Next Generation Researchers Initiative: Report from ACD Working Group
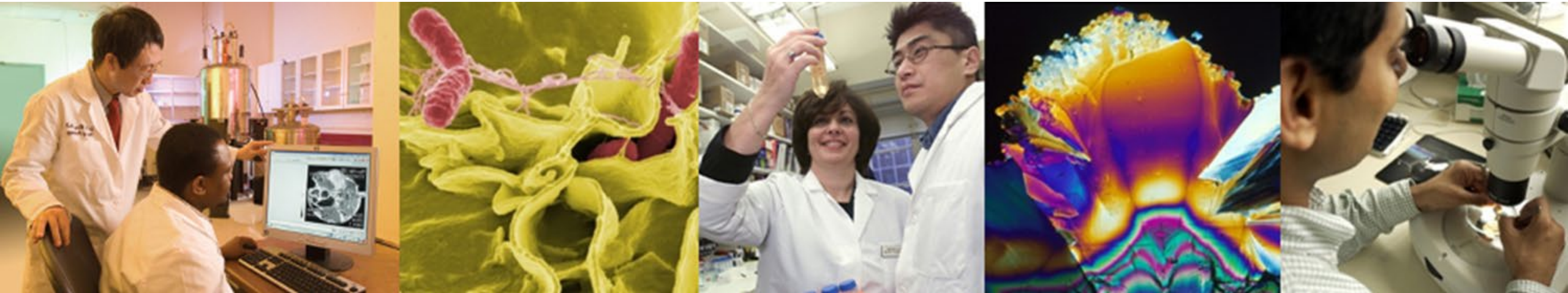
117th Meeting of the Advisory Committee to the Director
December 13, 2018

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Professor, Harvard Medical School; Institute Member, Broad Institute
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Principal Deputy Director, NIH

Outline of Today's Presentation

- Background
- Working Group Activity Summary
- Working Group Recommendations
- Next Steps

Background: Long-standing NIH interest in supporting the next generation of researchers

- New Investigator/Early Stage Investigator policies
- Programs for transitions to independent careers
  - K99/R00
  - NIH Director's awards for high-risk, high-reward research
    - Early Independence Award
    - New Innovator
- Strategies to manage existing resources
  - Special Council Review
- ACD Biomedical Workforce report (2012) and ACD Diversity working group (active)

Background: 21st Century Cures Act

- Section entitled, *Investing in the Next Generation of Researchers*, established the Next Generation of Researchers Initiative within the Office of the NIH Director.

- This initiative is intended to promote and provide opportunities for new researchers and earlier research independence.

  - Subsection (b) requires the Director to *Develop, modify, or prioritize policies, as needed, within the National Institutes of Health to promote opportunities for new researchers and earlier research independence, such as policies to increase opportunities for new researchers to receive funding, enhance training and mentorship programs for researchers, and enhance workforce diversity*

  - Subsection (c) requires the Director to *Carry out other activities…as appropriate, to promote the development of the next generation of researchers and earlier research independence.*

The Next Generation Researchers Initiative Working Group

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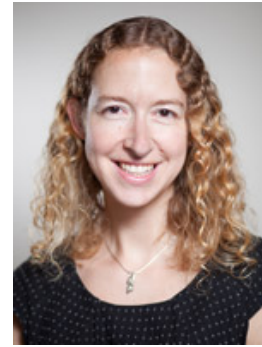Associate, AHA Fellow,
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Background: Working Group Charge

- Assist the NIH ACD on the development of a trans-NIH Next Gen policy;

- Review independent assessments to identify evidence-based metrics for research productivity, and determine the impact of NIH grant support on scientific progress;

- Provide advice and recommendations on approaches for developing or enhancing NIH funding mechanisms aimed at supporting Early Stage Investigators (ESIs) and Early Established Investigators (EEIs);

Background: Working Group Charge (cont.)

- Propose recommendations for tracking and assessing funding decisions for applications with fundable scores that involve ESIs and EEIs, to ensure the Next Gen is effectively implemented in all areas of research;

- Align recommendations for the opportunities and needs of ESIs and EEIs with the work of other ACD and internal NIH WGs regarding the demographics of workforce, age, sex, ethnic/racial diversity, MDs vs. PhDs;

- Review analyses to assess the impact of the Next Gen policy on the overall NIH scientific portfolio and workforce trends.

Summary of Working Group Activity

- **14 teleconferences and 3 in-person meetings**

- Activity since June 2018 ACD meeting:
  - Teleconferences and an in-person meeting
  - Engagement with external stakeholders
    - Briefings with:
      - NASEM Next Generation Researchers working group chair, staff
      - Members of the Rescuing Biomedical Research organization
    - More feedback and correspondence from scientific societies
  - Adding and refining recommendations for the working group report

Recommendations: 5 Major Themes

- *Theme 1: Modify the Original NGRI policy*

- *Theme 2: Develop Methods to Identify and Support "At-Risk" Investigators and Early Stage Investigators*

- *Theme 3: Promote Sustainable Training Opportunities that Incorporate Diversity and Inclusion*

- *Theme 4: Monitor Outcomes and Optimize Workforce Stability Through Improved Metrics And Further Research*

- *Theme 5. Continue Transparency Efforts and Engagement with Scientists Across Career Stages to Inform Policy Decisions*

Theme 1: Modify the Original NGRI policy

1.1. Redefine ESI status to increase flexibility and support for individuals at the beginning stages of their career who have had no previous funding as a sole investigator from a major independent award

- Interim recommendation proposed lengthening the ESI window
- Considered concerns of further forward shift to the time to 1st R01
- Report captures the discussion of pros/cons
- In the end, no recommendation to change the current ESI window length (10 years)

Theme 1: Modify the Original NGRI policy

1.2. Discontinue the "Early Established Investigator (EEI)" definition

- Data and modeling identified shortcomings of the EEI definition
  - Too restrictive
  - Would further hamper efforts to enhance diversity
  - Would lose as many PIs of interest as would be gained

The Model – Example (Payline)
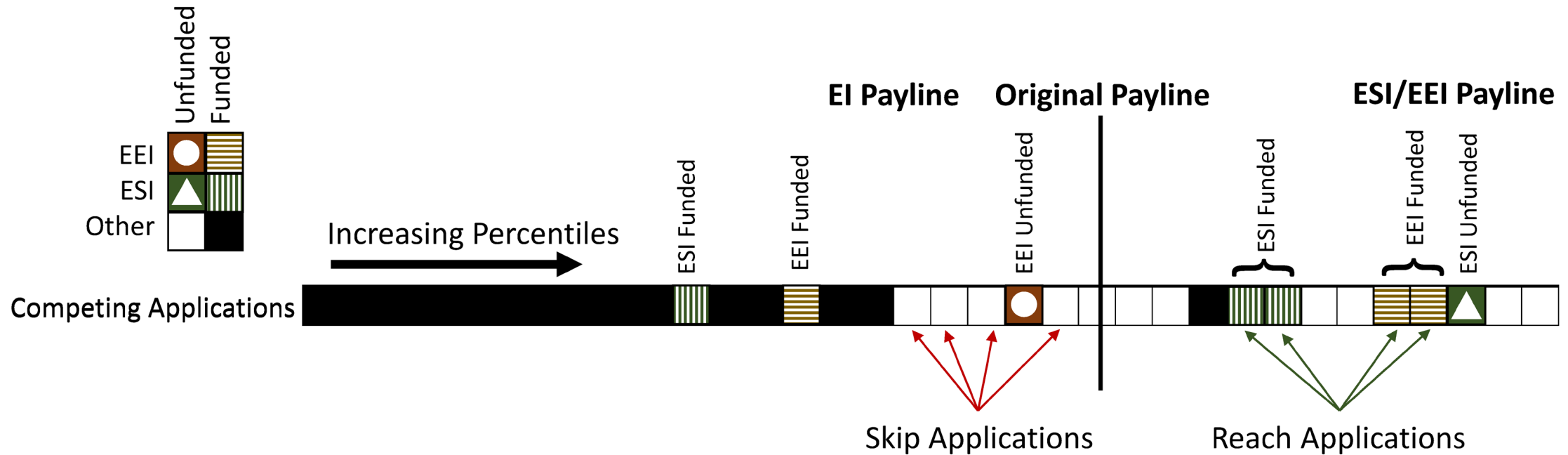
Reaching for 2 new ESI and 2 new EEI awards requires skipping 4 other awards

Theme 1: Modify the Original NGRI policy

1.3. Introduce the definition of "at-risk" applicants, taking into account the duration of their investigative career

- These are applicants with meritoriously-scored applications who would not have major NIH research funding if the application under consideration is not awarded

- Recommend special funding consideration given at programmatic/IC-level
  - Concern that "at-risk" label may cause peer reviewers to judge applications differently

Theme 2: Develop Methods to Identify and Support "At-Risk" Investigators and Early Stage Investigators

2.1. Expand pathways for funding ESIs through programs that do not require preliminary data

- Came out of discussion of recommendations to increase DP2s
- One of the main supporting arguments: to encourage independent lines of investigation, such that the applicant would not feel obligated to use the preliminary data from their postdoctoral training, but could branch out into a new line of research

Theme 2: Develop Methods to Identify and Support "At-Risk" Investigators and Early Stage Investigators

2.2. Preserve ESI status after first multi-PI award

2.3. Separate review, comparison and scoring/percentiling of ESI applications, grouped during the initial discussion in Study Section

2.4. Prioritize funding for meritorious applications from ESI and at-risk investigators

2.5. Fund ESI investigators R01-equivalent applications for at least 5 years

Theme 2: Develop Methods to Identify and Support "At-Risk" Investigators and Early Stage Investigators

2.6. Incentivize the inclusion of ESIs as project leaders in Program Project Grant applications

2.7. Extend R15 awards, per the investigator's choice, to up to 5 yrs

2.8. Expand R15 use at all NIH ICs

Theme 2: Develop Methods to Identify and Support "At-Risk" Investigators and Early Stage Investigators

2.9. Conduct, within one year, a detailed analysis of salary support derived from NIH grants, updating the 2007 study on this topic

SCIENTIFIC PROGRESS,

THE UNIVERSITIES, AND

THE FEDERAL GOVERNMENT

Statement by the
PRESIDENT'S SCIENCE ADVISORY COMMITTEE

THE WHITE HOUSE
WASHINGTON, D.C.
November 15, 1960

We recognize that many university scientists are strongly opposed to the use of Federal funds for senior faculty salaries. Obviously we do not share their belief, but we do agree with them on one important point—the need for avoiding situations in which a professor becomes partly or wholly responsible for raising his own salary. If a university makes permanent professorial appointments in reliance upon particular Federal project support, and rejects any residual responsibility for financing the appointment if Federal funds should fail, a most unsatisfactory sort of "second-class citizenry" is created, and we are firmly against this sort of thing. A variant of this same abuse is the practice of permitting extra pay to faculty members from grants or contracts, during the regular academic year. It seems to us fundamental to the spirit of a university that a man's salary from the university itself should not be supplemented by extra term-time payments for work that is properly part of his professorial responsibilities. (Summer compensation for research work is a separate matter, since most academic appointments plainly leave the summer months free for other activities at additional compensation.) Just as a professor should not be responsible for obtaining the funds to pay his regular salary, so also there should be no bonus payment for "landing a contract."

But in our judgment the possibility of abuse is not a good argument against action. We are convinced that when a university is firm in accept-

Theme 3: Promote Sustainable Training Opportunities that Incorporate Diversity and Inclusion

3.1. Increase gradient of post-doctoral support levels after 5 years

3.2. Ensure that all funding opportunity announcements for training, fellowship, and career awards reflect the requirement to promote diversity and inclusion in a sustainable way

Theme 3: Promote Sustainable Training Opportunities that Incorporate Diversity and Inclusion

3.3. Require institutions to provide professional development and training plans for mentors and trainees listed on research grants, including actionable feedback from trainees and detailed language in annual and renewal progress reports

3.4. Implement ACD Working Group on Diversity recommendations

Theme 3: Promote Sustainable Training Opportunities that Incorporate Diversity and Inclusion

3.5. Analyze the effect of research topic choice on R01 funding outcomes

3.6. Expand access to the National Research Mentoring Network-type resources

Theme 3: Promote Sustainable Training Opportunities that Incorporate Diversity and Inclusion

3.7. Ensure that POs interact equitably with all investigators, including ESI and at-risk investigators, and persons from underrepresented groups

3.8. Require broad and recurrent evidence-based training on unconscious bias for POs, SROs, and peer reviewers, and include this as a required component of RCR training for both mentors and trainees

Theme 3: Promote Sustainable Training Opportunities that Incorporate Diversity and Inclusion

3.9. Require grantee organizations to provide assurances that they have effective, fair, and up-to-date policies to preserve a harassment-free environment

3.10. Require R13 applications to describe what best practices for a safe and harassment-free environment will be employed at conferences and professional meetings

Theme 4: Monitor Outcomes and Optimize Workforce Stability Through Improved Metrics And Further Research

4.1. Create and establish a formal analysis plan for evaluating the impact of NGRI and early-career investigator programs, and for assessing disparities across ICs

4.2. Support further research on assessments of workforce capacity

Theme 4: Monitor Outcomes and Optimize Workforce Stability Through Improved Metrics And Further Research

4.3. Revise project scoring criteria and funding decisions for PIs to emphasize the previous 7 years of service and mentorship contributions

4.4. Assess portfolio-wide and NIH-wide productivity and return on investment of taxpayer dollars

Theme 5. Continue Transparency Efforts and Engagement with Scientists Across Career Stages to Inform Policy Decisions

5.1. Increase accessibility of NIH administrative data for both members of the biomedical research community and researchers investigating biomedical science

5.2. Expand channels by which the NIH solicits and receives public comments

Theme 5. Continue Transparency Efforts and Engagement with Scientists Across Career Stages to Inform Policy Decisions

5.3. Create a standing working group to monitor and refine the policy recommendations for the Next Generation Researchers Initiative

5.4. Appoint scientists from across career stages and life experiences to NIH working groups and committees

Recommendations for the Broader Biomedical Research Community

- For research organizations to examine hiring and recruitment practices to better support a diverse and strong future biomedical research workforce

- For research organizations to explore ways to create and support staff scientist positions, and incentivize the recruitment and hiring of staff scientists

- The working group supports initial efforts by universities to collect and add transparency to their own workforce data

Closing thoughts from working group members

- Continued need to evaluate the Next Generation Researchers Initiative

- Not one size fits all -- fields are different, have specialized needs, and will continue to evolve with time

- Pro-sustainability, pro-non-harassment, pro-diversification in every conceivable way
  - Consideration of workforce diversity and inclusivity is part and parcel of workforce policy

- Accountability and transparency are also paramount, from all stakeholders (NIH and research organizations, alike)

- Our recommendations embody a person-based view of research, not just a research-based view of research

Acknowledgements

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- Invited speakers
  - National Academies, "Rescuing Biomedical Research" group
  - NIH leadership and their representative ICOs
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  - Formally and informally; professional societies and individuals
- NIH Immediate Office of the Director staff
- Working Group Executive Secretary, Nicole Garbarini, Ph.D.

DISCUSSION
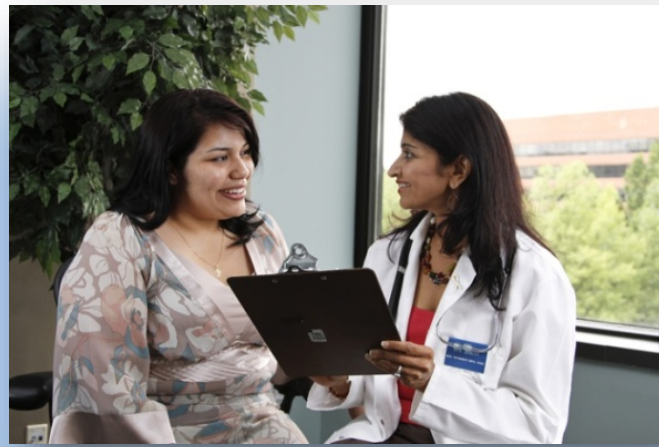
NIH...
Turning Discovery Into Health