TRANSLATING SCIENCE TO BETTER HEALTH:
THE POWER OF DIVERSITY AND MULTICULTURAL ENGAGEMENT

TRAINING WORKSHOP I
Effective Grantsmanship

JOHN C. HIGGINBOTHAM
University of Alabama School of Medicine
Grant Writing: Specific Aims

Presented at the 13th Research Centers in Minority Institutions (RCMI) International Symposium on Health Disparities
December 9th – 13th, 2012
San Juan, Puerto Rico

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University of Alabama School of Medicine – Tuscaloosa

Thanks to these resources

Erica Whitney, California Institute for Quantitative Bioscience

O.K., let's slowly lower in the grant money.
The Grants Process: Step by Step

Step 1 – Getting Started
Overview of NIMH organization and research areas; grant mechanisms and research funding opportunities—PAs and RFAs; NIMH funded projects and priorities; things to consider before applying; FY 2008 funding strategy for research grants.

Step 2 – Applying for Funding
Application forms and instructions; grant writing assistance; common mistakes in writing applications; grant writing tips; example grant application (e.g., from NIAID).

Step 3 – Application Assignment and Review Process
Assignment of application; review process (First Level, IRG/Second Level, Council); review guidelines and identifying an appropriate review committee; timeline for decisions about your grant application; link to eRA Commons.

Step 4 – Your Application has been Peer Reviewed: Now What?
Finding your score; summary statement; what your score means; program considerations; providing just in time information; resubmitting an application.

Step 5 – Your NIMH Grant has been Funded
Congratulations! Administration and Fiscal Management; NIMH Human Subjects Recruitment Policy; Progress Reports; Competing Continuation (Renewal) Awards.

Steps in Proposal Preparation

The AVERAGE Ron: Grant Proposal take more than 400 hours to prepare.


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Timeline for Proposal Preparation

Most common reasons for not receiving funding:
- Lack of new and original ideas
- Diffuse, superficial or unfocused research plan
- Lack of knowledge of published relevant work
- Lack of experience in the essential methods
- Uncertainty concerning the future directions
- Questionable reasoning in experimental approach
- Absence of acceptable scientific rationale
- Unrealistically large amount of work
- Lack of sufficient experimental detail
- Uncritical approach
What are Your Goals?

- Specific
- Measurable
- Realistic

Specific Aims

Your Specific Aims are the cornerstone of your entire proposal.

- The objectives of your research project.
- What you want to accomplish.
- Your project milestones.
- Testable concepts and ideas.
- Focused on an unresolved issue or on a roadblock to advancing the field.

Specific Aims

Your specific aims are:

- The most important page of your proposal.
- Start with a brief problem statement to introduce your research question and state why it is important.
- Limited to 2-4 aims.
- Declarative (use short bullet points).
- Explain why this research matters.
- Not inter-dependent but supportive of each other.
Specific Aims

Include, on 1 page:

- Introduction:
  - Big picture/relevance of your research.
  - The problem you are addressing.
  - Focus of project/what you hope to accomplish.
  - Overall hypothesis.
  - Lead into Specific Aims.

Specific Aims:

- Specific Aims:
  - Propose to test mechanistic hypotheses.
  - State what you propose to determine or test.
  - Specific Aims are not methods; include brief description of approach after the Specific Aim.
Specific Aims

Insert preamble that describes the unmet medical need and/or gaps in our biomedical knowledge and why this is an important topic of study.

Our long-term goal is to understand ____. The specific objective of this proposal is to ____. The central hypothesis is that ____. We formulated this hypothesis, in part, based upon our strong preliminary data, which shows that ____. The rationale for the proposed research is that once it is known how ____. We will pursue these studies in three Specific Aims:

- Aim 1 INSERT TEXT.
- Aim 2 INSERT TEXT.
- Aim 3 INSERT TEXT.

In these studies, we will examine the prediction that ____.

The proposed work is innovative because it capitalizes on ____. At the completion of this project, we expect that the combined work proposed in Aims 1 and 2 will ____. We also expect that Aim 3 will establish ____.

Specific Aims

- Specific Aim 1. We will test the prediction that X……
  - 1A. We will manipulate X and measure Y … Our hypothesis predicts …
  - 1B. We will do X assay to determine … We expect to find …

- Specific Aim 2. To characterize the mechanism of …
  - 2A. We will test whether X happens by Y… We predict that …
  - 2B. We will test the hypothesis that X happens by carrying out Y methods …

Specific Aims are not General, Long-term, Compassionate Aims.

- General aims:
  - To improve the quality of alcoholism treatment
  - To offer helpful services to heroin addicts

- Specific aim:
  - To determine the relative efficacy of Treatment A vs. Treatment B for increasing abstinence among alcohol dependent patients

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Specific Aims

All specific aims should be directly linked to:
- Research methods for achieving them
- A statistical-analytic plan for testing or documenting them.
- The analytic plan is often organized in sections directly corresponding to numbered aims, proposing how it will be evaluated.

Look at Funded Specific Aims

NIH Enhanced Review Criteria

Significance
- If the aims of the project are achieved, how will scientific knowledge, technological advances, technical capability, clinical practice, and/or health be improved?
- How will successful completion of the aims change the concepts, methods, technologies, treatments, services, or preventative interventions that drive this field?
NIH Enhanced Review Criteria

Investigator(s)

- Are the PD/PI, Community Research Associates, collaborators, and other researchers well suited to address the aims of the project?

Innovation

- Do the aims of the application challenge and seek to shift current research or clinical practice paradigms by utilizing novel theoretical concepts, approaches or methodologies, instrumentation, or interventions?
- Is a refinement, improvement, or new application of theoretical concepts, approaches or methodologies, instrumentation, or interventions proposed (i.e., in the specific aims)?

Approach

- Are the overall strategy, methodology, and analyses well reasoned and appropriate to accomplish the specific aims of the project?
NIH Enhanced Review Criteria

Environment

- Will the scientific environment in which the work will be done contribute to the probability of success (i.e., achievement of specific aims)?

- Are the institutional support, equipment and other physical resources available to the investigators adequate for the project proposed (i.e., the specific aims)?

Remember

What we write with our effort is in general read without pleasure.

-Samuel Johnson

There are no great artists, only great observers.

- Ernest Hemingway

Write because you have something to say, not because you want to be something.

- F. Scott Fitzgerald

The End...
DAVID M. STOFF
National Institute of Mental Health

Mentoring to Enhance Diversity in the Research Workforce
13th RCMI International Symposium on Health Disparities
December 10-13, 2012 San Juan, Puerto Rico

David M. Stoff, Ph.D.
National Institute of Mental Health
Division of AIDS Research

Carmen D. Zorrilla, M.D. and Silvia Rabionet, Ed.D.
University of Puerto Rico School of Medicine

DEPARTMENT OF HEALTH & HUMAN SERVICES   USA

The views expressed are solely those of the author and do not necessarily represent the views or policy of the U.S. Department of Health and Human Services

Agenda

• Diversity Context
• Mentoring: General Issues
• Mentoring: Models
• Mentor Training
• Mentoring Recommendations
Agenda

• Diversity Context
  • Mentoring: General Issues
  • Mentoring: Models
  • Mentor Training
  • Mentoring Recommendations

Figure 1. Underrepresented Minorities at Different Academic/Career Stages

Underrepresented minorities as a percent of... K-12 School-Age Population (2008)
All Undergraduate Students (2008)
S & E Bachelor’s Degree Recipients (2008)
S & E Graduate Students (2008)
S & E Ph.D. Recipients (2008)
S & E Postdocs (2008)
NIH ROI P.I.s (2010)

Percent
0 10 20 30 40

Source: Data from National Science Foundation and National Center for Education Statistics.

Figure 2. U.S. Demographics and the Biomedical Scientist Population

2. Derived from data provided by NIH Office of Extramural Research Division of Information Services Reporting Branch.
3. National Science Foundation, Survey of Doctorate Recipients, Appendix Table 5-17.
Diversity in Research: Where Is The Problem?

The Pipeline is actually a funnel

Agenda

- Mentoring: Diversity Context
- Mentoring: General Issues
- Mentoring: Mentor
- Mentoring: Mentee
- Mentoring Recommendations

Barriers Faced by Individuals From Diverse Backgrounds to Success In HIV/AIDS Research

<table>
<thead>
<tr>
<th>Barriers</th>
<th>Implications of Barriers</th>
<th>Possible solutions and strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual-Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mentoring and Training</td>
<td>Backward research training opportunities, research resources and pipeline programs for independent research readiness, limited professional role models for career planning</td>
<td>Mentored research training and research education awards with increased funding opportunities for research readiness</td>
</tr>
<tr>
<td>Professional Development and Socialization</td>
<td>Inefficiencies in communication, presentation, publication, grant writing and other survival skills, deficiencies in knowledge of funding sources, the grantmanship process and networking</td>
<td>Mentored research training and research education awards with increased funding opportunities for skills building programs</td>
</tr>
<tr>
<td>Self-concept and feelings</td>
<td>Lack of self-confidence and isolation; unaccustomed into research world; relative insensitivity of researchers from diverse communities related to backward publications and track record; view that diversity-focused research is substandard</td>
<td>Increased awareness of positive impact of research contributions; broader scope of funding agencies to diversify support; encourage opportunities for diverse investigators to participate in resource rich programs such as Centers and/or multi-site projects</td>
</tr>
</tbody>
</table>
### Barriers Faced by Individuals from Diverse Backgrounds to Success in HIV/AIDS Research (continued - 2)

<table>
<thead>
<tr>
<th>Implications of Barriers</th>
<th>Possible Solutions and Strategies to Overcome Barriers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Infrastructure and Resources</td>
<td></td>
</tr>
<tr>
<td>Lack of strong culture for research, limited availability of cutting-edge scientific equipment, lack of follow-through on institutional commitments</td>
<td>Increased funding opportunities for research infrastructure development; increased integration of research with curriculum; improved access to core facilities; increased accountability of institutional leadership</td>
</tr>
<tr>
<td>Institutional priorities, bias and support</td>
<td></td>
</tr>
<tr>
<td>Overwhelming competition from large and more established mainstream institutions for limited resources and funding; insufficient support and commitment from home institution</td>
<td>Increased funding opportunities for collaborations and partnerships; increased commitment and accountability; cultivate long term relationships between diverse and mainstream perspectives</td>
</tr>
<tr>
<td>Leaky pipeline</td>
<td></td>
</tr>
<tr>
<td>Inacceptable rates of attrition from one career stage to the next higher one, especially at the transition points</td>
<td>Increased number of programs and faculty strengthening committees</td>
</tr>
</tbody>
</table>

### Barriers Faced by Individuals from Diverse Backgrounds to Success in HIV/AIDS Research (continued - 3)

<table>
<thead>
<tr>
<th>Implications of Barriers</th>
<th>Possible Solutions and Strategies to Overcome Barriers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational/Structural-level barriers</td>
<td></td>
</tr>
<tr>
<td>Resources</td>
<td></td>
</tr>
<tr>
<td>Inadequate time necessary to do research (administrative responsibilities and teaching load); addressing policy and political issues; inadequate library resources, such as lack of journals, to do research; development of newer technologies</td>
<td></td>
</tr>
<tr>
<td>Competing demands and inadequate incentives</td>
<td></td>
</tr>
<tr>
<td>Absence of social support; health and family commitments, such as childcare responsibilities; lack of transportation options; lack of financial resources</td>
<td></td>
</tr>
<tr>
<td>Social/Cultural-level barriers</td>
<td></td>
</tr>
<tr>
<td>Culture and language</td>
<td></td>
</tr>
<tr>
<td>Cultural insensitivity—inadequate attention to cultural difference variables and to sensitivities of diverse groups; language barriers for some diverse groups in publishing and completing applications</td>
<td>Provide support for culturally-sensitive programs and enhanced language competency; advance science of cross-cultural support</td>
</tr>
<tr>
<td>Stigma, discrimination and microaggressions</td>
<td></td>
</tr>
<tr>
<td>Restricted opportunities; insults and discriminatory experiences</td>
<td></td>
</tr>
<tr>
<td>Systemic-level barriers</td>
<td></td>
</tr>
<tr>
<td>Mistrust, misperceptions, insensitivity</td>
<td></td>
</tr>
<tr>
<td>Anti-diversity research, communication gaps; lack of understanding and appreciation for sources and complexities of diversity-focused research</td>
<td>Increased awareness and education on equity and diversity issues; more equitable access to care and research; increased number of diverse researchers, especially in community-based participatory research; increased representation on review committees</td>
</tr>
</tbody>
</table>
Importance of Factors as Barriers to Diversity Investigator Application and Successful Competition for NIH Funding

• Inadequate research infrastructure, training and development (4.01)
• Barriers to development as independent researchers (3.94)
• Inadequate mentoring (3.86)
• Insensitivity, misperceptions and miscommunications (3.71)
• Institutional bias in NIH policies (3.67)
• Unfair competitive environment (3.56)
• Lack of institutional support (3.55)
• Unsupported research topics/methods (3.50)
• Social, cultural and environmental barriers (3.39)


Suggested Actions to Increase Diversity Investigator Application and Competition for NIH Funding

• Create opportunities for mentorship/collaboration (4.11)
• Increase commitment and accountability
• Sensitize and diversify review process
• Provide more technical assistance and skill-building programs
• Increase funding opportunities for career development
• Cultivate long-term relationships between NIH and its constituencies
• Broaden scope and type of funding
• Facilitate professional and organizational development (3.75)


Mentoring as Iterative Long term Process

From Bremen et al Infect Dis Clin N Am 25 (2011) 511-536
Why Mentor?

• Mentoring correlates with increased success in academic career
  – Sigma Xi Postdoc Survey (2005): Mentoring is part of "structured oversight" that correlates with greater success and satisfaction for postdocs
• Mentoring critical part of training for early-career researchers
  – Mentoring plan can provide a training roadmap for both mentor and protégé

Overall Observations - 1

• Mentoring programs by and large are not taking advantage of research concepts and practices from relevant areas of scholarship, including adult education, counseling, psychology, and other social sciences
• A bigger institutional cultural change is needed—not just mentoring programs
• Bring in experts in organizational change, knowledge translation, and innovative diffusion
• We need to move beyond traditional mentoring models—team, transdisciplinary, cis and trans

Overall Observations-2

• Most mentoring models are not conceptually-driven, atheoretical and based primarily upon targeting specific scientific content
• We need to do more than match mentors with mentees—adhoc mentoring, the most ubiquitous model, is insufficient—must train mentors and mentees and standardize
• Mentoring should be treated as an intervention
• We need to take more advantage of lessons learned from successful mentoring models
Mentors are Important

• Find Internal and External Mentors
• Help mentors Help you to:
  – Identify significant questions
  – Develop innovative approaches to these questions
  – Formulate scientific questions suitable for funding
  – Identify appropriate funding mechanisms
  – Design and acquire pilot studies/data
  – Prepare grants (e.g., Critique drafts, link with consultants)
  – Plan and prepare publications
  – Identify training needs
  – Have opportunities for collaborating in research projects
  – Manage your time
  – Provide networking opportunities
  – Identify and implement plan for long term goals
  – Overcome barriers to research

Mentors are Important - continued

• Be a mentor...

• NIH supports opportunities for research training programs across the nation to strengthen mentoring for individuals from diverse backgrounds (at all academic levels) in various HIV/AIDS research areas (i.e., NIMH’s R25 portfolio of special summer “institutes”).

Mentoring Individuals from Diverse Backgrounds

• Two way mentoring matching mutually beneficial to mentee and mentor w/ re’ needs, research objectives, interests and experiences
  – Individuals from diverse backgrounds benefit more from mutually-initiated relationships
• Multiple mentor model is especially effective for individuals from diverse backgrounds and for multidisciplinary approaches
  – “Collective mentoring” model can create supportive environment, with department overseeing a mentoring team
  – “Peer mentoring” can also be effective, esp. as complement to mentoring team
  – Encourage protégés to look beyond research group, department, discipline, institution
Mentoring Individuals from Diverse Backgrounds - continued

- Individuals from diverse backgrounds face additional challenges in finding mentors, such as:
  - Poor access to potential mentors due to limited informal networks
  - Dearth of racial/ethnic minority mentors with research expertise
  - Limited institutional resources
  - Few same-racial/ethnic role models
  - Peer-perceptions of cross-racial/ethnic mentoring relationships
  - Feelings of being excluded or isolated

Critical Features of Effective R25 Mentoring Programs-1-

- Critical Mass—funded research teams, mentors
- Enrichment/Survival Skills
- Dynamic—constantly revised and tailored to mentee
- Conceptually-based
- Empirically-based—literature on mentoring
- Focus on transition points
- Thematic Research Area and/or Tracks
- Creative Use of existing funding mechanisms—leverage collaborative funding across programs

Critical Features of Effective Mentoring Programs-2-

- Seed Money For Research (approx $20,000 per proj)
- Milestones/Tracking
- Standardized Outcomes
- Networking
- Ongoing Mentoring (throughout the year and long term)
- External Speaker Series on Methods, Topics and Timely Issues in HIV/AIDS (Beyond Immediate Research Area)
- Co-mentoring and partnering across disciplines: academic and community collaborations
# Research Mentoring: Relevant Outcomes

- Retention
- Personal Satisfaction
- Enhanced Learning/Skills
- Publications
- Research Grants
- Transitions
- RO1 as “Gold Standard”
- Independent Research Direction
- Scientific Collaborations
- National/International Reputation

## NIMH Research Education Grants (R25)

- Flexible and specialized award that fosters the development of MH researchers through creative and innovative research educational programs that address aspects of NIMH mission including basic, clinical, translational, and services research across the lifespan.

- Overall goal of NIMH’s research training and research education programs is to ensure that highly trained scientists will be available in adequate numbers and in appropriate scientific areas.

- BAR FOA used R25 to:
  - Develop special summer institute of research mentorship programs for individuals from underrepresented racial and ethnic groups in a thematic HIV/AIDS research area
  - Establish a network of senior mentors in HIV/AIDS research for mentees from underrepresented groups

## Types of R25 Mentoring Programs

- **Special “Institutes”:** Combine didactics and research opportunities with mentoring
  - Academic program component.
  - Research program component.
  - Local mentoring network.
  - Evaluation.

- **National research mentoring networks:** Provides a resource of mentors
  - Mentor-mentee matching
  - Administrative coordination
  - Mentor training and standardization
  - Workshops/meetings
  - Evaluation
**DAR-Supported Research Education Programs (R25)**

<table>
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<tr>
<th>PI Name</th>
<th>Title</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANDERSON, JOHN</td>
<td>Cyber Mentors: A Sustainable Model for Developing Minority HIV Researchers</td>
<td>AMERICAN PSYCHOLOGICAL</td>
</tr>
<tr>
<td>FERNANDEZ, ISA</td>
<td>Developing HIV/AIDS and Substance Abuse in Corrections</td>
<td>ASSOCIATION / NOVA UNIVERSITY</td>
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<tr>
<td>BRAITHWAITE, RONALD</td>
<td>Southwestern Research Training Collaborative on HIV/AIDS, Mental Health and Substance Abuse in Corrections</td>
<td>MOREHOUSE SCHOOL OF MEDICINE</td>
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<tr>
<td>CHERNER, MARIANA</td>
<td>Interdisciplinary Research Fellowships in HIV/AIDS</td>
<td>UNIVERSITY OF CALIFORNIA, SAN DIEGO</td>
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<tr>
<td>EL-BAEL, NABILA</td>
<td>HIV Intervention Science Training Program for New Minority Investigators</td>
<td>COLUMBIA UNIVERSITY</td>
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<tr>
<td>FLANIGAN, TIMOTHY</td>
<td>The Brown Initiative in HIV/AIDS Research for Minority Communities</td>
<td>BROWN UNIVERSITY</td>
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<td>GUTHRIE, BARBARA</td>
<td>Community-based HIV Education Research Program for Diverse Scholars</td>
<td>YALE UNIVERSITY</td>
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<tr>
<td>KRAUSS, BEATRICE</td>
<td>Minority Researcher Skills in Youth, community, Family and HIV</td>
<td>HUNTER COLLEGE OF DUNY</td>
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<th>Institution</th>
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<tr>
<td>MORGELLO, SUSAN</td>
<td>The Mount Sinai Institute of NeuroAIDS Disparities</td>
<td>MOUNT SINAI HOSPITAL</td>
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<td>McARTHUR, JUSTIN</td>
<td>Diversity Related NeuroAIDS and Mental Health Research</td>
<td>JOHNS HOPKINS UNIVERSITY</td>
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<td>NIELANDS, TORSTEN</td>
<td>Collaboration HIV Prevention &amp; Minority Communities</td>
<td>UNIVERSITY OF CALIFORNIA, SAN FRANCISCO</td>
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<td>RUTHERFORD, GEORGE</td>
<td>International Longitudinal HIV/AIDS Studies</td>
<td>UNIVERSITY OF CALIFORNIA, SAN FRANCISCO</td>
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<td>SULLERS, KARINA</td>
<td>The Elkhorn River HIV/AIDS Research Training Program (ERT)</td>
<td>UNIVERSITY OF WASHINGTON</td>
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<td>HIV/AIDS International Training Program (IAT)</td>
<td>UNIVERSITY OF CALIFORNIA, LOS ANGELES</td>
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<tr>
<td>ZORRILLA, CARMEN</td>
<td>The Brown Initiative in HIV &amp; Mental Health Research</td>
<td>UNIVERSITY OF PUERTO RICO</td>
</tr>
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</table>

**Figure 3:** NIH/NIMH/NIDAIR25-Supported New and Continuing Trainees Over Three-Year Period (2008-2010)

<table>
<thead>
<tr>
<th>Year</th>
<th>New Trainees</th>
<th>Continuing Trainees</th>
</tr>
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<tbody>
<tr>
<td>2008</td>
<td>101</td>
<td>24</td>
</tr>
<tr>
<td>2009</td>
<td>53</td>
<td>55</td>
</tr>
<tr>
<td>2010</td>
<td>21</td>
<td></td>
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Objectives

• What models have been used for mentoring?
• What does the limited evidence say about training mentors?
• Why train mentors?....beyond the evidence
• Some examples of programs to train mentors
• Some insightful moments while “mentoring the mentors”!

Agenda

• Diversity Context
• Mentoring: General Issues
• **Mentoring: Models**
  - Mentor Training
  - Mentoring Recommendations

Purpose of Mentoring Models

• To provide program’s conceptual basis
• To guide program elements
• To tailor to needs of mentee
• To identify program targets
• To monitor program progress
• To ensure integrated approach
Conceptual model of factors that influence the development of a research career

Figure 2. TEAM-Science conceptual model based on social cognitive career theory.

A competency model showing core and cross-cutting domains

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Agenda

• Diversity Context
• Mentoring: General Issues
• Mentoring: Models
• Mentor Training
• Mentoring: Recommendations

The role of mentors in the enhancement of diversity in the workforce-1-

• Not all successful investigators can become good mentors
• A good mentor is expected
  – to be able to provide guidance without being too directive,
  – to allow the mentee choose his/her topic of interest apart from the mentors’,
  – to be able to listen to new ideas and allow for a wider discussion/analysis of the research question and the methodology to answer it.

The role of mentors in the enhancement of diversity in the workforce-2-

• A good mentor is needed for:
  – scientific ideas and methodology,
  – emotional support,
  – leadership and guidance within the institution and with the broader aspects of the career
  – the development of a network of collaborators
  – access into specific circles limited to senior researchers
The role of mentors in the enhancement of diversity in the workforce-3-

- The mentor needs communication skills and strategic planning
  - to be able to communicate with the “other mentors” in a respectful, professional and productive way A mentor
  - needs to have social skills and maturity in order to be able to create the best environment for the growth and scientific (funding) independence of the mentee

The role of mentors in the enhancement of diversity in the workforce-4-

- How do we facilitate diversity as mentors?
  - expanding the pool of mentors
  - training mentors in “mentoring”
  - expanding mentoring programs
  - with the inclusion of diverse disciplines
  - documenting their needs and planning for solutions
  - acknowledging the role of mentors as part of job-related activities

Benefits of Mentor Training

- Standardization
- Theory
- Mechanisms
- Tailoring to Needs
- Cost Effective
- Improved Outcomes (short term and long term)
- Address Relevant Topics to Improve Mentoring (e.g., cultural diversity, values & sensitive issues, boundaries, navigating independence)
Mentoring Seminar: The Wisconsin Program for Scientific Teaching

- Session 1—Getting Started
- Session 2—Learning to Communicate
- Session 3—Goals and Expectations
- Session 4—Identifying Challenges and Issues
- Session 5—Resolving Challenges and Issues
- Session 6—Evaluating Our Progress as Mentors
- Session 7—The Elements of Good Mentoring
- Session 8—Developing a Mentoring Philosophy

Handelman J et al

Faculty Mentor Development Program

1. Defining Mentorship from the Beginning
2. Rewards and Challenges of Mentoring
3. Communicating Effectively with Mentees
4. Balancing Work & Life
5. Understanding Diversity among Mentees
6. Understanding Academic Advancement Policies
7. Understanding Economic & Fiscal Realities for Successful Academic Careers
8. Leadership Skills & Opportunities: How to Build a Successful Research Team
9. Understanding Intramural & Extramural Grants
10. IRB: Navigating the UCSF Application Process


The UPR Mentoring Institute for HIV and Mental Health Related Research

"Mentor the Mentors" Program

1. Mentoring expectations: A two-way (maybe three-way) relationship
2. Importance of ethics and mentoring
3. Trends and opportunities for developing a career in HIV research for mentors and mentees
4. Assessing the mentees' research competencies and needs
5. The balance of developing a long-lasting relationship
6. Negotiating collaborations and networking: the mentor as a broker
7. The ethics of publishing and scientific writing: Ideas and authorship
8. Assessing the mentees' career development
“I expected more of you”

- The mentor said – “A mentee seemed to have more skills and knowledge and when I asked her to write specific aims for a project we were working on her behalf... She could not complete the task...”
- The mentee said- “I wanted my mentor to guide me every step of the process. I want to do it as well as her.”

How could this be handled?

*Mentoring expectations: A two-way (maybe three-way relationship)
*Assessing the mentees’ research competencies and needs

“tug-of-war”

- Differences in opinion and research guidance style to a shared mentee.
- Happened with the study design, choices of instruments.
- The “mentee” is not strong enough to decide on her own... her two main mentors had opposite ideas on what kind of study was needed.

What follows, any ideas?

*Mentoring expectations: A two-way (maybe three-way) relationship
*Negotiating collaborations and networking: the mentor as a broker

“Everybody wants me as a mentor”

- Mentor said- “I feel the sense of responsibility but I have limited time, I feel overwhelmed, and my own research is not advancing, I seem to be devoting more time to mentoring that other faculty”
- Mentees said- “We really want her as a mentor she has the skills, the time, the patience and all her mentees advance.”

What can we do?

*Trends and opportunities for developing a career in HIV research for mentors and mentees
*The balance of developing a long-lasting relationship
*Negotiating collaborations and networking: the mentor as a broker
“Who’s work is this?”

Mentor- “I shared my original and innovative idea for her to develop it. She is not doing it right. I expected more diligence, and more credit.”

Mentee- “She only gave me an idea, I have done most of the work in making this research possible.”

What kind of conflicts could arise in the future?

*The ethics of publishing and scientific writing: ideas and authorship.
*Importance of ethics and mentoring

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**Agenda**

- Diversity Context
- Mentoring: General Issues
- Mentoring: Models
- Mentor Training
- Mentoring Recommendations

---

**Recommendations to Support Quality Mentoring-1**

Scholars
- Establish Implementation Development Plan
- Recognize Diversity of Careers and Backgrounds and support a wide variety of career paths
- Provide cross-discipline support for clinicians and non-clinicians
- Recognize Perspective of Scholar Tailoring Programs to Scholar’s Needs
- Assess Milestones, Outcomes (standardized outcomes ideal) and Success Metrics
- Train Scholars to be Mentors
### Recommendations to Support Quality Mentoring-2

**Mentors and Mentoring Program**

- Propose New Mentoring Models: e.g., team, peers, trans/cis mentors
- Develop New Mentoring Programs that are empirically-based (what works, for whom, under what conditions) and take advantage of relevant social science literature on mentoring
- Systematic Process and Content Evaluations

---

### Recommendations to Support Quality Mentoring-3

**Mentors and Mentoring Program**

- Teach Mentoring as a Skill: Training Mentors
- Incentivizing and Compensation for Mentors Under Certain Conditions
- Develop Mentor Awards and Incentives
  - Institutionally
  - Federally
  - Industry and other NGO
- Develop national network of mentors

---

### Recommendations to Support Quality Mentoring-4

**Mentors and Mentoring Program**

- Accountability
  - NIH to work with professional associations to define policies.
  - Call for multiple sets of best practices
  - Institutional/NIH and A&P reward system for mentoring
  - Mentoring is expected, with defined metrics, for appointments and promotion.
- Funding for research on mentoring
  - Methods to identify gaps
  - Seed grants for small mentoring programs
  - Novel mentoring programs
  - Comparative studies of mentoring models
Recommendations to Support Quality Mentoring

Institution and Funding:

• Develop programs to help enhance Institutional Buy-In
  – Belief in the concept of mentoring
  – Matching funds for programs
  – Resources: libraries, biostatisticians, mock reviews

• Support Funding for Research on Mentoring

• Support Funding for Mentoring Programs
  – Institutional funding
  – All training grants to have a funded mentoring component
  – Incorporate mentoring as component of other mechanisms
  – Protected mentoring time in grants

CONTINUING OUR DIALOGUE

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NONI H. BYRNES
National Institutes of Health
Navigating the NIH Peer Review Process

Noni Byrnes, Ph.D.
Director, Division of Basic and Integrative Biological Sciences
NIH Center for Scientific Review

RCMI
December 2012

National Institutes of Health
U.S. Department of Health and Human Services

Spending at NIH
FY 2012 Enacted: $30.9 Billion

- $3.4 B Intramural Research
- $1.5 B Research Management & Support
- $0.3 B Buildings and Facilities, Other
- $5.2 B

How are NIH funds distributed?

83% Spending Outside NIH
- Supports over 300,000 Scientists & Research Personnel
- Supports over 2,500 Institutions

NIH Grants Process

Great Idea

NIH

? $$
Inside the black box

Where, What, Who, When, How?

• Where does my application go?

• What is the review/funding process?

• Who is the right person to contact? When should I contact someone?

• How should I correctly prepare/target the application?

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Center for Scientific Review (CSR)

Focal Point for Initial Review at NIH
- Receives all NIH applications
- Refers them to NIH Institutes/Centers and to scientific review groups (study sections or special emphasis panels)
- Reviews 70% of grant applications for scientific merit

MISSION: To see that NIH grant applications receive fair, independent, expert, and timely reviews – free from inappropriate influences – so NIH can fund the most promising research.

Where does your application go?

Application

1st level of Peer Review: (70% at CSR)
Study Section or Special Emphasis Panel

2nd level of Peer Review: Advisory Council

Score or Recommendation (summary statement)

Funding Recommendation to Institute Director

Funding Decision

Study Section versus Special Emphasis Panel

Study Sections:
- Standing committees with recurring membership (12-24 regular members that serve 4-6 year terms)
- Meets three times/year to review grant applications in a specific area of science
- Review mostly R01 and R21 mechanisms
- Temporary (ad hoc) reviewers are also recruited to add needed expertise

Special Emphasis Panels (Panel name starts with a “Z”):
- Most are assembled on an as-needed basis, with all temporary (ad hoc) reviewers – vary in size
- Review all mechanisms (Fellowships, small business, collaborative programs, centers, etc.)
- Also used for special initiatives, request for applications
Sample Application Number

<table>
<thead>
<tr>
<th>Individual Research Grant</th>
<th>Serial Number</th>
<th>Resubmission</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 R01 CA 987654 01 A1</td>
<td>New Application</td>
<td>National Cancer Institute</td>
</tr>
</tbody>
</table>

A Window into the NIH: eRA Commons

eRA Commons is an online interface where you can:

- Check submitted grant application for errors and warnings and view final image
- Track review assignment, view review outcomes (score, summary statements), find contact info
- Update Personal Profile to ensure Early Stage Investigator eligibility is in place
- Submit pre-award information (just in time)
- View Notice of Award and other key documents

And much more!

www.commons.era.nih.gov
Inside the black box

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Study Section or Special Emphasis Panel

- Administered by federal NIH official - Scientific Review Officer
- Reviewers selected based on demonstrated scientific expertise, perspective/judgment, impartiality
- Review groups balanced in terms of seniority, gender/ethnic diversity, and geography

Before the Study Section Meeting

- Each application is assigned to 3 or more reviewers based on scientific expertise and perspective
- Reviewers have about 5-6 weeks to independently assess the applications assigned to them by providing:
  - A preliminary Overall Impact score
  - Criterion Scores for each of the 5 review criteria
  - A preliminary written critique addressing strengths and weaknesses in each of the 5 review criteria
At the Study Section Meeting

- Meetings can be held:
  - Face-to-face
  - Virtually (teleconference, video conference, web)

- Applications may be reviewed in clusters, e.g.
  - New Investigator R01s
  - Clinical
  - R21s and R03s

- Discussed at the meeting:
  - Top half of each cluster, usually
  - Final Overall Impact score given privately by each reviewer present, after discussion

- Not discussed at the meeting:
  - Bottom half of each cluster, usually

Each Application has 5 Scored Review Criteria

- Research Grant Applications (e.g. R01, R21, R03, Small Business, Program Projects)
  - Significance
  - Investigator(s)
  - Innovation
  - Approach
  - Environment

- Training Grant Applications (e.g. F: Fellowships)
  - Fellowship Applicant
  - Sponsors, Collaborators, and Consultants
  - Research Training Plan
  - Training Potential
  - Institutional Environment & Commitment to Training

- Career Development (K), Training (T)

Additional Criteria (not scored)

Contribute to Overall Impact Score:
- Protections for human subjects
- Inclusions of women, minorities, and children
- Appropriate use of vertebrate animals
- Management of biohazards

Budget does not contribute to the Overall Impact Score, and is discussed only after final scoring is completed.
9-Point Scoring Scale

<table>
<thead>
<tr>
<th>Impact</th>
<th>Score</th>
<th>Descriptor</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Impact</td>
<td>1</td>
<td>Exceptional</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Outstanding</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Excellent</td>
</tr>
<tr>
<td>Medium Impact</td>
<td>4</td>
<td>Very Good</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Good</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>Low Impact</td>
<td>7</td>
<td>Fair</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>Marginal</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>Poor</td>
</tr>
</tbody>
</table>

Criteria Scores and Overall Impact Score

- Each of the 5 Review Criteria are rated 1-9
- Overall Impact Score (1-9) based on but not a sum of the core criterion scores plus additional criteria

Every application receives a summary statement

- Scores for each review criterion from assigned reviewers
- Largely unedited critiques from assigned reviewers
If your application is discussed, you also will receive:
- An overall impact score and, for R01s, a percentile ranking
- A summary of review discussion
- Budget recommendations
Summary Statement

Impact/Priority Score
10-90 range

Program Officer

Percentile:
Whole numbers

Where, What, Who, When, How?

• Where does my application go?

• What is the review/funding process?

• Who is the right person to contact? When should I contact someone?

• How should I correctly prepare/target the application?

Who should you consult?

• Before you prepare/submit your application
   • Your mentor(s)
   • Your collaborator(s)
   • Potential Program Officer(s) at the NIH Institute (funding)

• After submission, before review
   • Your Scientific Review Officer (SRO) at the NIH (at CSR or Institute)

• After the review, when you get your summary statement
   • Your Program Officer at the NIH Institute
**Program Officer**

- Initiates and encourages interest in scientific areas of importance to the Institute or Center’s mission.
- Assists scientists during the development of their proposals
- Prepares funding recommendations
- Reviews yearly progress of grantees
- Prepares program reports (e.g., budget justifications, scientific accomplishments of overall program)

**Scientific Review Officer**

- Federal official in charge of review process
- Ensures NIH policies are upheld and conflicts-of-interest are managed
- Selects reviewers and Chairperson to serve on study sections
- Administers the study section or special emphasis panel meeting
- Prepare written summary statements documenting the review
- Your contact during the review process

**Inside the black box**

**Where, What, Who, When, How?**

- Where does my application go?
- What is the review/funding process?
- Who is the right person to contact? When should I contact someone?
- How should I correctly prepare/target the application?
Know where in the NIH your science is reviewed/funded

- Which Institute funds your area of science?
  - NIH RePORTER: www.projectreporter.nih.gov

- Which Programs at those Institutes have portfolios in your research area, and who are the Program Officers in charge of those portfolios?
  - Institute Websites: www.nih.gov/icd/

- Which Study Sections review your area of science, and who are the Scientific Review Officers (SROs) in charge of those study sections?
  - CSR website: www.csr.nih.gov

- Who are the current regular and recent ad hoc members/reviewers of that study section?
  - CSR website: www.csr.nih.gov

http://www.nih.gov
Help target your application - Write a cover letter

**In the cover letter:**

- Suggest Institute
  - National Institute of Diabetes, Digestive and Kidney Diseases (primary)
  - National Institute of Allergy and Infectious Diseases (dual)
- Suggest Study Section
  - Digestive, Kidney, and Urological Systems Study Section
- Identify conflicts (provide rationale)
- Discuss appropriate expertise but do not specify reviewers

**Sample Cover Letter**

*Please assign this application “Immunology of Kidney Transplant Rejection” to the following:*

- Institutes/Centers
  - National Institute of Diabetes, Digestive and Kidney Diseases (primary)
  - National Institute of Allergy and Infectious Diseases (dual)
- Scientific Review Group
  - Digestive, Kidney, and Urological Systems Study Section
*Please do not assign this application to the following:*

- Scientific Review Group
  - Immunology IRG

This study focuses on improving outcomes specifically for kidney transplant, not general immunological aspects.
CSR's EARLY CAREER REVIEWER (ECR) PROGRAM

Purpose
• To train and educate qualified scientists without significant prior review experience so that they may develop into critical and well trained reviewers
• To help emerging researchers advance their careers by exposing them to review experience that may make them more competitive as applicants
• To enrich the existing pool of NIH reviewers by recruiting scientists from less research-intensive institutions as well as those from traditionally research-intensive institutions.

Requirements for Being an ECR
• Has not reviewed for CSR beyond one mail review
• Demonstrates training, experience or qualifications in the discipline and fields of the scientific areas under review as evidenced by:
  1. A faculty appointment or equivalent
  2. An active independent research program and recent publications in peer reviewed research journals
  3. Other relevant credentials or experience
• Does not necessarily have NIH or equivalent funding
Responsibilities of an ECR

- Attends study section meeting
- Is assigned 2-4 applications as 3rd reviewer
- Writes a full critique of each application
- Participates in no more than one study section per year and no more than twice total

"You miss 100% of the shots you never take."

Wayne Gretzky

Contact Information:
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National Institutes of Health (NIH)
Bethesda, MD

301-435-1023
byrnescsri.nih.gov

CSR: www.csr.nih.gov
Preparing an Application

**Alignment**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Significance</td>
<td>Research Strategy</td>
</tr>
<tr>
<td></td>
<td>a. Significance</td>
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<tr>
<td>Investigator(s)</td>
<td>Biographical Sketch</td>
</tr>
<tr>
<td></td>
<td>Personal Statement</td>
</tr>
<tr>
<td>Innovation</td>
<td>Research Strategy</td>
</tr>
<tr>
<td></td>
<td>b. Innovation</td>
</tr>
<tr>
<td>Approach</td>
<td>Research Strategy</td>
</tr>
<tr>
<td></td>
<td>c. Approach</td>
</tr>
<tr>
<td>Environment</td>
<td>Resources</td>
</tr>
<tr>
<td></td>
<td>Environment</td>
</tr>
</tbody>
</table>

**When Preparing an Application**

- Read instructions
- Never assume that reviewers will know what you mean
- Refer to pertinent literature
- State rationale of proposed investigation
- Include well-designed tables and figures
- Present an organized, lucid write-up
- Obtain pre-review from colleagues at your organization

NIH Grant Writing Tips:
http://grants.nih.gov/grants/grant_tips.htm
What Reviewers Look for in Applications

- Significance and impact
- Exciting ideas
- Clarity
- Ideas they can understand -- Don't assume too much
- Realistic aims and timelines -- Don't be overly ambitious
- Brevity with things that everybody knows
- Noted limitations of the study
- A clean, well-written application

Common Problems in Applications

- Lack of new or original ideas
- Absence of an acceptable scientific rationale
- Lack of experience in the essential methodology
- Questionable reasoning in experimental approach
- Uncritical approach
- Diffuse, superficial, or unfocused research plan
- Lack of sufficient experimental detail
- Lack of knowledge of published relevant work
- Unrealistically large amount of work
- Uncertainty concerning future directions

Panel Discussion / Q&A
Thank you for participating!