2019 ANNUAL MEETING

OCTOBER 19 - 23

2019 SRAI Annual Meeting October 19-23

W 212: First Step Toward Proposal Success: Understanding the Agency Review Process

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First Step to Proposal Success: Understanding The Agency Review Process

Learning Objectives:

- Understand how the grant review process works at U.S. federal and non-federal agencies
- Compare and contrast the different systems
- Evaluate strengths and weaknesses of those systems
- Contrast the differing roles of program officers
- Understand how reviewers are chosen
- Apply this knowledge of the review processes to help investigators develop effective, successful proposals

Starting Points

- Peer review: the backbone and integrity of the U.S. federal grant process and the gold standard in academia and research
- "Peers" may be differently defined by different funding agencies and not all agencies use peer review
- Not all sponsors share reviews with applicants
- Sponsors give their staff different levels of responsibility (and latitude) in their review processes
- While proposal review (whether by peers or otherwise) is a key factor in the funding decision, reviews are normally advisory: the program staff can agree or disagree with the reviewers' judgment, wholly or in part.

Standard Types of Review

Most proposals are reviewed in one of the following ways:

1. **Individual review by subject matter experts** (NSF "mail" or *ad hoc* reviews)
2. **Group review by subject matter experts** (NIH, NSF, NEH panel reviews)
3. **Group review by lay people** (U.S. Department of Education panels, a foundation's board of directors)
4. **Staff review** (agency staff, whether experts or lay people, used by U.S. Department of Defense, private foundations, industry)

Basics of Review

Submission

- Basic business process and technical compliance checks
- Return without review if serious failures after these checks are done.

Processing & Initial Review

- Assignment to appropriate review process
- Identification of ad hoc reviewers
- Solicitation of reviewer comments and initial rankings
- Solicitation of additional comments

Panel

- Individual reviewers present (and may discuss) their findings
- Initial ratings may be revised
- Panel discussion summarized

Basics, continued

Recommendation

- Deciding official reviews the recommendations from reviewers/ panels
- Makes funding decision

Administrative Review

- Program staff reviews funding decisions

Decision

- Award processed, or decline notice sent to proposing organization
- Comments and/or summary statement provided

Who Reviews Proposals

- Federal agencies: set their own review process
  - Federal research agencies generally use formalized review panels of experts—peer review
  - Federal mission agencies often use internal staff as reviewers; some also use external experts
- State agencies: generally use staff as reviewers
- Generic private foundations: generally use staff and boards for review and funding decisions
- Specialized private foundations/organizations
  - May use peer review systems, staff and boards

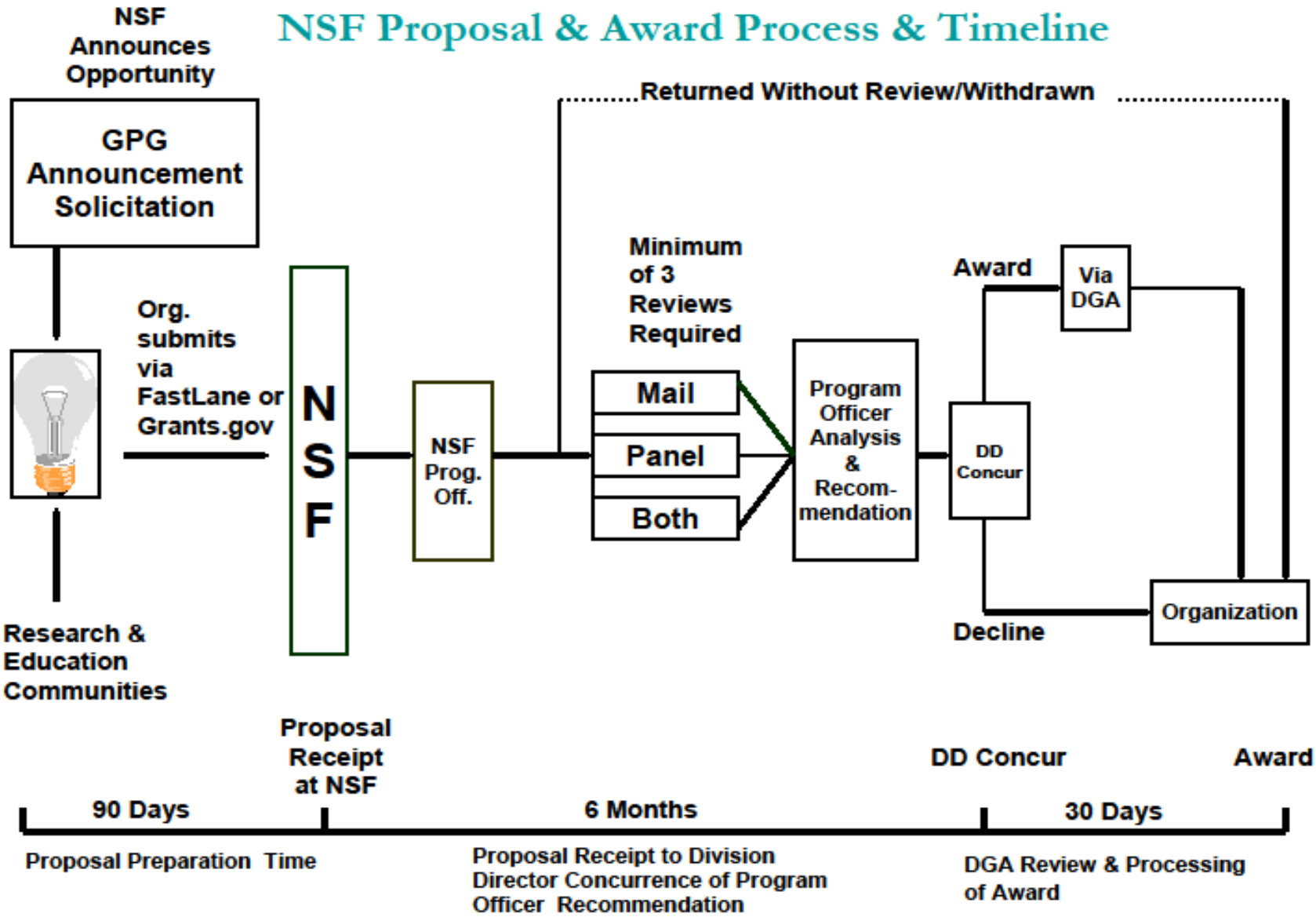
Review, continued…

- Reviewers usually screened for conflict of interest
- Reviewers may not be known to applicants
- Review systems constantly tweaked, improved
- Crucial for investigators and research administrators to understand review system for successful grants
- 25% of PI grant development time: learn and apply review process/rating criteria in writing proposal
- Reviewing is a great learning opportunity:
  - Reviewers see excellent (and poor) examples and can apply this knowledge to develop better proposals

The Agency Review Process

- Agencies to be discussed in this session:
  - National Science Foundation
  - National Institutes of Health
  - U.S. Department of Defense: DARPA
  - National Aeronautics and Space Administration (NASA)
  - U.S. Department of Education
  - National Endowment for the Humanities (NEH)
  - Robert Wood Johnson Foundation
  - Susan G. Komen for the Cure Foundation

NSF Proposal & Award Process & Timeline



NSF External Reviewers

- Proposal has up to five/six individual reviewers, as few as three, depending on program and officer
- Applicants can (and should) suggest reviewers and non-reviewers on original application
- Only the program officer knows about these suggested reviewers
- Reason must be given for suggesting non-reviewer
- International reviewers are allowed
- Reviewers are not known to applicant
- Reviewers cannot have known conflict of interest
  - Personal
  - Professional

NSF Program Officer: Review Process

- NSF applications submitted directly to program
- NSF program officers = academic peers usually with Ph.D. or relevant education/experience in the field
- NSF program officers often rotators on 2-year term from home institution
- NSF program officer
  - Selects reviewers (from NSF database, applicant suggestions, own knowledge of the field, publications)
  - Manages review panel discussions
  - Summarizes reviews and communicates with PI
  - Makes award decisions/recommendations to division director
  - Manages post-award process with PI
  - Handles no-cost extensions and supplements

NSF:
Two Broad Review Criteria

- Intellectual Merit: the potential to advance knowledge
- Broader Impact: the potential to benefit society and contribute to the achievement of specific, desired outcomes
- Reviewers are asked to consider for both intellectual merit and broader impact:
  - What the proposers want to do
  - Why they want to do it
  - How they plan to do it
  - How they will know if they succeed
  - What benefits will accrue if the project is successful

Additional review considerations

- To what extent to the proposed activities suggest and explore creative, original, or potentially transformative concepts?
- Is the plan for carrying out the proposed activities well-reasoned, well-organized, and based on a sound rationale? Does the plan incorporate a mechanism to assess success?
- How well qualified is the individual, team or institution to conduct the proposed activities?
- Are there adequate resources available to the PI (at home institution or through collaborations) to carry out the proposed activities?

NSF, continued…

- Reviewers may read 10 or more proposals
- Reviews conducted electronically and/or in person at NSF
- Each reviewer writes strengths and weaknesses and assign one overall merit ranking and one funding ranking
- Five rankings: Excellent to Poor and
  - Fund or Not recommended for Funding
- Applicant receives
  - all individual verbatim reviews
  - program officer summary of panel discussion
  - recommendation for funding

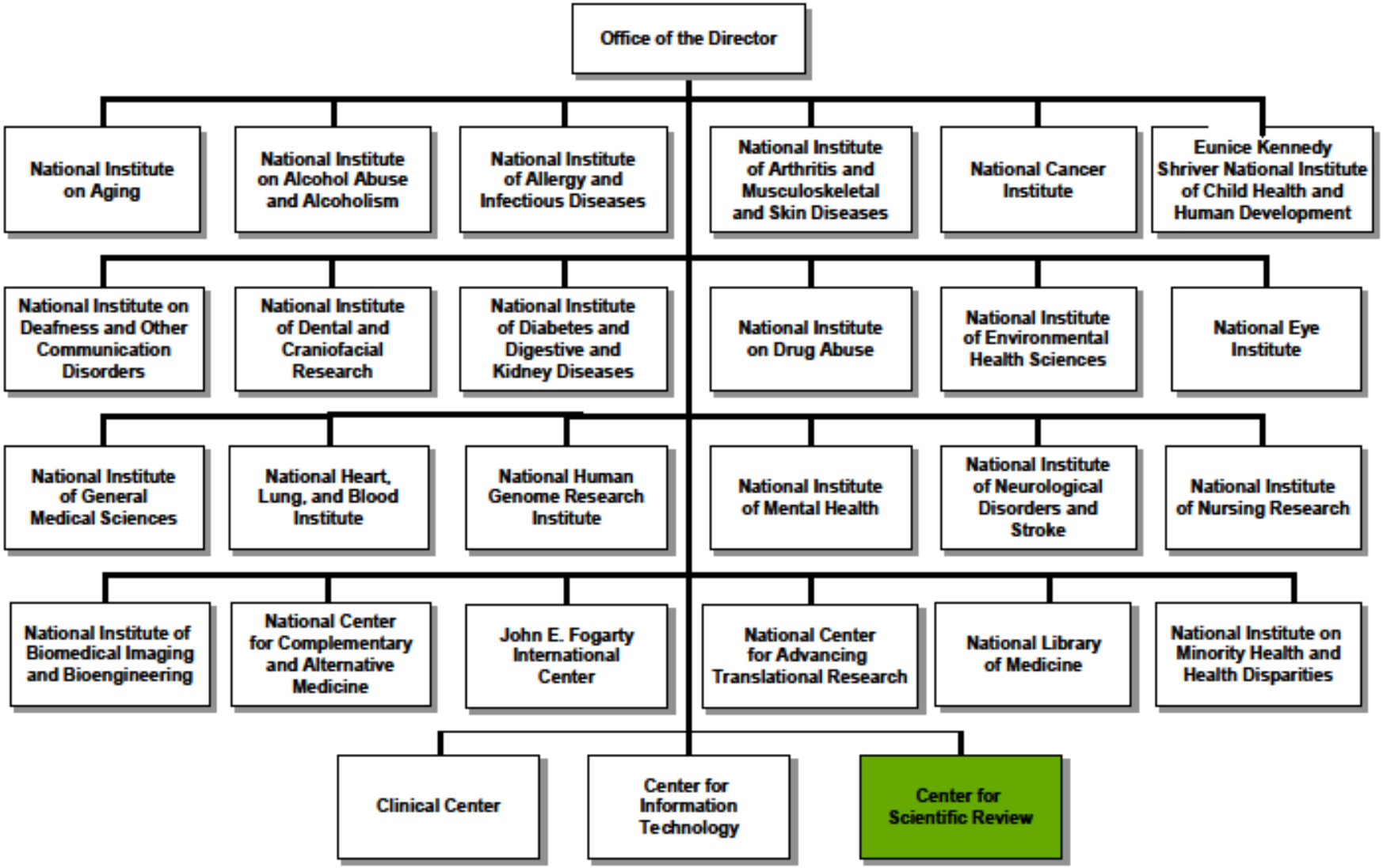
NSF Review Process, continued

- No published standard scoring for award
  - How many excellent, very good, good, for award?
  - Anecdotal: only excellents and very goods
- NSF goal: notification within six months
- Resubmissions not labeled as such to NSF
- Changes not identified in resubmission
- Reviewers may not be the same for resubmissions but…
- PI can request same reviewers on resubmission
- PI can also ask program officer to remove reviewers who appear to have bias in comments

NIH Review Process: Overview

- Review division separate from funding institutes (next slide)
- Review process managed by permanent NIH Scientific Review Officer (SRO) in Center for Scientific Review
- SRO is a scientific peer usually with a Ph.D. or relevant experience, depending on the program
  - Usually works with a single review group
  - Does not participate in decision
- Applicant can/should request assignment to review group and to funding institute in cover letter
  - Can suggest more than one of each
  - If no request, SRO assigns review group based on title, abstract, quick reading of proposal, and professional judgment

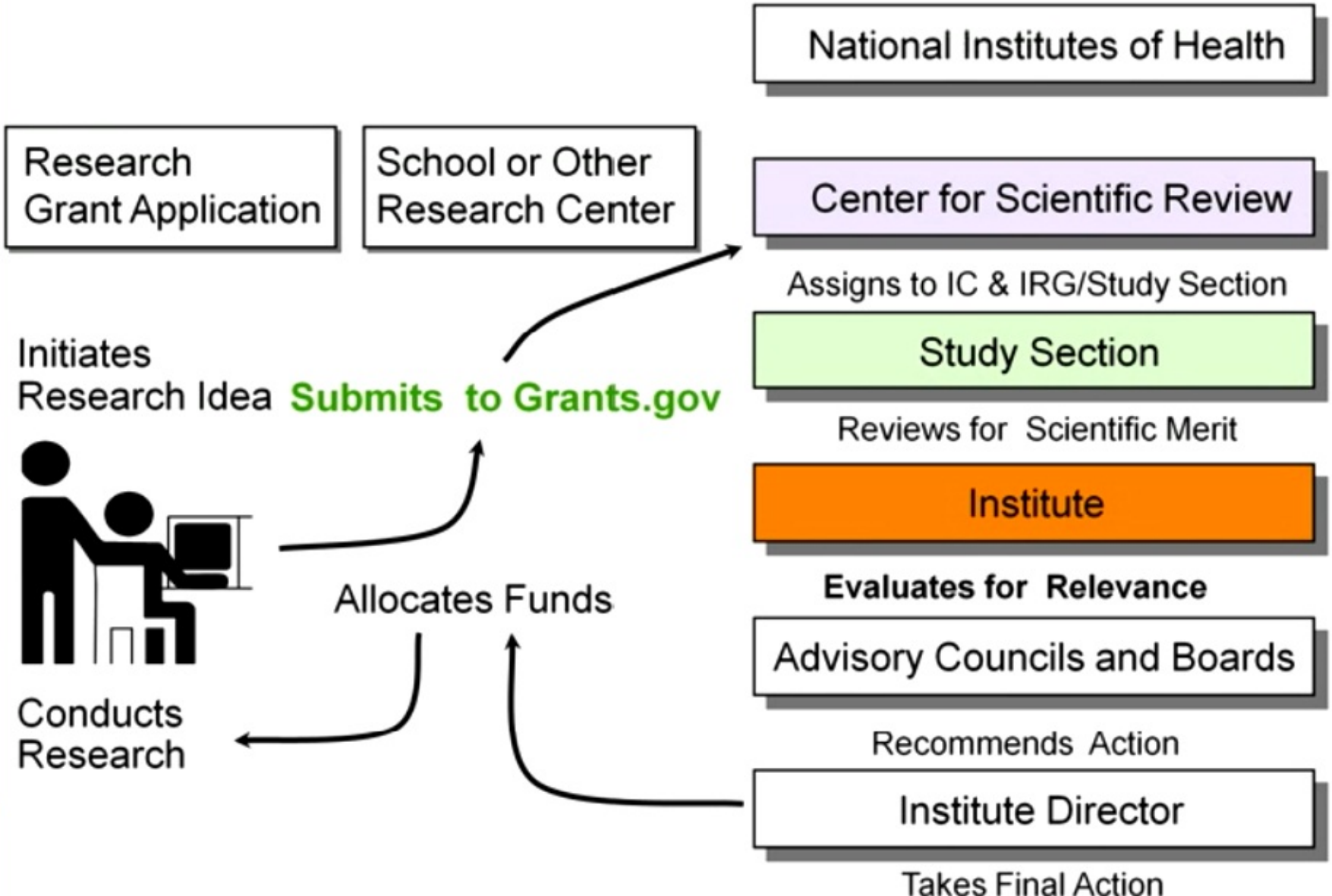
Your Application Could Be Funded by One of 24 NIH Institutes or Centers



NIH SRO—Role in Review Process

- Analyzes content of application for fit with review group expertise
- Documents and manages conflict of interest in reviewers
- Recruits initial and ad hoc reviewers
- Assigns applications to reviewers
- Communicates with PI for added material
- Attends and oversees administrative and regulatory aspects of peer review meetings
- Prepares summary statements and sends to PI

Review Process for a Research Grant



Overall Timeframe from Submission to Award

There are three main overlapping cycles per year

http://grants1.nih.gov/grants/funding/submissionschedule.htm

NIH Review Groups/Study Sections

- Several hundred standing groups—members publicly known
  - Some are institute-specific, some are topic-specific
  - Range from 15-30 persons, depending on topic
  - Temporary reviewers may be added for scientific need
  - Ad hoc review groups may be formed for a particular RFP/RFA when special expertise is needed
- Reviewers serve three to four year terms, may be reappointed or serve on more than one group
- Reviewers must declare conflict of interest before reviewing
- SRO assigns proposal to review group and potential funding institute and notifies PI of assignment
  - PI can request new review group—immediately…if a conflict exists or if group does not have the right scientific expertise

Scoring Process: Preliminary Score

- All reviewers assign preliminary score before study section meeting on five individual criteria rated 1-9:
  - Significance
  - Investigator(s)
  - Innovation
  - Approach
  - Environment
- Impact score: overall assessment on the likelihood of project to make a sustained, powerful influence on the field
  - Separate score, not a total of individual scores
  - May consider other criteria: human subjects; animal subjects; biohazards

NIH Scoring

Score	Descriptor	Additional Guidance on Strengths/Weaknesses
1	Exceptional	Exceptionally strong with essentially no weaknesses
2	Outstanding	Extremely strong with negligible weaknesses
3	Excellent	Very strong with only some minor weaknesses
4	Very Good	Strong but with numerous minor weaknesses
5	Good	Strong but with at least one moderate weakness
6	Satisfactory	Some strengths but also some moderate weaknesses
7	Fair	Some strengths but with at least one major weakness
8	Marginal	A few strengths and a few major weaknesses
9	Poor	Very few strengths and numerous major weaknesses

Minor Weakness: An easily addressable weakness that does not substantially lessen impact
Moderate Weakness: A weakness that limits impact
Major Weakness: A weakness that severely limits impact

NIH Scoring process, continued

- Primary reviewer presents proposal for discussion if it scored high enough to be considered by whole panel
- Reviews in lower half of scoring "streamlined"--not discussed
- Some proposals discussed, but not recommended for further consideration
- After full panel discussion, reviewers establish final scores
- Applicant receives "summary statement" plus numerical scores on
  - Five merit review criteria
  - Percentile score (based on % of applications with higher impact or priority scores from study section during past year)
  - Impact score
- Resubmissions allowed; same panel may/will re-review, with some turnover; may/may not have same primary reviewer

NIH Review Criteria at a Glance: Research

	Research/Research Center (R, DP, RC, P, U01 etc.)	Conferences and Scientific Meetings R13/U13	SBIR/STTR (R41, R42, R43, R44)	Academic Research Enhancement Award (AREA)(R15)	Institutional R25
Parent Announcements (CT = Clinical Trials)	R01 CT Not Allowed R01 CT Required R01 Basic* R03 CT Not Allowed R21 CT Not Allowed R21 CT Required R21 Basic*	R13 CT Not Allowed*	R41/R42 CT Not Allowed R41/R42 CT Required R43/R44 CT Not Allowed R43/R44 CT Required	R15 CT Not Allowed*	**Issued through Program Announcements (PARs)**
Overall Impact	Overall Impact	Overall Impact	Overall Impact	Overall Impact	**Overall Impact**
Scored Review Criteria **(Scored individually and considered in overall impact score)** **PAR & RFA: May add questions to each scored criterion or additional criteria**	Significance Investigator(s) Innovation Approach Environment	Significance Investigator(s) Innovation Approach Environment	Significance Investigator(s) Innovation Approach Environment	Significance Investigator(s) Innovation Approach Environment	**Significance Investigator(s) Innovation Approach Environment**
Additional Review Criteria **(Not scored individually, but considered in overall impact score)** **PAR & RFA: May add new criteria or questions to each additional criterion**	Clinical Trials only: Study Timeline U01-BRP only: Partnership and Leadership All: Protections for Human Subjects Inclusion Vertebrate Animals Biohazards Resubmission Renewal Revision	Appropriate Representation Protections for Human Subjects Inclusion Vertebrate Animals Biohazards Resubmission Renewal Revision	Clinical Trials only: Study Timeline All: Phase II Fast Track Protections for Human Subjects Inclusion Vertebrate Animals Biohazards Resubmission Renewal Revision	Protections for Human Subjects Inclusion Vertebrate Animals Biohazards Resubmission Renewal Revision	**Protections for Human Subjects Inclusion Vertebrate Animals Biohazards Resubmission Renewal Revision**
Additional Review Considerations **(Not scored individually and not considered in overall score)**	U01-BRP only: Technology Transfer All: Applications from Foreign Organizations Select Agents Resource Sharing Plans Authentication of Key Biological and/or Chemical Resources	Provision of Family Care Facilities Applications from Foreign Organizations Select Agents Resource Sharing Plans Budget and Period of Support	Select Agents Resource Sharing Plans Authentication of Key Biological and/or Chemical Resources Budget & Period of Support	Select Agents Resource Sharing Plans Authentication of Key Biological and/or Chemical Resources Budget & Period of Support	**Recruitment & Retention Plan to Enhance Diversity Training in the Responsible Conduct of Research Select Agents Resource Sharing Plans Budget and Period of Support**
	Budget & Period of Support				

NIH Review Process, Second Level

- Composite scores/comments sent to funding institutes/centers (I/C) for funding decision
- Funding institute may also consider
  - Program priorities
  - Overall funding portfolio
  - Relevance to mission
  - Urgency or innovation of project
  - Overall budget request
  - PI (beginning, established star, diverse population)
  - PI's Institution
- I/C Advisory Council or Board
  - Reviews list of all recommended proposals and recommends awards for final approval based on scores and I/C goals
  - Final funding decision by I/C Director based on all of this input

Other New Requirements and Comparison with Prior Requirements

Rigor Focus Area	Places in Application	Descriptions
Rigor of Prior Research (formerly "Scientific Premise")	Significance (Research Strategy)	Rigor of supporting data. Discuss strengths/weaknesses of prior research cited to support the project (including relevant biological variables and authentication of key resources). Consider using subheading "Rigor of Prior Research"
Scientific Rigor	Approach (Research Strategy)	Rigor of proposed research. Describe plans to address weaknesses in the rigor of the prior research that serves as the key support for the proposed project.
Consideration of Relevant Biological Variables	Non-Human Research: Approach (Research Strategy) Human Research: Human Subjects Sect. Inclusion of women, minorities & children	Includes Sex as a Biological Variable: May also include other variables, e.g. age, weight, underlying health conditions. Inclusion of Children is "Inclusion Across the Lifespan" (<18 years old & older adults). sIRB: Multi-site studies can be reviewed by one central IRB and some costs can be charged to NIH.
Authentication of Resources	Separate Attachment	Includes, but is not limited to, cell lines, specialty chemicals, antibodies, other biologics that may differ from lab to lab and/or over time, whose qualities may influence the data. Include this attachment even if you are indicating that your materials do not require authentication.

NIH Review Process: YouTube

- Three great videos on NIH Application and Review Process:
  - What Happens to Your Grant Application
    - http://www.youtube.com/watch?v=DuuAGROm_1Q
  - NIH Tips for Applicants
    - http://www.youtube.com/watch?vIAOGtr0pM6Q
  - NIH Peer Review Revealed
    - http://www.youtube.com/watch?v=kfgzLe92c0

U.S. Department of Education

- A mission agency, not a research or academic agency
- Funds projects that improve education at all levels
- Not discipline-specific or only for education faculty
- ED also collects and analyzes data
- ED subject to politics in many ways
- ED a relatively new federal agency (1980)
- ED's budget is allocated in two ways:
  - Formula grants
    - Recipients: states, municipalities, local school systems, tribes, higher education (student financial aid)
  - Discretionary grants ***
    - Recipients: individuals and institutions (higher education, secondary education, elementary education, community organizations, faith-based organizations, tribes, etc.)

ED Review Process: discretionary grants

- Three reviewers (non-federal)
- ED program officers select names from database
- Each reads up to 10 proposals--at home, in D.C. or both
- On-line application and scoring system
- Total possible score of 100 points
  - Each required section has a specific point value
  - Each reviewer separately scores each proposal
  - Program officer conducts panel discussion to reconcile outlying scores and inconsistent reviewer comments
  - Extra points for prior experience with previous grant
    - Awards decided in numerical order

ED Typical Review Sections = 100 points

- Meeting the authorizing legislation*
- Need for project
- Objectives
- Quality of project design
- Quality of project personnel*
- Quality of management plan
- Quality of project evaluation
- Adequacy of resources (budget and budget narrative)*

Other Review Considerations

- Additional Priorities
  - Absolute priority
  - Competitive priority
- Evidence and citations of What Works from national clearinghouse
- Logic models
- Prior experience
- Tie-breakers: geography, endowment, library and general expenditures, grant management history

ED IES Review Process

- Institute for Education Sciences (ED research unit)
- Proposal and review process based on NIH
- Standards and Review Office handles reviews
- Uses standing and single-session peer review panels
- Program officers are academic peers
- Review criteria a blend of ED and NIH:
  - 7-point scale from 1 (poor) to 7 (excellent) on
  - Significance, Research plan, Personnel, Resources

Other Agencies' Review Processes

- NASA, DARPA, NEH, private foundations
  - May or may not use external peer reviewers
  - May or may not provide written or any reviews
  - May or may not have transparent review process
  - May or may not have point or rating system
  - May or may not relate page limits to point system
  - May or may not have resubmission policy
  - May or may not be willing to discuss reviews

NASA Review Process

- Program officer selects panel or individual reviewers
- Program officer makes recommendation to Selection Official based on
  - Quality of science/technical peer review
  - Program-unique criteria
  - Relevance to research objectives in NRA and NASA's goals
  - Comparison with competing proposals of equal merit and objectives
  - Available budget resources
- Selection Official makes funding decisions
- Applicants "sometimes may receive an anonymous copy of the proposal's peer review"
- Applicants can request a debriefing from NASA program officer
  - Identifying strengths and weaknesses
  - Peer reviews "may be" sent through mail or oral communication

NASA: Instructions to Reviewers

- Proposal criteria:
  - Intrinsic Merit (35%)—with 2 sub-points
  - NASA Alignment and Partnerships (35%)—with 4 sub-points
  - Management and Evaluation (15%)—with 7 sub-points
  - Budget Justification: Narrative and Details (15%)
- Adjectival rating (Excellent, Very Good, Good, Fair, Poor) and narrative comments on **Strengths** and **Weaknesses** for each of these primary areas (definitions provided)

"Start with the assumption that the proposal is 'good.' Use your comments on the strengths and weaknesses of each area to raise or lower the score for that area (determine the degree to which the proposal is better than or worse than 'good.' "

Defense Advanced Research Projects Agency (DARPA) Review Process

- A panel of reviewers, usually all from DoD entities and/or national laboratories, rates all grants and ranks them on fixed criteria
- Broad Agency Announcement (BAA) specifies review criteria
  - Program Manager chooses weighting factors within criteria
- Criteria include:
  - Scientific and technical merit
  - Long-term value to defense
  - Capability of personnel and facilities to perform proposed effort
  - Cost realism
- All proposals ranked into two categories:
  - Selectable
  - Non selectable
- Program Manager funds some, but not all, of the selectables as his/her funding allows and based on program needs

DARPA, continued…

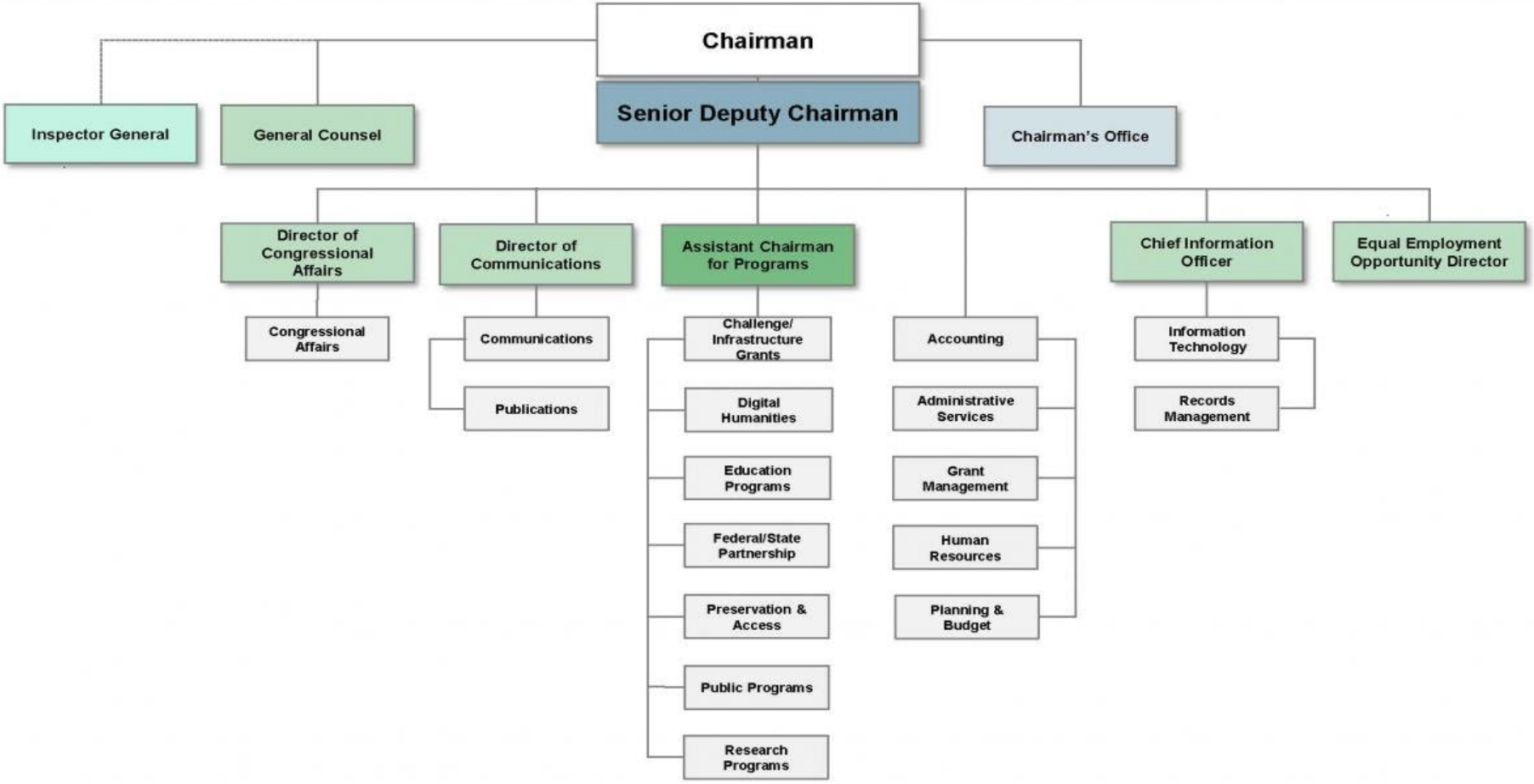
- Key element of DARPA review process: no peer reviews
- Review managed by a strong technical expert as a gate keeper, with a team of people to help review.
- "Inputs on technical aspects of the proposals may be solicited from non-government consultants/experts"
- Program Manager has the flexibility to choose and change funding targets.
- DARPA does not fund specific technologies.
- DARPA goal: focus on the end applications and look at many partial solutions.

DARPA Decision-making Process

National Endowment for the Humanities (NEH)

- NEH director appointed by president for four-year term
- NEH organized by types of funding programs: see next slide
- Funds individuals, institutions and state humanities organizations that operate their own grant programs
- Funds 26 humanities disciplines, defined by Congress:
  - language, both modern and classical; linguistics; literature; history; jurisprudence; philosophy; archaeology; comparative religion; ethics; the history, criticism and theory of the arts; those aspects of social sciences which have humanistic content and employ humanistic methods; and the study and application of the humanities to the human environment with particular attention to reflecting our diverse heritage, traditions, and history and to the relevance of the humanities to the current conditions of national life

National Endowment for the Humanities



Updated 11/18

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NEH, continued

- Full-year research fellowships submitted by PI
- Other NEH applications submitted by institution
  - Challenge Grants, Preservation Grants
  - Collaborative research
  - Digital humanities
  - Summer fellowships (nominated by institution)
  - Education/curriculum proposals/public humanities projects
- Program officers will review drafts (up to six weeks before deadline) and will return comments
- NEH staff recruit “subject, institutional, and programmatic experts” as peer reviewers

NEH Review Criteria

- Intellectual significance
  - Potential to enhance research, teaching and learning in the humanities
- Quality of work
- Feasibility of work plan
- Innovation
- Project staff qualifications
- Overall value to Humanities Scholarship

NEH Review Process

- First review by disciplinary experts
- Next review by panel by program (fellowships, e.g.)
- Top-ranked applications forwarded to National Council on the Humanities (26 persons nominated by president and confirmed by Senate)
- Council makes recommendations to NEH Chair, who "takes into account the advice provided by the review process and, by law, makes all funding decisions."
- Unsuccessful applicants "can ask to receive copies of the reviewers' comments"

Example of Private Foundation: Robert Wood Johnson Foundation

- For "unsolicited proposals" only
  - Two rounds of reviews: Six weeks for decision
    - Initial foundation review for
      - Strategic objectives of RWJ
      - Guidelines followed for "What We Fund"
    - Portfolio review
      - RWJ staffers assigned to a "portfolio" review for above topics
  - Applicant receives one of the following after 6 weeks:
  - If invited,
    - Request to submit full proposal
    - Request for more information
    - Letter informing applicant that project will not be supported at this time

RWJ, continued

- Full Proposal Review (6 weeks)
  - If invited to submit full proposal
    - RWJ sends packet of application material including
      - Checklist of required information
      - Budget and budget narrative information
    - "Appropriate RWJ decision-making groups" will review
    - Proposal "may be sent to an outside expert for review"
  - Decision (4 to 5 weeks)
    - If no, applicant contacted in writing or by phone
    - If yes, formal written notification to applicant
    - Additional 2-3 weeks for processing award
    - RWJ "does not provide critiques"
    - About 10% of applications are funded from those invited

Example of Private Foundation: Susan G. Komen for the Cure

- **Step 1: Letter of Intent Stage**
- Applicants/PIs will submit a Letter of Intent that clearly describes the research question, specific aims, and impact of their proposed work.
- Only Applicants/PIs with a Letter of Intent deemed appropriately aligned with Komen's annual research focus areas and who meet the eligibility criteria will be invited to submit an Application.
- **Step 2: Applications Stage (by invitation only)**
- Each qualified Application is reviewed by a Patient Advocate who is a member of the Advocates in Science program and three scientists with breast cancer or other expertise as appropriate.
- The top scoring Applications are selected for further discussion by the review committee. Following these discussions, the Scientific Advisory Board reviews the results of peer review and issues a recommendation for funding.

International Agency Review Processes

- A quick search of international funding agencies found that many use peer review:
  - Canadian Cancer Society
  - UK Research and Innovation: Arts and Humanities Research Council
  - DFG (German Research Foundation)
  - And many, many more
- The European Commission (EUAXESS) also provides a Grant Proposal Peer Review Service for member organizations
- The review process of international grant agencies is another topic for another meeting…if there is interest.

What Agencies Seek in Reviewers

- Knowledge: current expert in the field
- Education: usually doctoral level or appropriate professional degrees
- Grant and research expertise: e.g., PI on comparable project
- Diversity in
  - Gender
  - Ethnicity
  - Geographic balance
  - Experience
  - Type of organization
  - Age distribution

Some Useful Resources

- Agency websites
- Holly J. Falk-Krzesinski and Stacey C. Tobin, “How Do I Review Thee? Let Me Count The Ways: A Comparison of Research Grant Proposal Review Criteria Across US Federal Funding Agencies,” *Journal of Research Administration* 46, no. 2 (Fall 2015): 79-94.
- David Ngo, Cohort for Efficiencies in Research Administration
- Holly J. Falk-Krzesinski, “Review Process,” copyright©2018
- Michael Spires, “Common Proposal Review Mechanisms,” Annual Conference, National Organization of Research Development Professionals, 2018.

Final thoughts

- Understanding the review process is key to preparing and submitting successful proposals
- Review processes vary widely among agencies
- Make sure your investigators thoroughly understand the review process and review criteria
- Encourage investigators to become reviewers—or apply to be a reviewer yourself if you have the credentials and interest
- You may to use this presentation or parts of it with investigators at your institution, with my permission and appropriate attribution

Thanks

Questions? Comments?

For follow-up:

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