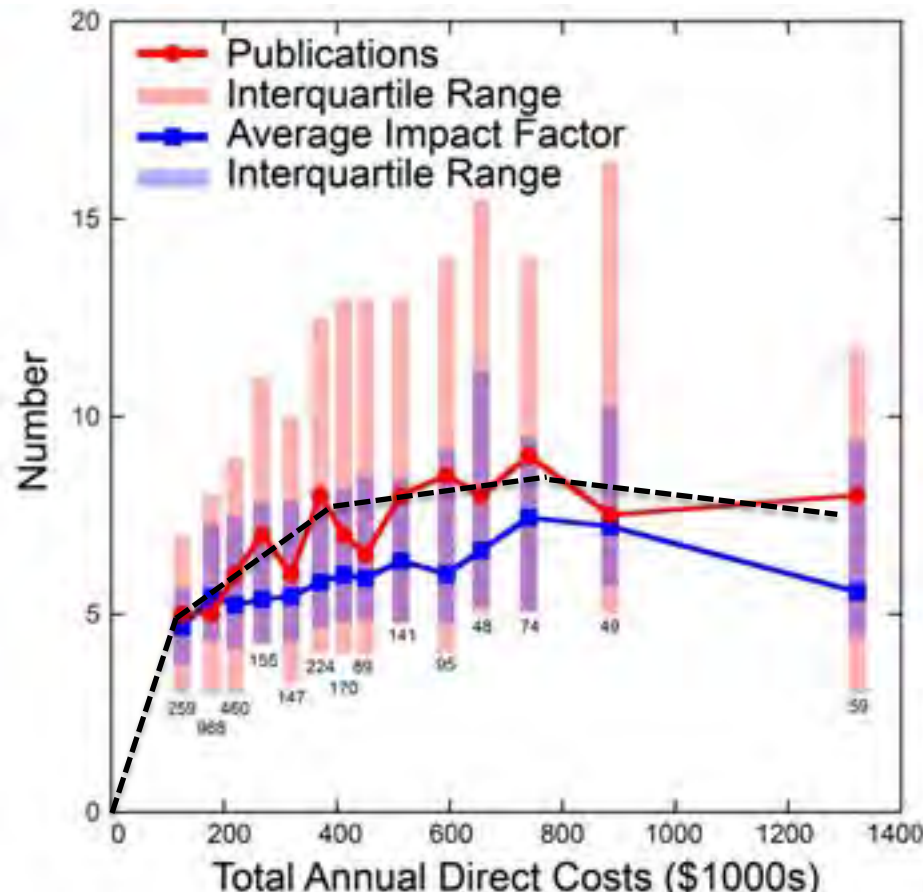
**Scientific
rewards system**



Distribution of NIGMS Grantees' Total NIH Direct Costs



Maximizing the Return on Our Investment of Taxpayer Dollars



Another R01 to someone who already has \$400K d.c. buys the taxpayers 1 extra paper

An R01 to a new PI or someone who will otherwise have nothing buys the taxpayers 5 papers

➡ 4 paper difference in yield

What should our metric for funding be?

of Grants Awarded

What should our metric for funding be?

of Grants ~~Awarded~~

of Investigators Supported

Funding Research *Programs* instead of Individual *Projects*

- Increase the **stability of funding** to enhance investigators' willingness to take on ambitious scientific projects and to approach problems creatively.
- Increase **flexibility** for investigators to follow important new research directions as opportunities arise.
- Improve the **distribution of funding** among investigators to increase overall scientific productivity and the chances for important breakthroughs.
- Reduce the time spent by researchers **writing grant applications**, allowing them to spend more time conducting research.
- Reduce the time spent on **reviewing grant applications**.

Maximizing Investigators' Research Award (MIRA)

- One NIGMS research grant per PI – R35
- Bigger and longer (5 years) than current R01 averages
- Direct cost range up to \$750K
- Not tied to specific aims
- Review based on track record and overall research ideas
- Budget could be modulated based on competing review in order to avoid abrupt termination of research groups
- Separate panels and modified review considerations for early-stage investigators

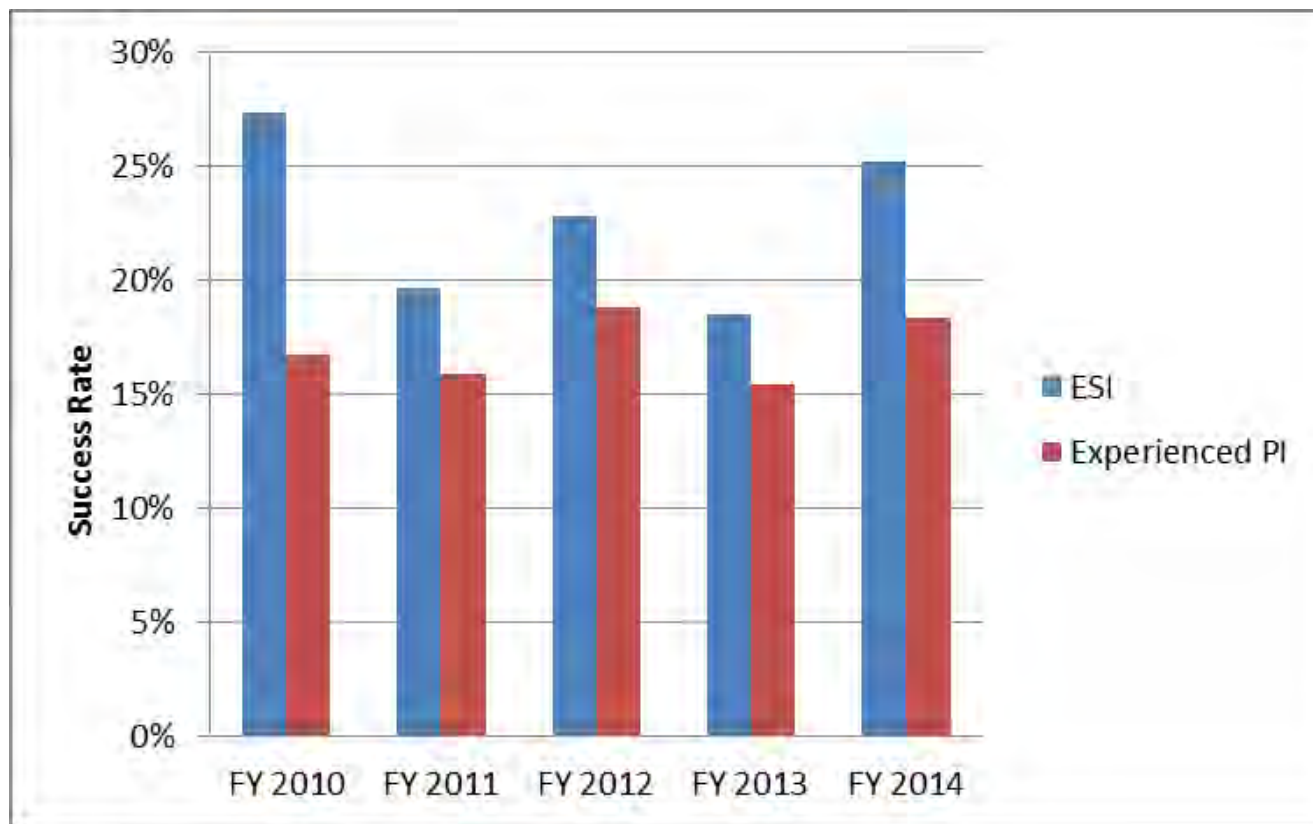
What MIRA Is Not

- Not targeted specifically at high-risk, high-potential-reward research
- Not targeted specifically at a perceived highly elite group of investigators
 - ➔ If it works, MIRA could support any investigator studying questions related to NIGMS' mission

Initial Implementation Plan

- Need to generate a moderate number of applications to test the MIRA application and review concepts.
- Applications from NIGMS established PIs with either ≥ 2 NIGMS R01s or 1 NIGMS R01 for $\geq \$400K$ d.c.
- Applications from New Investigators.
- Separate FOAs, review panels, and review criteria for established PIs and New Investigators.
- If pilot phase is successful, expand the program to include all PIs working on questions relevant to NIGMS' mission.

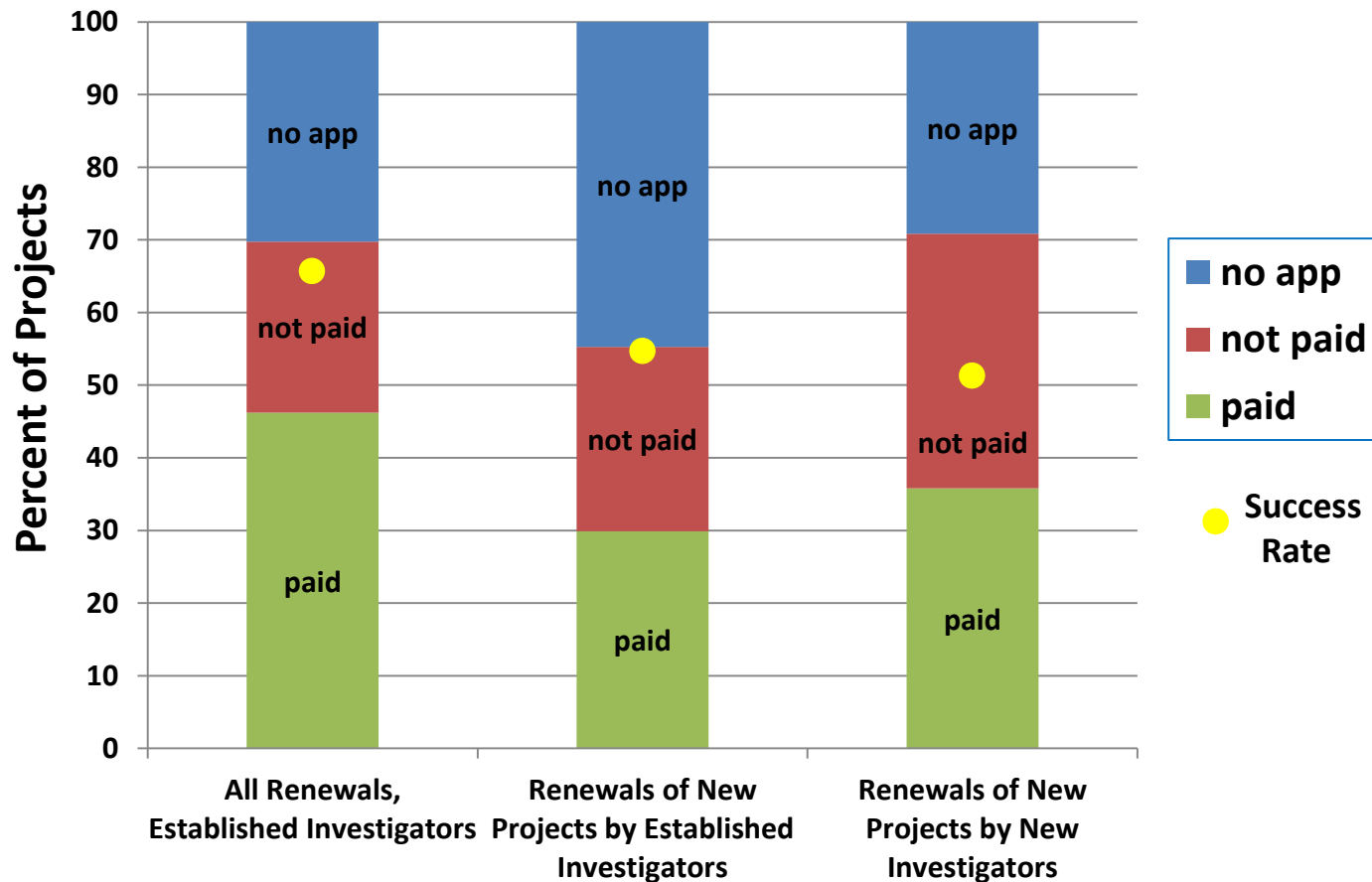
Early Stage Investigator R01 Success Rates Are Higher than Success Rates for New R01s (for Experienced PIs)



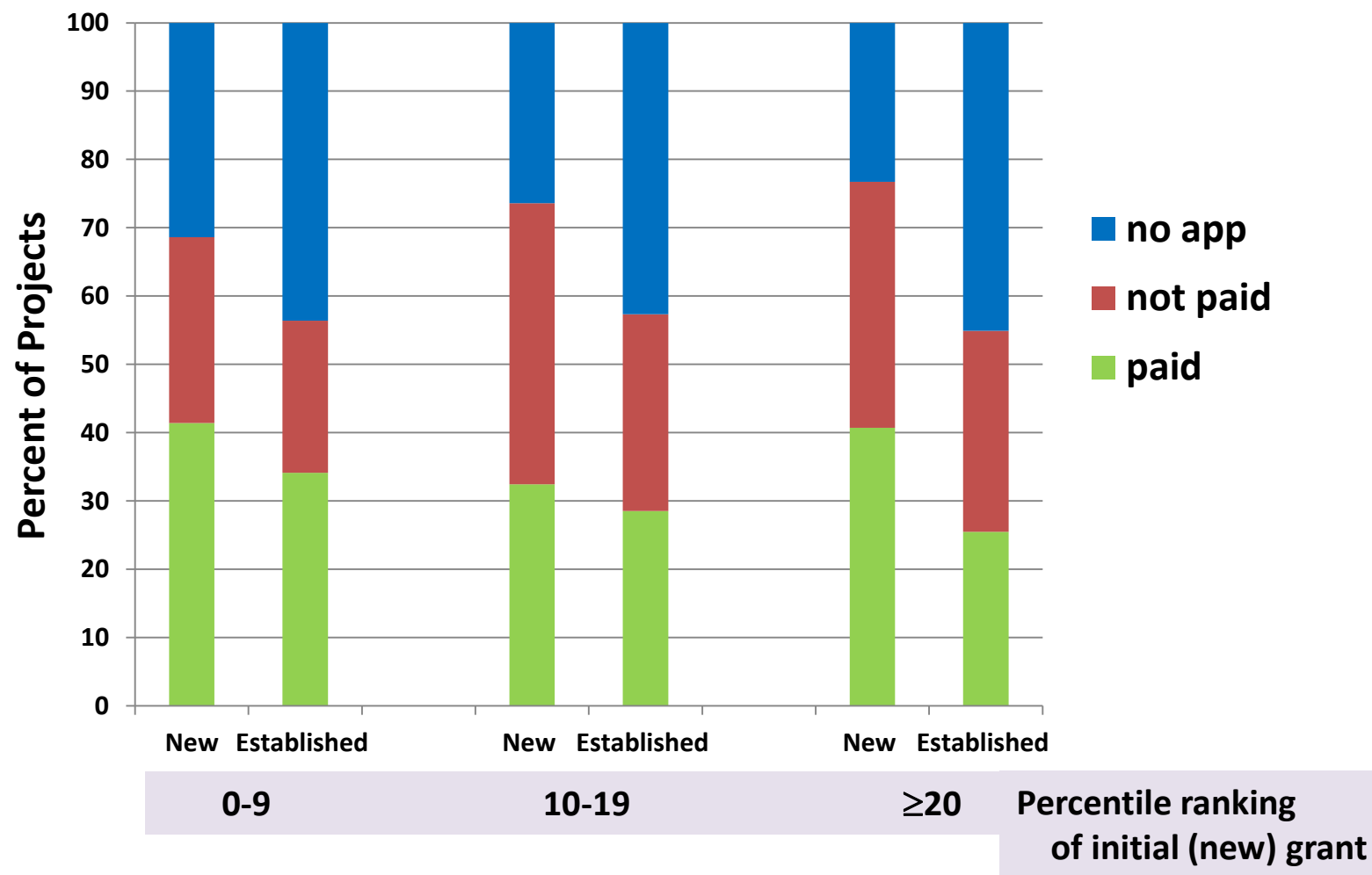
ESI (Early Stage Investigator) – A new investigator who is within 10 years of completing their terminal research degree or within 10 years of completing their medical residency at the time they apply for R01 grants.

The NIGMS ESI success rate (R01, DP2, R37 and RF1 mechanisms) has remained higher than the success rate of NIGMS experienced investigators .

Grants to New Investigators are Renewed More Frequently than New Grants to Established Investigators



“Reaching” to Fund Grants for New Investigators Seems to Be Justified

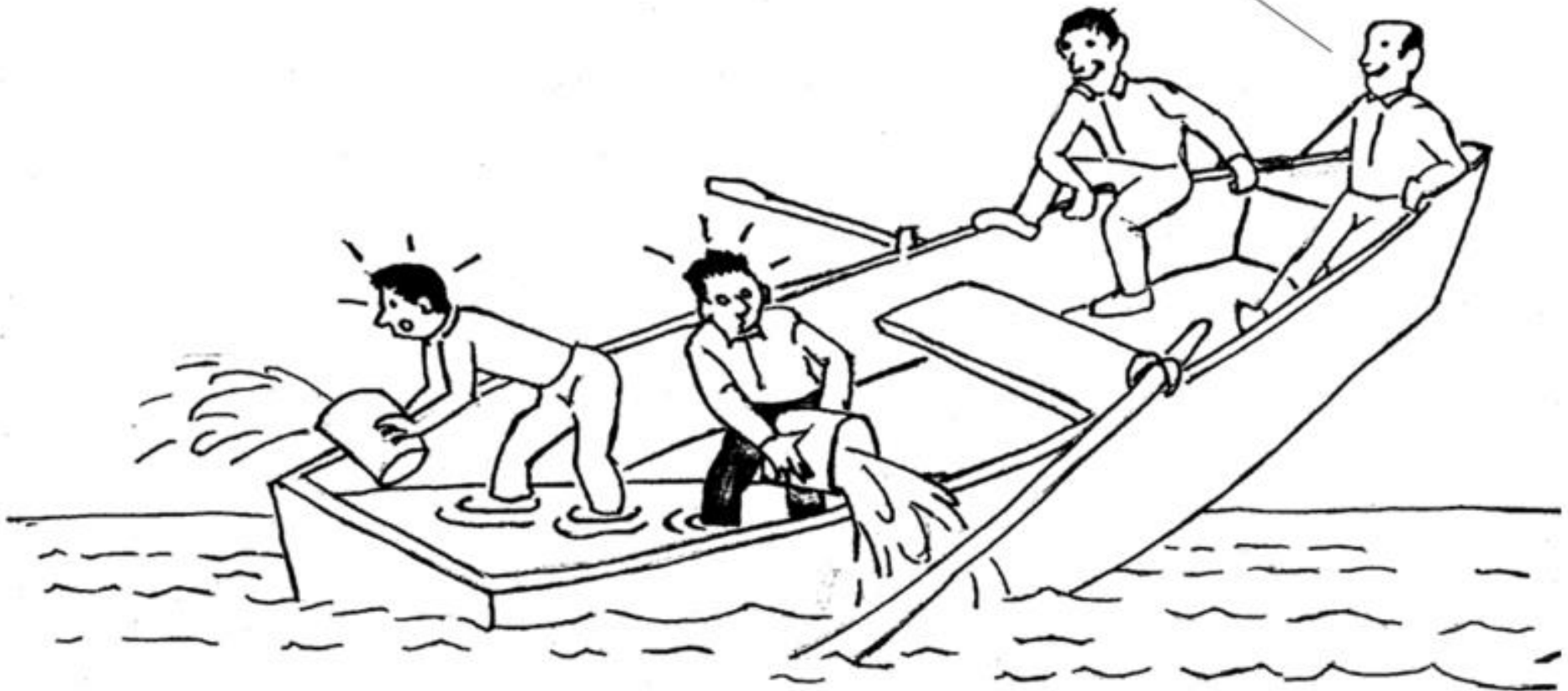


Some Important Issues in Workforce Development

- Developing the Optimal Workforce
 - Building diversity: from research questions to regions to people
- PhD Education
 - Promoting innovation to improve outcomes
 - Evaluation and outcomes assessment
 - Career development
- Physician-Scientist Education
 - Complementary models to the Medical Scientist Training Program?
 - Retention in research
- Postdoctoral Training
 - What is postdoctoral training for and who should do it?
 - Improving postdoctoral training

A Shared Responsibility

Sure glad the hole isn't at our end.



Questions or Comments?

