NIH AA/B Funding Disparity Working Group: Findings and Recommendations

Hannah A. Valantine, M.D.
NIH Chief Officer for Scientific Workforce Diversity

NIH ACD Meeting | June 9, 2016
AA/B Funding Disparity Working Group

- Hannah Valantine, MD*
- James Anderson, MD, PhD*
- Bruce Cuthbert, PhD
- Matthew Fenton, PhD
- Gary Gibbons, MD
- Kenneth Gibbs, PhD*
- Stephen Katz, MD
- Michael Lauer, MD*
- Jon Lorsch, PhD
- Douglas Lowy, MD
- David Murray, PhD
- Richard Nakamura, PhD *
- Eliseo Pérez-Stable, MD
- Roderic Pettigrew, PhD, MD
- William Riley, PhD
- Griffin Rodgers, MD
- George Santangelo, PhD*
- Nora Volkow, MD
- Alison Davis, PhD*
- Janetta Lun, PhD*
- Luci Roberts, PhD*

* Analytics subgroup
R01 Funding Disparity for AA/B Scientists
Key Findings and Next Steps

• Submissions
  – Low applicant pools
  – Fewer applications per applicant

• Re-submission
  – Review score
  – Topic choice

• Recommendations
  – Interventions
  – Ongoing analyses

• Discussion
AA/B Funding Disparity

• Ginther: (FY2001-2006) AA/B applicants less likely to be awarded R01 grant compared to WH applicants
  – Controlling for demographics; education and training; employer characteristics; NIH experience; research productivity

• AA/B Funding Disparity Working Group (WG) follow-up analysis with more recent data (FY2008-2014)
  – Multifactorial
  – Disparity at each stage in the process
    ➢ Initial applications, re-submissions, review outcome (score), number of applications discussed, funded
  – Cumulative disparity
    ➢ Odds of AA/B scientist being funded 35% less than for WH scientist funded
  – Background facts to frame interventions
Analysis of R01 Success Rates in the Era of Declining Pay Lines: Disparity Persists

Success rate for:
FY 2000 – 2006
  African American applicants: 17%
  White applicants: 29%

  Differential success (AA:W) 0.59

FY 2010 - 2015
  African American applicants: 11%
  White applicants: 17%

  Differential success (AA:W) 0.65

* Cochran-Mantel-Haenszel statistics
  Effect of race adjusted for time period: 154.40; p < 0.0001

Ginther, 2011
OER, 2016
Applications from AA/B Scientists Constitute Only 1.5% of the Pool

Source: NIH Office of Extramural Research
New Data: R01 Funding Disparity Spans Submission to Funding

Submissions
- Institution
- Topic

Review
- Less discussed
- Lower score
- Fewer re-submissions
- Topic

Funding
- IC Council review
- Paylines, select pay
- Topic

- AA/B 1.5% total applicant pool
- More AA/B are NIs
- Fewer applications per AA/B PI
- Resources, protected time
- AA/B-preferred topics: lower funding success

- When compared directly, 45% AA/B vs. 53% WH discussed
- Score drives re-submission
- Study topics similar in citation metrics
- WH > AA/B funding in all study topics

- Topic preference for IC select pay
- Pool of discussed, unfunded AA/B applications
- Low-success topics ~ IC priorities?
Regardless of race, certain topics are less likely to be funded NIH-wide ("low-success"), for example:

- Community
- Women
- Health disparities
- African American
- Kidney disease

AA/B scientists prefer these topics but produce far fewer applications overall than do WH scientists, and AA/B scientists are less likely to be funded even in these topics.
Factors Contributing to R01 Application Outcomes

• Discussed
  – Re-submission application
  – Race other than AA/B
  – Continuation application
  – Early-stage investigator

• Funded if discussed
  - Re-submission application
  - Continuation application
Factors Contributing to R01 Application Outcomes

• Discussed
  • Re-submission and application type (renewal vs new):
    • More likely to be discussed
    • More likely to be funded, if discussed
  • Race
    • AA/B less likely than WH to be discussed
    • AA/B just as likely to be funded (of those discussed)

• Funded if discussed
  - Re-submission application
  - Continuation application
Intervention Targets

Submissions
- Institution
- Topic

Mentoring/coaching pilot to enhance submission and re-submission

Review
- Less discussed
- Lower score
- Fewer re-submissions
- Topic

Information on re-submission outreach
Anonymized application review study

Funding
- IC Council review
- Paylines, select pay
- Topic

IC select pay analysis
- Topic further analyses
- Health disparities
- Minority health research
Experimental Intervention #1: Mentoring/Coaching Pilot for Application Preparation

Expanding on existing NRMN* Programs

- **Goal:** Increase R01 submission and re-submission, thus improving success in obtaining NIH R01 grants
- **Participants:** Cohort of up to 20 mentees with 2 NRMN professional-development core models
- **Method:**
  - Targeted invites from IC leadership, pre-submission review (coaches and NIH program officers, review staff)
  - Resources for protected time (administrative supplements)
- **Outcome metrics:** re-submissions, score, awards made

*National Research Mentoring Network*
Mentoring and Coaching Pilot
R01 Grant-Application Preparation

- Include targeted outreach to new investigators
- Expand mentorship opportunity with context experts
- Provide career development support and resource (e.g., protected time)
- Facilitate interaction with NIH program officers
- Expanded focus on re-submissions
# Mentoring and Coaching Pilot

## R01 Grant-Application Preparation

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before re-submission...</td>
<td><strong>10 months</strong></td>
</tr>
<tr>
<td></td>
<td>Identify “scored but not funded” applications (~30-35 AA/B investigators)</td>
</tr>
<tr>
<td></td>
<td><strong>Workshop Preparation /Pre-Review</strong></td>
</tr>
<tr>
<td></td>
<td>Pre-workshop applications reviewed by NIH program officers and assist identify content experts</td>
</tr>
<tr>
<td></td>
<td><strong>5 months</strong></td>
</tr>
<tr>
<td></td>
<td>A combination of in-person and online mentoring and coaching</td>
</tr>
<tr>
<td></td>
<td><strong>2 months</strong></td>
</tr>
<tr>
<td></td>
<td>Wrap-Up session / Mock Review</td>
</tr>
<tr>
<td></td>
<td><strong>Submission/Re-submission</strong></td>
</tr>
</tbody>
</table>
Experimental Intervention #2: Application Information, Knowledge Trial

- **Goal**: provide facts about application and review processes that link application score to funding likelihood; raise awareness about increased funding success from re-submissions
- **NIs***: stratified samples of AA/B, WH, and Asian scientists whose applications were discussed but not funded (historical controls)
- **Method**: “Dear Investigator” letter with information that links score to fundability, and action steps
- **Companion survey** about resources, topic choice
- **Outcome measures**: number of re-submissions, survey responses

* New R01s and R21s in FY2016-17
Experimental Intervention #3: CSR-Led Anonymous Review Study

• Goal: Assess potential bias in peer review
• 3 cohorts
  – AA/B applicants
  – Matched* sample of WH applicants
  – Randomly selected sample of WH applicants
• Anonymized (personal information redacted)/non-anonymized
• Multiple reviewers per application:
  – Title, specific aims, methods
  – NOT biosketch, budget, bibliography
• Outcome measures: resulting scores for differences that may be due to race awareness, institution reputation, sex, and seniority

*sex, institutional types, and original score range
Ongoing Analyses on Topic Choice

✓ Quality of science: comparing high vs. low success topics shows no difference in citation characteristic for funded R01s (FY2010-13)
  ✓ Disaggregated by grant percentile score:
  ✓ Grant percentile rankings 15th-30th - no significant differences between high and low success

✓ IC Discretionary pay:
  ✓ Greater use for high-success topics
  ✓ No difference by race

• Scaled-up topic cluster analysis and co-citation networks
R01 Funding Disparity for AA/B Scientists
Key Findings and Next Steps

• Submissions
  – Low applicant pools
  – Fewer applications per applicant

• Re-submission
  – Review score
  – Topic choice

• Recommendations
  – Interventions
  – Ongoing analyses

• Discussion
Issues and Questions

• NIH R01 is currency of biomedical advancement, long-term academic success
  – Disparity must be resolved
• Shared responsibility: NIH and academia
• Applicant pool: Severe AA/B underrepresentation
• Low success topics:
  – Health disparity and minority health research
  – Outdated methodology, questions, approaches?
• Understand role of bias:
  – Race (review, funding)
  – Topic (review, funding)
DISCUSSION