NIH Extramural Programs: Grantsmanship, Funding, and Peer Review

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Presentation Outline

- NIH Structure and Extramural Component
- Grant Application Process/Grant Writing
- Funding Opportunities
- Peer Review
National Institutes of Health (NIH)
NIH – 27 Institutes and Centers

Different Missions, Responsibilities and Constituencies
A Typical NIH Institute/Center

Office of the IC Director

National Advisory Council

Extramural

Biomedical Research Grants

Biomedical Research Contracts

Intramural

Basic & Clinical Research

Clinical Trials

Board of Scientific Counselors
NIH Extramural Staff - Examples

- Program Officer (PO)
- Scientific Review Officer (SRO)
- Grants Management Specialist (GMS)
Program Officer

A science professional, usually Ph.D./M.D. level, who:

- Serves as an advocate for investigators
- Provides scientific stewardship and administration of grants & contracts awarded by NIH
- Identifies areas of scientific priority and develops funding opportunities for extramural researchers
- Provides guidance on NIH extramural policy/procedures, research resources, and funding opportunities to extramural investigators
Scientific Review Officer

A science professional, usually M.D. or Ph.D. level, who:

- Is based at an IC Division of Extramural Activities (DEA), or at the Center for Scientific Review (CSR)
- Manages Study Sections and review panels for grants and contracts
- Selects review panel members
- Assigns reviewers to applications
- Compiles application summary statements
Grants Management Specialist

Business/finance professional who:

- Negotiates and awards all grants
- Provides fiscal administration of grants
- Is the government official on fiscal and policy issues and approvals
Types of NIH Funding Opportunity Announcements (FOAs)

**FOA:** Call for applications in a particular research area of interest to one or multiple NIH Institutes.

**Contracts**
- RFP
- BAA

**Grants**
- Request for Application (RFA)
- Program Announcement (PA)
Types of NIH Funding Opportunity Announcements (FOAs)

Contracts

- **RFP** – Federal Government writes the work requirements (Statement of Work (SOW)). Offerors propose how will accomplish SOW.

- **BAA** – Indicates scientific areas of interest (like RFA). Offerors write the SOW and how will accomplish proposed tasks to address areas of interest.
Types of NIH Funding Opportunity Announcements (FOAs)

Request for Application (RFA)

- One application receipt date
- Set-aside funds
- Areas of scientific interest indicated, also includes areas not supported by the RFA
- Awards may have a budget cap
- Programmatic, Review, and Grants Management contacts
Program Announcement (PA) – 3 types

- **PA** – general type. No set-aside funds or special review. Reviewed in standing study sections, paid with IC “payline” funds

- **PAR** – Special review (Special Emphasis Panel) convened, no set-aside funds (paid with IC “payline” funds)

- **PAS** – Set-aside funds, may include review by a Special Emphasis Panel
When will I get my first grant?

(well, sometimes it just feels that way...)
Grant Writing 101: The Big Three

- Will your research move your field forward?

- Is the field important overall – will progress make a difference in human health?

- Can you and your team conduct the work (expertise, resources)?
Grant Writing 101

- Read Funding Opportunity (FOA) instructions completely.
- State rationale of proposed studies.
- Present an organized, clear story.
- Never assume the reviewers will “know what you mean”.
- Refer to literature thoroughly.
- Include well-designed tables and figures.
Common Grant Writing Mistakes

- Diffuse, superficial or unfocused research plan or experimental approach
- Lack of new or original ideas; incremental advances
- Absence of a solid scientific rationale
- Limited/no experience in essential techniques, no collaborators with required expertise
- Proposed studies are too broad or too narrow
- Lack of discussion of possible pitfalls and alternative approaches
- Insufficient knowledge of relevant published work
- Uncertainty concerning future directions
**A Little Help From Your Friends**

- **NIH Extramural Staff:**
  - SRO – advice about appropriate study sections; submission requirements
  - PO - advice about research focus (before review), appropriate study sections, discussion of review results and applicant responses

- **Colleagues:** Institutional mock study sections, well in advance of application due date

- **GRIP: Grant Review for Immunologists Program**
  - Matches new PIs with established PIs in same area
  - Obtain expert advice on grant application
  
  [http://www.aai.org/GRIP_rd.htm](http://www.aai.org/GRIP_rd.htm)
NIH Tetramer Core Facility:
- MHC class I, class II, and non-classical class I tetramers
- Approved clients provide peptides (in most cases) and pay all shipping and handling charges, no cost for tetramers
- Website: http://tetramer.yerkes.emory.edu/
- NIAID contact: Alison Deckhut Augustine, augustine@niaid.nih.gov

Immune Epitope Database and Analysis Resource
- Free public website containing immune epitope (B and T cell) for infectious diseases, allergy, autoimmune disease, transplant antigens
- Epitope prediction, visualization, and analysis tools
- Website: www.iedb.org
- NIAID contact: Alison Deckhut Augustine, augustine@niaid.nih.gov
**NIAID Research Resources - highlights**

- **Taconic Emerging Models (NIAID Exchange)**
  - Access to immunologically-related, gene-targeted mouse strains (transgenics and knock-outs). $40/mouse
  - Website: [http://www.taconic.com/wmspage.cfm?parm1=1661](http://www.taconic.com/wmspage.cfm?parm1=1661)
  - NIAID contact: Stacy Ferguson, fergusonst@niaid.nih.gov

- **BEI Resources:**
  - Cell lines, antibodies, organisms, assays etc
  - Approved clients pay all shipping and handling charges, no charge for reagents
  - Website: [http://www.beiresources.org/Home.aspx](http://www.beiresources.org/Home.aspx)
  - NIAID contact: Kimberly Stemple, kstemple@niaid.nih.gov

**NIAID-supported Research Resources (complete listing):**
[http://www.niaid.nih.gov/labsandresources/resources/Pages/default.aspx](http://www.niaid.nih.gov/labsandresources/resources/Pages/default.aspx)
Mechanisms (Funding Opportunities)
PhD Career

T32- Institutional Training Grant (NRSA)- Pre- & Post-doc slots
F31- Individual Diversity Pre-doc Fellowship (NRSA)
F32- Individual Post-doc Fellowship (NRSA)
K01- Mentored Research Scientist Award
K22- Research Scholar Development Award
K99/R00- Pathway to Independence Award
K02- Independent Scientist Award
R03 - Small Research Grant Program
R15 – NIH Academic Research Enhancement (AREA) Award
R21 – Exploratory/Developmental Research Grant Program
R01 – Research Project Grant
F33 – Senior Fellowships

Award Types

High School Student
Ph.D.
Graduate Student
Post-doc Phase

Career Stage

Diversity Supplements
Science Re-Entry Supplements

Independent Investigator
MD Career

T35- NRSA Short Term Institutional Research Training Grant
T32- Institutional training grant (NRSA)-has pre- & postdoc slots
F32- Individual postdoc fellowship (NRSA)
K01- Mentored Research Scientist Award
K08 - Mentored Clinical Scientist Research Career Development Award
K23 - Mentored Patient-Oriented Research Career Development Award
K22- Research Scholar Development Award
K24 - Mid-Career Investigator Award in Patient-Oriented Research
K02- Independent Scientist Award
R03 - Small Research Grant Program
R21 – Exploratory/Developmental Research Grant Program
R01 – Research Project Grant
F33 – Research Fellowship Grant

Award Types

High School Student
Medical Student
M.D.
Clinical Training Phase
Research Training Phase
Faculty Position
Independent Investigator

Research Career Stage

Diversity Supplements
Science Re-Entry Supplements
Junior Fellowships (F31 and F32)

- Ruth L. Kirschstein for Individual Pre-doctoral Fellowships to Promote Diversity in Health-Related Research (F31 - Diversity)
  - Pre-docs from underrepresented racial and ethnic groups, individuals with disabilities, and individuals from disadvantaged backgrounds.

- Ruth L. Kirschstein NRSA for Individual Post-doctoral Fellows (F32)
  - Post-docs only
  - Individual awards, U.S. citizens or permanent residents only
  - NIH determines stipend levels, limited tuition reimbursement, and training related expenses
  - Reviewed at CSR
Career Development Awards (Ks)

• Individual awards
• Generally support development to become independent investigators
• Mentored projects
• Salary: $90K + $50K research support
• All about K awards:
  
  http://grants.nih.gov/training/careerdevelopmentawards.htm
**Post-doc (PhD/MD) – Should I apply for a K22 or a K99/R00?**

- **NIAID Research Scholar Development Award (K22)**
- Transition award (postdoc-to-assistant professor)
- 2 year award
- No mentored phase. If an applicant gets a fundable score, s/he has one year to find a position as assistant professor
  - Phase 2:
    - Assistant Professor position
    - Own lab space
    - Significant start-up funds
    - Little teaching/no administrative responsibilities
- $150K (Year 1) + $100K (Year 2)
- Success rate: >25%

- **(K99/R00) Pathway to Independence**
- Transition award (postdoc-to asst. professor)
- 3 year award (other ICs 5yrs)
- 1 yr mentored phase ($90K/yr)
- Awardee becomes assistant professor (internal approval similar to K22 phase 2)
- 2 yr independent R00 phase ($249K/yr TC)
- No US citizenship required
- Success rate: ca. 7-15%
NIAID Transition Awards (K22 or K99/R00)

Postdoc with less than 5 years of postdoc experience

Submits a K22 or K99 application and receives a fundable score

+/− 1 year

Secures a faculty position & Submits the K22 phase II or R00 application

Assistant Professor

NIAID makes the award to the new institution/candidate.
Independent Investigator

- R01 – Research Project Grant
- R03 – Small Research Project Grant
- R15 – NIH Academic Research Enhancement (AREA) Award
- R21 – Exploratory/Developmental Research Grant Program
- P01 – Program Project Grant
- U – Cooperative Agreements (U01, U19)
REMINDER:  PEER REVIEW IN DEPTH and MOCK STUDY SECTION, OCTOBER 23
Led by Dr. Duane Price, Senior SRO, NIAID
Application Processing

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Researcher writes and Institution submits application to NIH

Summary Statement and Priority Score transmitted to applicant (Commons) and NIH extramural staff

3-4 reviewers assigned to read and write critiques for each application

Study section composed of 20-30 reviewers – review/discuss applications

CSR assigns applications to study section (review) & NIH Institute (funding)
"They're harmless when they're alone, but get a bunch of them together with a research grant and watch out."
Understanding the Summary Statement

- **Impact/Priority Score**: 1-9 scale, with 1 being the best score.

- **Percentile**: Approximate percentage of applications receiving an impact/priority score from a study section over 3 review cycles (current + 2 previous).

- **Resume**: Official summary of review meeting discussion, for scored applications only.

- **Critiques**: Reviewers written comments: Overall Impact, Significance, Investigator, Innovation, Approach, Environment.
What to Do After Review

- Talk to your NIH Program Officer
  - Attends the Study Section (most cases)
  - Provide insights to discussion (unofficial) and possible funding options

- Read the Summary Statement
  - Official document providing scientific merit score and summarizing reviewers comments
  - First paragraph (Resume) is the official summary of the meeting discussion

- Strategize Next Steps
  - Talk to your NIH program officer again, after both of you have read the summary statement
  - Discuss with colleagues, mentors
Grants and Peer Review Resources

NIAID:

- Sample R01 Applications and Summary Statements: http://www.niaid.nih.gov/researchfunding/grant/pages_SAMPLES.aspx
- New and Early Stage Investigators: http://www.niaid.nih.gov/researchfunding/grant/Pages/newpportal.aspx
- Funding Opportunities and Announcements: http://www.niaid.nih.gov/researchfunding/ann/Pages/default.aspx
- NIAID Funding Newsletter: http://www.niaid.nih.gov/researchfunding/newsletter/2012/Pages/0926.aspx
Grants and Peer Review Resources

- NIH Office of Extramural Research (OER):
  - All About Grants: [http://grants.nih.gov/podcasts/All_About_Grants/index.htm](http://grants.nih.gov/podcasts/All_About_Grants/index.htm)

- Center for Scientific Review (CSR):
  - Mapping your career to the NIH:
    - [https://webmeeting.nih.gov/p32939640/](https://webmeeting.nih.gov/p32939640/) (webinar)
  - Other Resources for Research Mentors and Trainers:
    An outreach flyer associated with the peer review video can be downloaded from CSR’s outreach publications Web page: [http://cms.csr.nih.gov/publications](http://cms.csr.nih.gov/publications)
**NIAID Contacts**

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QUESTIONS?