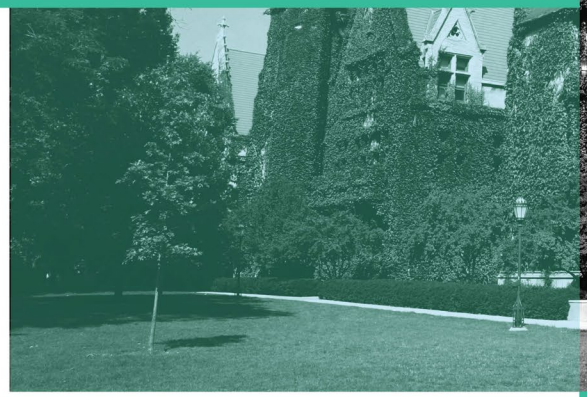
# Grant Academy Grants 101

## Prepared for Temple University

November 8, 2018



HANOVER RESEARCH

www.hanoverresearch.com

# Presenter

**Sarah Ott**

***Senior Grants Consultant***

- Full-time grants professional since 2003
- Joined Hanover in 2013
- More than $30 million raised
- Specializes in clinical and translational sciences and patient-centered outcomes research

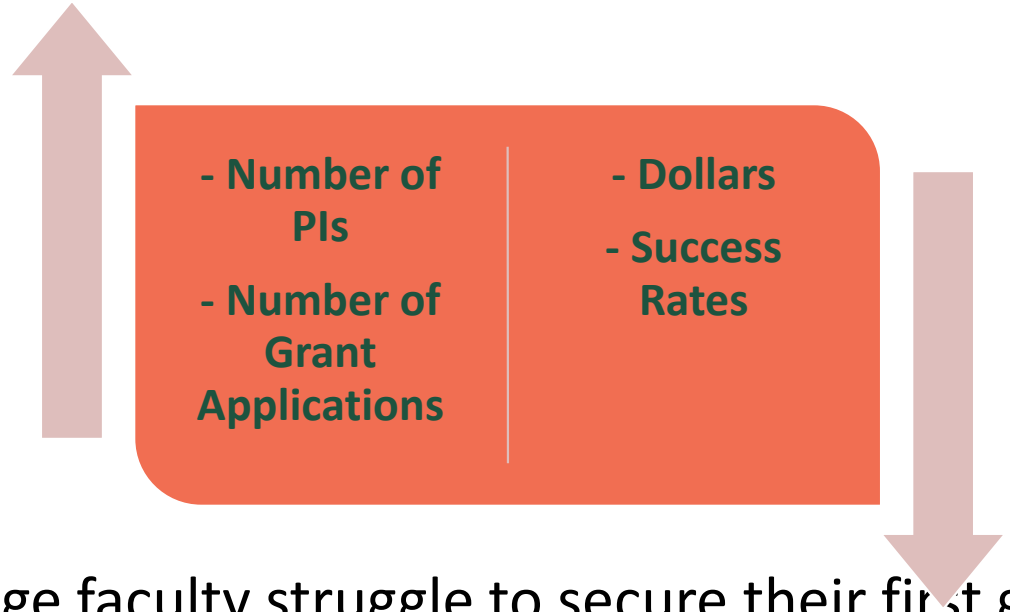
# Today's Topics

- Grant Funding Landscape
- Matching Grant Ideas with Suitable Funders
- Developing and Submitting Compelling Proposals
- Grantseeking Strategy: Playing a Competitive Long Game
- Grant Resubmission Strategies

# GRANT FUNDING LANDSCAPE

# Hyper-competition

***With increased competition for grant funds, faculty at all career stages face challenges to securing funding.***




- Early-stage faculty struggle to secure their first grant
- Mid- to late- stage faculty risk losing existing funding

# GRANTS: WHAT? WHO? WHY?

## WHAT IS A GRANT?

Grants are (generally) non-repayable funds or products disbursed by one party, often a governmental agency, corporation, or foundation/trust, to a recipient, often a nonprofit entity, educational institution, business or (rarely) an individual.

## WHO MAKES GRANTS?

- Federal agencies
- State and local government agencies
- National, regional, local, family, community, and corporate foundations
- Public charities
- Professional or industry associations
- Businesses and companies

## WHY DO THEY MAKE THEM?

- Local / Regional / National / Global Need
- Promote Change & Improvement
- Philanthropic Investment
- Preferred Tax Status
- Public Recognition

# GOVERNMENT GRANTMAKING

Government agencies and organizations fund a variety of projects, programs, research, and product development through grants. Each agency exists to advance a specific agenda. This agenda is typically outlined in a public document called a strategic plan.

## KEY FEDERAL GRANTS STATS

**26**

*TOTAL FEDERAL GRANTMAKING AGENCIES*

**1,000+**

*TOTAL GRANT PROGRAMS ACROSS ALL AGENCIES*

**$961.4 Billion**

*TOTAL FEDERAL OBLIGATED AMOUNT FOR GRANTS IN FY 2018*

(SOURCE:USASPENDING)

# FOUNDATION GRANTMAKING

A foundation is a non-governmental entity that is established as a nonprofit corporation or a charitable trust, with a principal purpose of making grants to unrelated organizations, institutions, or individuals for scientific, educational, cultural, religious, or other charitable purposes.

(SOURCE: FOUNDATION CENTER)






## KEY FOUNDATION STATS

**86,726**
TOTAL NUMBER OF FOUNDATIONS

**$60.24 Billion**
TOTAL AMOUNT OF GIVING

**$865.25 Billion**
TOTAL FOUNDATION ASSETS

(SOURCE: FOUNDATION CENTER, 2014)

# FOUNDATIONS VS. GOVERNMENT GRANTMAKERS

***They have very little in common beyond a mandate to give away money with strings attached.***

## GOVERNMENT GRANTMAKERS

- Get their funding from **taxpayers**
- Are responsible to **legislators** and administrations
- Are required to be **transparent** in their activities
- Follow **clearly defined criteria** and processes

## FOUNDATION GRANTMAKERS

- Get their funding from **donors**
- Are responsible to **trustees**
- Are **not required to explain** their decisions to the public
- Often **lack clear definition** for their criteria and processes, or **choose not to follow** those they adopt

# MATCHING GREAT IDEAS WITH SUITABLE FUNDERS

# What makes a grant idea competitive?

***To be competitive for grant funding, you need to have an exciting idea.***

*A competitive grant idea:*

- Fills a demonstrable gap (e.g., in services or knowledge)
- Is innovative and interesting to people in the field
- Produces something of value within a specified timeframe
- Has a strong, measurable impact
- Is timely

**If people in your field get excited about your idea, you are on to something.**

# Idea Development: Define the Gap

***A great grant idea fills a key gap that is hindering your field.***

*Ask:*

- What are the most important challenges in my field right now?
- What is missing that could help advance the field?
  - Is it a tool? What kind?
  - Is it knowledge? What knowledge, specifically?
  - Is it a program model?
  - Is it implementation of existing models?
  - Is it evaluation of current implementations?

**Articulate the key gaps in your field as clearly as possible.**

# Idea Development: Define the Impact

***Great grant ideas are high-impact.***

*With your field's key gaps in mind, ask: "If I filled this gap…."*

- What would be the impact on my own work?
- What would be the impact on my students?
- What would be the impact on the field?
- What would be the impact on society?

**Your idea's impact is what grant funders would get for their money.**

# Idea Development: Collaborate

***Team Research and well-balanced collaboration***

- Small teams>large teams
- Collaborate and network with PIs from diverse fields and different career levels to heighten innovation

# EXERCISE (15 minutes) – Collaborative Concept Development

Turn to the person to your right.  Have them tell you about their research/program focus and/or area of discipline, current projects, publications, and related professional activities, and share the same information with them.

Now try to *form a concept for a collaborative project*. What sort of topic is compatible with your respective research/project foci? How do your disciplines complement one another? Approximately how much funding would you need to make the project work (rough estimate)? Take notes. Draft a one paragraph "concept paper."  Discuss your project concepts with the larger group.

# A Good Idea vs. a Grant-Fundable Idea

***A good idea:***

- Helps someone
- Advances an important agenda
- Serves a wise/substantial purpose
- Creates interest
- Involves growth or learning
- Can have undefined steps or processes
- Builds something of value
- Has form that follows function
- Can be of any scale
- Can be a one-time effort

***A fundable idea:***

- Addresses the funder's target audience
- Advances the funder's agenda
- Serves a wise/substantial purpose
- Aligns with funder priorities
- Measures/analyzes growth and learning
- Must have a clear path from A to B to C (with limited exceptions)
- Builds something of value
- Fits in a pre-set spectrum of activity types
- Is scaled by prior experience and to the budget
- Should be replicable

More information: Helping Faculty Differentiate Between the Good and the Fundable

# PROSPECTING

# Prospecting: Who will fund your idea?

***Prospecting is the art of matching grant ideas with likely funders.***

*Good prospective funders have:*

- A mission that aligns with your mission
- A history of funding similar or related projects
- Stated priorities that encompass your project area
- No restrictions that would preclude funding your project

*However, note that:*

- Funding history is not always a good predictor of future funding.
- Stated priorities are not always current.

**To find good prospects, learn to read between the lines.**

# Prospecting: Who is funding similar work?

***To identify prospective funders, find out who has funded similar projects.***

*Start by finding out who is doing similar work:*

- Use industry/discipline publications, as well as online searches.
- Find similar or thematically aligned projects.
- Include projects in your local area and around the country, as appropriate.

*Find out who is funding the identified projects.*

- Look for acknowledgements and statements of thanks.
- Contact project staff if appropriate.

**Identify promising prospects—or types of prospect—for your work.**

# Prospecting: Which funders prioritize this work?

***Funders' stated priorities provide a means for identifying prospects.***

*Use databases and search engines to find funders with relevant priorities:*

- Use multiple databases and search tools.
- Search for keywords that relate to your mission and project.
- Search by funder type, funding type, and funding region.
- Note funding restrictions.
- Note typical funding amounts.
- Note key deadlines and other timing constraints.

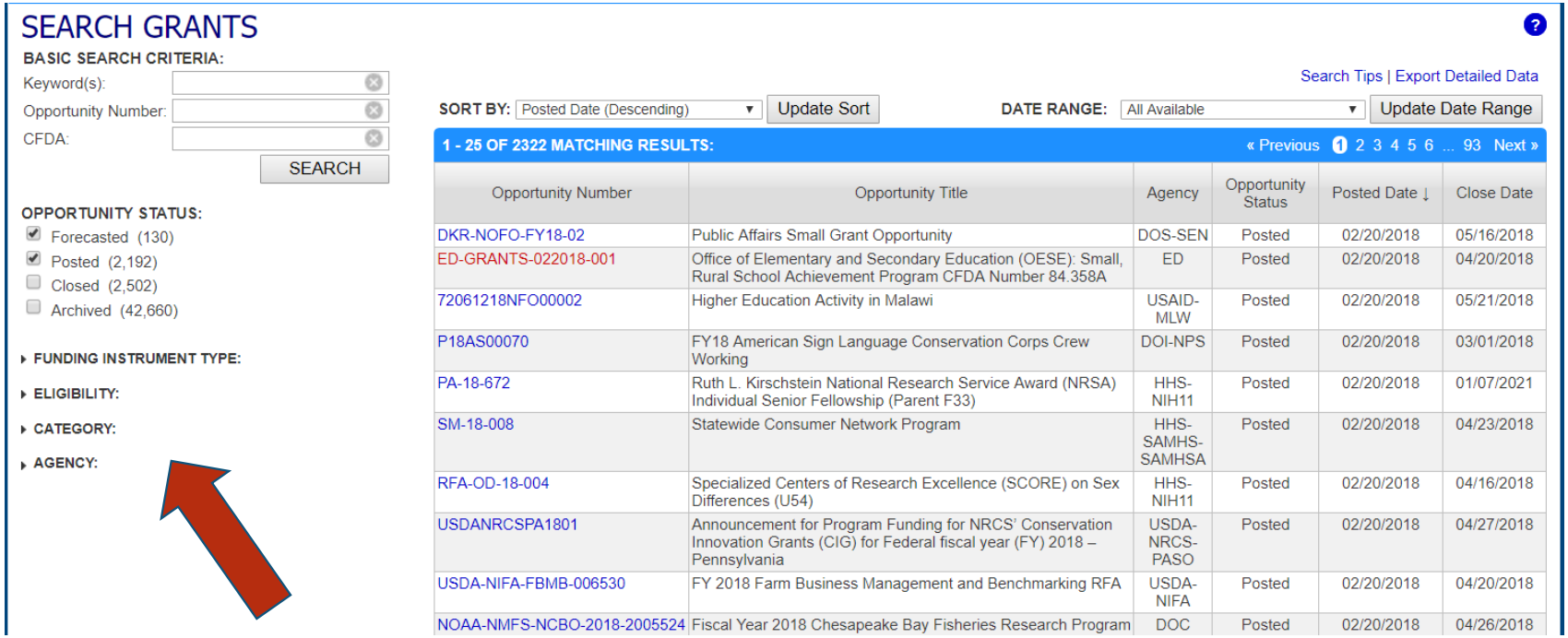
**Keep a list, spreadsheet, or database of promising opportunities.**

# Prospecting: Federal tools and resources

**Grants.gov is a clearinghouse for federal grant information.**

# Prospecting: Federal tools and resources

**Search Grants.gov by keyword, status, type, eligibility, category, or agency.**



SEARCH GRANTS

BASIC SEARCH CRITERIA:

Keyword(s):

Opportunity Number:

CFDA:

SEARCH

OPPORTUNITY STATUS:

- Forecasted (130)
- Posted (2,192)
- Closed (2,502)
- Archived (42,660)

- FUNDING INSTRUMENT TYPE:
- ELIGIBILITY:
- CATEGORY:
- AGENCY:

Search Tips | Export Detailed Data

SORT BY: Posted Date (Descending) Update Sort DATE RANGE: All Available Update Date Range

1 - 25 OF 2322 MATCHING RESULTS: « Previous 1 2 3 4 5 6 ... 93 Next »

| Opportunity Number | Opportunity Title | Agency | Opportunity Status | Posted Date ↓ | Close Date |
|---|---|---|---|---|---|
| DKR-NOFO-FY18-02 | Public Affairs Small Grant Opportunity | DOS-SEN | Posted | 02/20/2018 | 05/16/2018 |
| ED-GRANTS-022018-001 | Office of Elementary and Secondary Education (OESE): Small, Rural School Achievement Program CFDA Number 84.358A | ED | Posted | 02/20/2018 | 04/20/2018 |
| 72061218NFO00002 | Higher Education Activity in Malawi | USAID-MLW | Posted | 02/20/2018 | 05/21/2018 |
| P18AS00070 | FY18 American Sign Language Conservation Corps Crew Working | DOI-NPS | Posted | 02/20/2018 | 03/01/2018 |
| PA-18-672 | Ruth L. Kirschstein National Research Service Award (NRSA) Individual Senior Fellowship (Parent F33) | HHS-NIH11 | Posted | 02/20/2018 | 01/07/2021 |
| SM-18-008 | Statewide Consumer Network Program | HHS-SAMHS-SAMHSA | Posted | 02/20/2018 | 04/23/2018 |
| RFA-OD-18-004 | Specialized Centers of Research Excellence (SCORE) on Sex Differences (U54) | HHS-NIH11 | Posted | 02/20/2018 | 04/16/2018 |
| USDANRCSPA1801 | Announcement for Program Funding for NRCS' Conservation Innovation Grants (CIG) for Federal fiscal year (FY) 2018 – Pennsylvania | USDA-NRCS-PASO | Posted | 02/20/2018 | 04/27/2018 |
| USDA-NIFA-FBMB-006530 | FY 2018 Farm Business Management and Benchmarking RFA | USDA-NIFA | Posted | 02/20/2018 | 04/20/2018 |
| NOAA-NMFS-NCBO-2018-2005524 | Fiscal Year 2018 Chesapeake Bay Fisheries Research Program | DOC | Posted | 02/20/2018 | 04/26/2018 |

# Prospecting: Federal tools and resources

**Subscribe to Grants.gov to keep up with new opportunities.**

## Manage Subscriptions

Customize your Grants.gov opportunity subscriptions, including expanded criteria for saved searches and the ability to view and manage existing subscriptions. To subscribe to Grants.gov email notifications, users must first create a Grants.gov account. Don't worry - the account registration process is quick and easy.

### Custom Email Notifications

When you create a Grants.gov account, you can customize the type of email notifications you receive. Log in and click the links below to subscribe to news updates about system enhancements, notifications about saved searches and new funding opportunities, and more.

» Subscribe to Grants.gov News
Receive Alerts and Newsletters containing updates about system enhancements and training resources

» Subscribe to all new grant opportunities
Receive a daily email listing all new grant opportunities

» Subscribe to opportunities
Receive notifications when changes are made to a specific opportunity's forecast, synopsis and/or packages

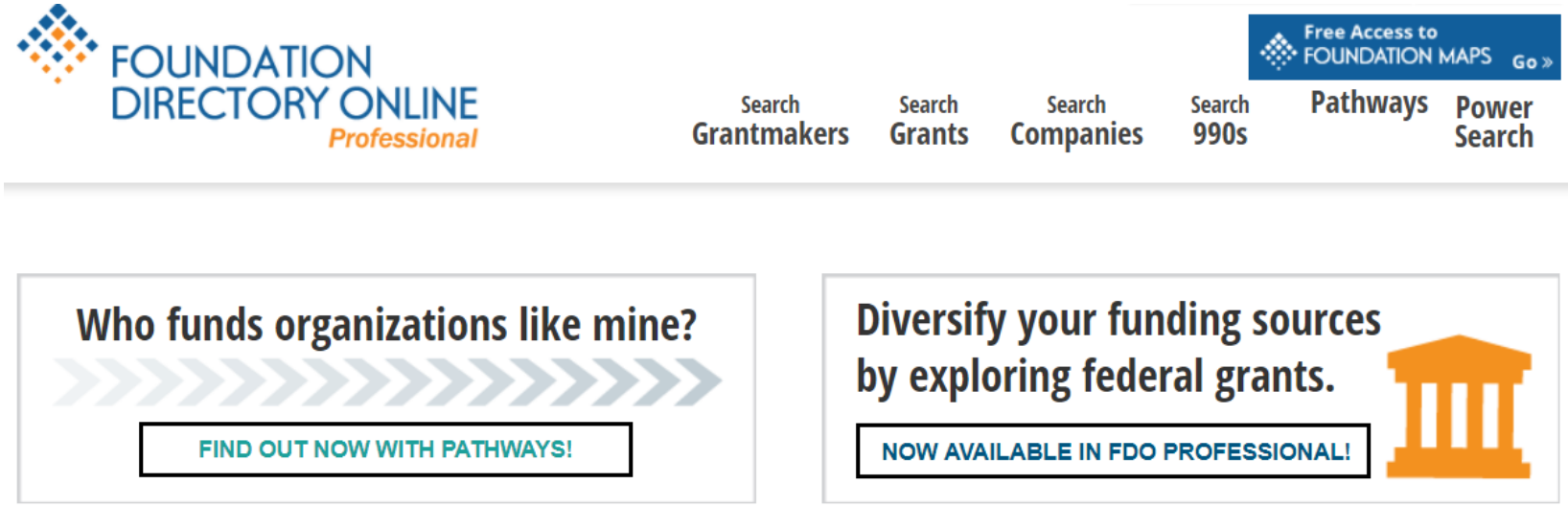
» Subscribe to saved searches for grant opportunities
Receive notifications for new opportunities matching saved search criteria

For more information on Grants.gov Subscriptions, please review the Connect with Grants.gov help article.

# Prospecting: Other tools and resources

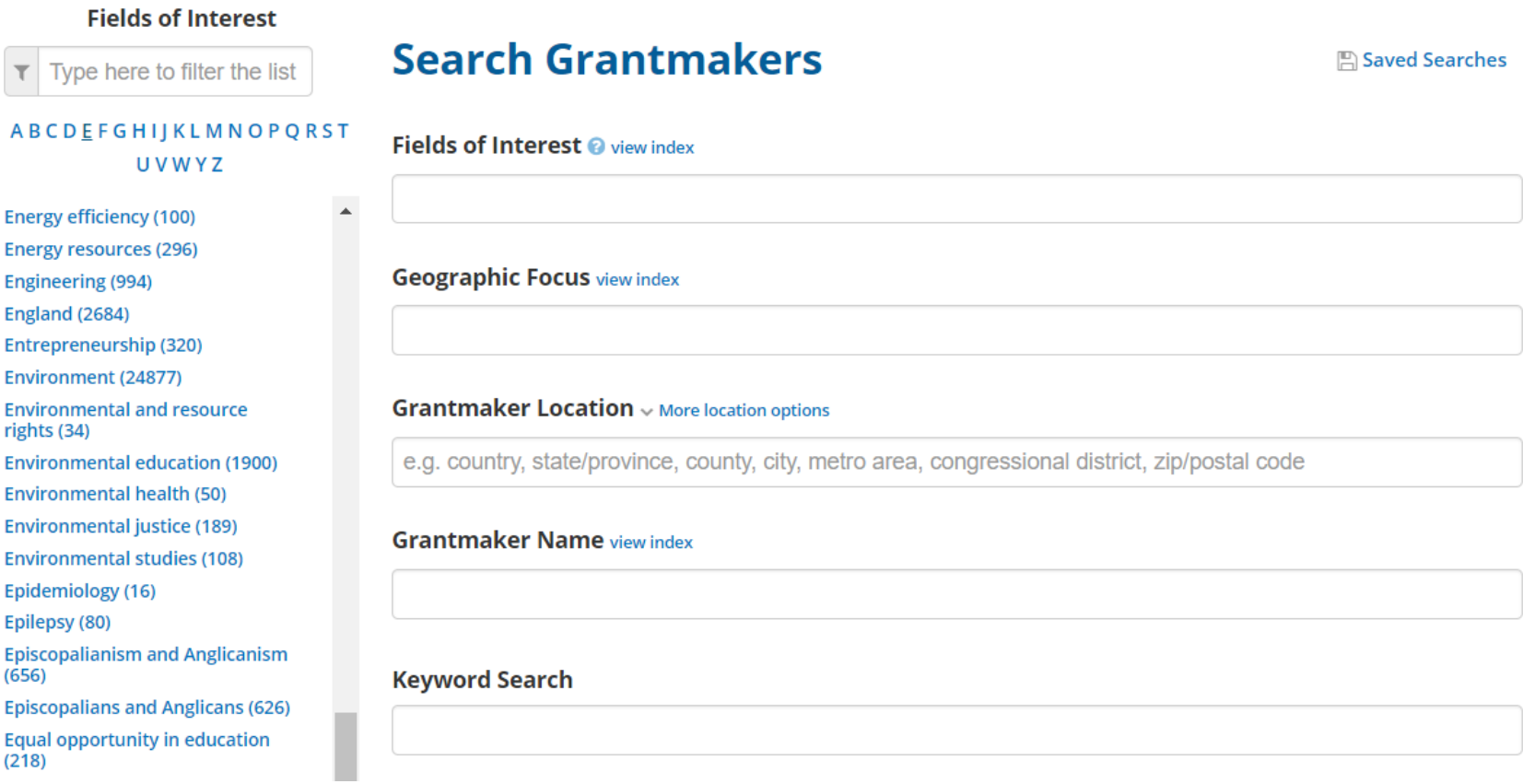
**Foundation Directory Online provides:**

- Directory of U.S. Foundations
- Directory of corporate contribution programs
- Resources for grantseeking



# Prospecting: Other tools and resources

**Foundation Directory Online has a flexible and powerful search interface.**

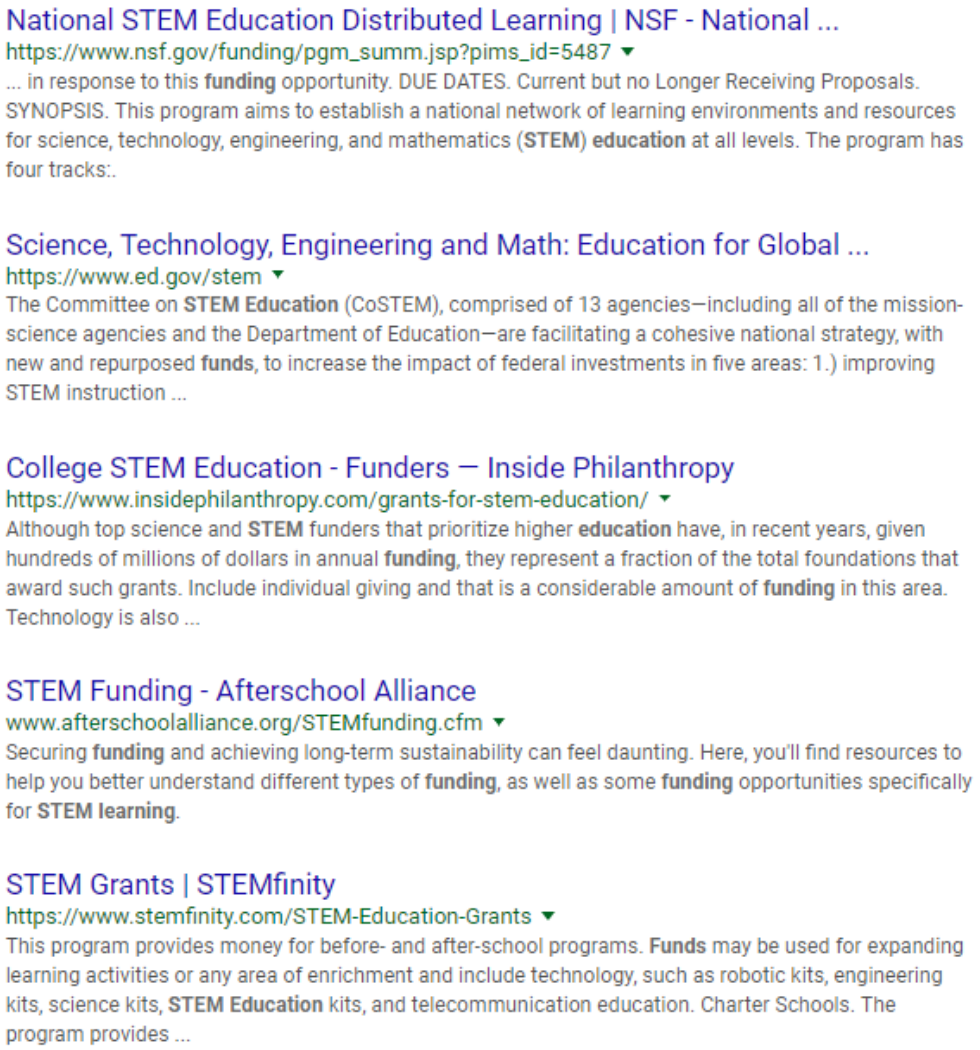


# Prospecting: Other tools and resources

**Don’t forget to use search engines to explore other opportunities.**

For example, at right are Google search results for the following query:

STEM education funding



National STEM Education Distributed Learning | NSF - National ...
https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5487
... in response to this **funding** opportunity. DUE DATES. Current but no Longer Receiving Proposals. SYNOPSIS. This program aims to establish a national network of learning environments and resources for science, technology, engineering, and mathematics (**STEM**) **education** at all levels. The program has four tracks:.

Science, Technology, Engineering and Math: Education for Global ...
https://www.ed.gov/stem
The Committee on **STEM Education** (CoSTEM), comprised of 13 agencies—including all of the mission-science agencies and the Department of Education—are facilitating a cohesive national strategy, with new and repurposed **funds**, to increase the impact of federal investments in five areas: 1.) improving STEM instruction ...

College STEM Education - Funders — Inside Philanthropy
https://www.insidephilanthropy.com/grants-for-stem-education/
Although top science and **STEM** funders that prioritize higher **education** have, in recent years, given hundreds of millions of dollars in annual **funding**, they represent a fraction of the total foundations that award such grants. Include individual giving and that is a considerable amount of **funding** in this area. Technology is also ...

STEM Funding - Afterschool Alliance
www.afterschoolalliance.org/STEMfunding.cfm
Securing **funding** and achieving long-term sustainability can feel daunting. Here, you'll find resources to help you better understand different types of **funding**, as well as some **funding** opportunities specifically for **STEM learning**.

STEM Grants | STEMfinity
https://www.stemfinity.com/STEM-Education-Grants
This program provides money for before- and after-school programs. **Funds** may be used for expanding learning activities or any area of enrichment and include technology, such as robotic kits, engineering kits, science kits, **STEM Education** kits, and telecommunication education. Charter Schools. The program provides ...

# Alignment: Federal funder and RFP analysis

***Collect data on federal opportunities from agency websites and solicitations.***

*Use agency websites to review:*

- Funder mission
- Grantmaking trends and priorities
- Grantmaking history
- Contact information

*Review specific grant solicitations (funding announcements, RFPs) for:*

- Competition details
- Grant requirements

# RESEARCH, EVALUATE, AND PRIORITIZE OPPORTUNITIES

## *GATHER PROSPECT INFORMATION*

- ✓ Funder type and mission
- ✓ Relevant grantmaking history
- ✓ Key Contacts, Staff and Trustee names and profiles
- ✓ Funding process (e.g., eligibility, timing, amounts, requirements)
- ✓ Indicators of competitiveness
- ✓ Opportunities for connection and communication

**Keep notes in a list, spreadsheet, or database for further analysis.**

## *EVALUATE PROSPECT ALIGNMENT*

**Government:**

- ❑ Does the program align with the goals of your project?
- ❑ Does the program support activities you plan to pursue in your project?
- ❑ Is there evidence of support to projects similar to yours?

**Foundation:**

- ❑ Are your mission and the funder's mission well aligned?
- ❑ What is the long-term potential of the relationship?
- ❑ How challenging will it be to develop a relationship with the funder?

## *PRIORITIZE PROSPECTS*

*Pursue prospects with:*

- Good mission alignment
- Strong program alignment
- Good potential ROI

*Do not pursue if:*

- Alignment is not good
- ROI is not good

***Prioritize prospects based on alignment, potential benefit, ease of pursuit, and timeline urgency***

# Alignment: Evaluate opportunities

***Prioritize grant opportunities based on alignment and competitiveness.***

1. Strong prospects
   - Good mission and logistical fit
   - Project likely to be competitive
2. Potential prospects
   - Good mission and logistical fit
   - Project might be competitive
3. Competitive long shots
   - Only pursue these if there is something to be gained from the application process (e.g., learning about the funder, developing a relationship).

**Do not pursue opportunities without good mission and logistical fit.**

# **Exercise (10 minutes)**: Sample Prospect List – Which One First and Why?

- Assume that you developed the list of prospects on the list that is provided. Number the prospects in the order in which you would apply for them. Briefly describe your approach and rationale. Why did you rank them in the selected order? What were your considerations?

**Overview of Opportunities**

| PROGRAM / GRANT MAKER | RECOMMENDED REQUEST RANGE | APPROACH | DEADLINE |
|---|---|---|---|
| ***National Science Foundation*** | | | |
| Division of Environmental Biology (Ecosystem Studies, Population And Community Ecology, Biodiversity: Discovery and Analysis) Core Programs | $100,000 to $500,000 | Preliminary proposal online | January 23, 2016 (preliminary proposal) August 2, 2016 (full proposal) |
| Fluid Dynamics | $100,000 to $500,000 | Full proposal online | October 20, 2015 |
| Energy, Power, Control and Networks (EPCN) | $100,000 to $500,000 | Full proposal online | November 2, 2015 |
| ***United States Department of Agriculture*** | | | |
| Western Sustainable Agriculture Research & Education (SARE) | $150,000 to $250,000 | Pre-proposal online | Expected: June 2016 |
| ***National Institutes of Health*** | | | |
| School Nutrition and Physical Activity Policies, Obesogenic Behaviors and Weight Outcomes (R01), (R03), and (R21) Programs | Dependent on program | Full proposal online | October 5 (R01) and October 16 (R03 and R21), 2015 |
| ***Foundations*** | | | |
| David and Lucile Packard Foundation | $50,000 to $100,000 | Contact Program Officer | Check for RFPs |
| Alfred P. Sloan Foundation | $150,000 to $300,000 | Letter of Inquiry online | Rolling |
| Earthwatch Institute: Urban Ecosystems and Sustainable Agriculture and Forest Ecosystems Programs | $20,000 to $80,000 | Pre-proposal online | Expected: June 2016 |

# CONTACTING PROSPECTIVE GRANTMAKERS

Discuss your work with program officers from priority grantmakers.

*For most opportunities, it is not worth applying for a grant without first contacting a program officer or other funder representative to discuss your proposal.*

Email your concept paper to the program officer, and ask:

- Is your agency/organization currently interested in this type of work?
- If so, do you have any guidance on how best to approach a proposal?

*Key points:*

- If a program officer prefers to speak on the phone, *speak to them on the phone.*
- Take program officer guidance seriously: they are in the best position to know what will be competitive.

***Program officers are there to help you.***

# DEVELOPING COMPELLING PROPOSALS

# Grant Competitiveness

***Grant competitiveness is multi-faceted; pay attention to all the elements.***

*Key elements of grant competitiveness:*

1. PI qualifications and experience
2. Established relationships and collaborations
3. Resources available
4. Responsiveness to funder interests and requirements
5. Rationale
6. Project design
7. Preliminary work

# Compelling Proposals: Review Your Project Design

**After reviewing all grantmaker guidance, assess:**

- What are the funder's aims?
- How does your project accomplish these aims?

**Refine your project design with funder aims, Program Officer guidance, and RFP requirements in mind.**

- Make any necessary adjustments to the overall goals, objectives, and activities articulated in your concept paper.
- Plan the details of your project: What will be done? Who will do it? Where? How? How will you know if the project is successful?
- Ensure that your project plan follows funder requirements, and that your project's outcomes accomplish the funder's aims.

***For a strong project, use a logic model to guide the design process.***

# Compelling Proposals: Make A Grant Development Plan

**Map out your strategy to develop and submit the proposal on time.**

*Create:*

- **Checklist** of all required proposal elements
- **Timeline** for proposal development, including key dates
  - Note deadline for Letter of Intent or pre-proposal, as well as proposal deadline.
  - Allow time to get internal approval before submission.
- **Narrative Outline** based on the scoring rubric or key section headings
  - Note character-, word-, and page-limits, as well as formatting requirements.

***Always allow time for derailments: plan to submit well before the deadline.***

# Compelling Proposals: Outline The Narrative

**Strong narratives have similar core elements:**

- Statement of the Problem
- Literature Review
- Conceptual Framework
- Hypotheses or Research Questions
- Methodology/Strategy
- Scope of Work
- Management Plan
- Staff and Institutional Qualifications

***Note that each solicitation will require information to be presented in specific ways.***

# Compelling Proposals: Write The Narrative

What makes a compelling narrative?

**Good proposals come from good concepts.**

Strong narratives answer core questions clearly and succinctly:

- What do you want to do, how much will it cost, and how much time will it take?
- How does the proposed project relate to the sponsor's interests?
- What difference will the project make to your university, your students, your discipline, the state, the nation, and other stakeholders?
- What has already been done, and how will your project advance that work?
- How do you plan to implement and accomplish project goals and outcomes?
- How will the results be evaluated?
- Why should you, rather than someone else, be selected to do this project?

***The best proposals make the reviewers say "I wish I had thought of that!"***

# Compelling Proposals: Write The Narrative

## Statement of the Problem

Include a clear and concise statement of the purpose of the project.

For research grants, provide:

- Specific question(s) to be answered
- Brief explanation of the need for or significance of the study
- Explanation of how the results will contribute to the existing body of knowledge and the expected results

For program grants, provide:

- Statement of need, including statistics and qualitative data.

**** Do not simply restate or paraphrase the RFP***

## Literature Review

Convey your understanding of relevant literature and how the proposed study or project fits in context.

- Make it comprehensive but concise.
- Trace the central themes in the literature, highlight major areas of disagreement, and reflect a critical stance toward the materials reviewed.

# Compelling Proposals: Write The Narrative

## Conceptual Framework

Identify theories or concepts that will guide the project.

- Describe strengths and weaknesses of the proposed framework.
- Show understanding of the theoretical perspective and relevance.
- Describe how or why they suggest the specific hypotheses or research questions.
- Connect your conceptual framework to your logic model, if applicable.

## Hypotheses or Research Questions

Provide clear statement(s) regarding the research hypotheses (formal or informal) and key questions/expectations.

- Explain why testing the hypotheses or answering key questions is appropriate for elucidating the research problems.
- Be absolutely sure that your “hypotheses” are actual hypotheses—they must be fully testable and falsifiable.

# Compelling Proposals: Write The Narrative

## Methodology/Strategy

Describe implementation methods.

- The description of the proposed methodology should contain enough detail to indicate that the applicant knows what s/he is doing and allow reviewers to assess both feasibility and appropriateness to the research questions.
- Include details for all procedures, work, and implementation protocols.
- Describe the instruments that will be used for collecting data, explain why are they appropriate for this study, and provide evidence of the instruments' reliability and validity.
- Provide detailed data analysis procedures.

## Scope of Work

Indicate exactly what will be done, including the sequence of the proposed activities and the anticipated outcomes and/or deliverables.

- Specify the tasks, outcomes/deliverables, and schedule in sufficient detail.
- Include all activities necessary for completing the project.
- Provide a viable schedule for carrying out the tasks (work plan).

# Compelling Proposals: Write The Narrative

## Management Plan

Explain how you will manage the project.

- Indicate who will be responsible for each work component
- Describe how each element of the project will be coordinated.

## Staff and Institutional Qualifications

Explain why your staff and institution are qualified to implement the project.

- Include discussion of the qualifications and experience of the proposed staff (be brief but comprehensive), including how they are qualified to conduct the project.
- List capabilities of the institution (applicant and/or partners).
- Where applicable, include information on facilities and equipment.

# Compelling Proposals: Budget

**Typical budget lines include:**

- Personnel
- Fringe Benefits (standard rates)
- Travel
- Equipment (durable, long-lasting, costs more than $5,000 each)
- Supplies (expendable, short-term)
- Contractual
- Construction
- Indirect Costs (note limitations)
- Other

***It is often helpful to develop the budget in a separate spreadsheet using categories that make sense internally, and only "translate" to the grantmaker's required form after the budget is final.***

# Compelling Proposals: Write The Budget Narrative

**The budget narrative must be consistent with the project narrative.**

*Tips for budget narrative development:*

- Show a clear method of calculation for each item.
- Link each item back to grant activities and grantmaker goals.
- Use the same terminology that you used in the project narrative.
- A table can make the information easier to digest, even in the budget narrative.

*Be specific!*

**Vague:** The University will subcontract with a program evaluation company. Funding is requested at $25,000.

**Specific:** The University will contract with an independent professional evaluation service to conduct a rigorous program evaluation to verify impact and results as outlined in the Evaluation Plan. This cost is estimated at $100/hour and includes 200 hours of work plus $5,000 in travel costs associated with two site visits during the grant term. Total: $25,000.

# Compelling Proposals: General Biosketch Tips

- Biosketches should be concise but cover all bases
- Adjust Personal Statements/Activities/Contributions to your audience
- Avoid using jargon
- Tell a story about you not about your project
- Should address:
  - Who you are
  - What you have done to prepare for this work
  - Why you are qualified, including any special accomplishments
  - What you will do next

# EXERCISE (10 minutes) – Biosketch Revamp

Assume that you developed the Biographical Sketch Personal Statement provided. Identify areas you would change. Briefly describe your approach and rationale. Why would you make these changes? What were your considerations?

# Example Biosketch Revamp

A. Personal Statement My strong formal training and research background in psychology, behavioral endocrinology, neuroendocrinology, and human sexuality as well as my teaching of pelvic anatomy and the embryology of sexual differentiation of the urogenital (UG) tract have found a common ground in the study of disorders of sex development (DSD). As a scientist in Puerto Rico working in the largest university-based medical center in the Caribbean, I simply cannot ignore the significant amount UG congenital conditions that are routinely seen during consultations in Pediatrics and Urology. It has taken me a number of years to transition from basic research to clinical research, but after completing a number of successful clinical studies I aim to expand my research portfolio by conducting federally-funded health disparities research.

# The Bottom Line

***Successful grantseeking takes time and energy.***

*To maximize return on investment:*

- Build adequate grant timelines, including time to:
  - Communicate with stakeholders
  - Create strong project design
  - Get feedback
  - Develop and refine the application
- Be wary of quick-turnaround grants.
  - Remember that it can be damaging to submit a bad proposal.
- Be strategic about the grants you choose to pursue.
  - Make sure each proposal process supports your long-term goals.

# NATIONAL SCIENCE FOUNDATION

# National Science Foundation

NSF funds research and education in most fields of science and engineering. It does this through grants, and cooperative agreements to more than 2,000 colleges, universities, K-12 school systems, businesses, informal science organizations and other research organizations.

NSF receives approximately 40,000 proposals each year for research, education and training projects, of which approximately 11,000 are funded.

The Foundation also supports cooperative research between universities and industry, US participation in international scientific and engineering efforts, and educational activities at every academic level.

**Accounts for ¼ of Federal Basic Research Funding for Academic Institutions**

# National Science Foundation: History and Mission

***The National Science Foundation (NSF) is an independent federal agency.***

*Mission:* **"to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense…"**

*Origin:* Created by Congress in 1950.

*Annual budget:* $7.5 billion (FY 2017)

**NSF funds approximately 24% of all federally supported basic research conducted by America's colleges and universities.**

# National Science Foundation: Goals

**NSF's goals: "discovery, learning, research infrastructure and stewardship."**

*With these goals, NSF seeks to:*

- Advance the **frontiers of knowledge**
- Cultivate a world-class, broadly **inclusive science and engineering workforce**
- Expand the **scientific literacy** of all citizens
- Build the nation's research capability through investments in advanced **instrumentation and facilities**
- Support excellence in **science and engineering research and education** through a capable and responsive organization

***"NSF is where discoveries begin."***

# National Science Foundation: Activities

***NSF makes grants to advance its goals.***

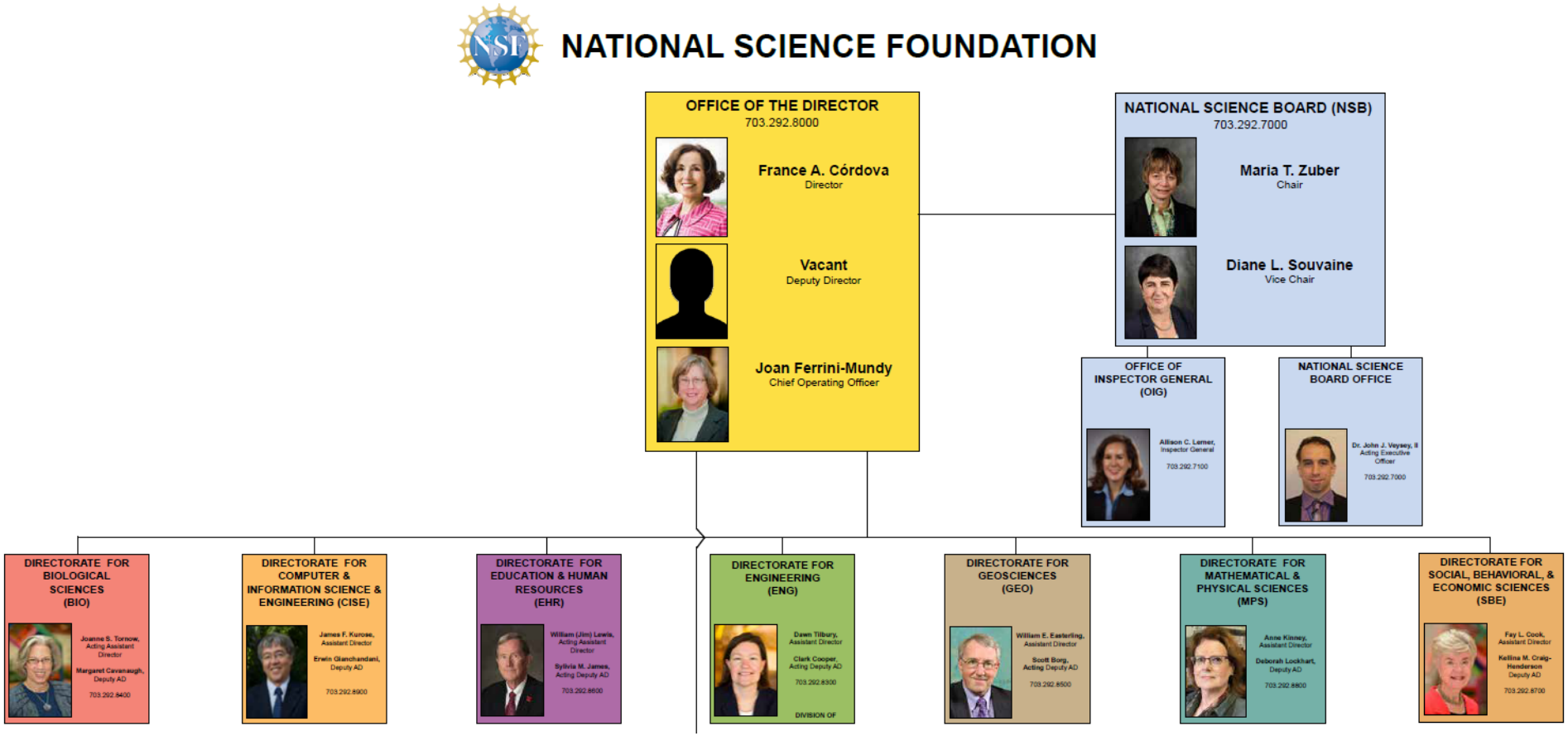
*NSF grants fund:*

- Basic science research
- Equipment that supports basic science research
- STEM education at all levels
  - PreK-12, undergraduate, graduate, lifelong learning
  - Formal and informal

*NSF grants do not fund:*

- Health-focused research
- Non-STEM education

# NSF Structure




Source: https://www.nsf.gov/staff/organizational_chart.pdf (Administrative offices not included here.)

# NSF Grantmaking Directorates and Divisions

## Biological Sciences (BIO)

- Molecular & Cellular Biosciences (MCB)
- Biological Infrastructure (DBI)
- Integrative Organismal Systems (IOS)
- Environmental Biology (DEB)
- Emerging Frontiers (EF)

## Computer & Information Science & Engineering (CISE)

- Advanced Cyberinfrastructure (ACI)
- Computing and Communication Foundations (CCF)
- Computer and Network Systems (CNS)
- Information and Intelligent Systems (IIS)

## Education & Human Resources (EHR)

- Research on Learning in Formal and Informal Settings (DRL)
- Graduate Education (DGE)
- Human Resource Development (HRD)
- Undergraduate Education (DUE)

## Engineering (ENG)

- Chem., Bioeng., Env., & Transport Sys. (CBET)
- Civil, Mechanical & Manufacturing Innov. (CMMI)
- Electrical, Comms. & Cyber Sys. (ECCS)
- Engineering Education & Centers (EEC)
- Industrial Innov. & Partnerships (IIP)
- Emerg. Frontiers & Multidisc. Act. (EFMA)

## Geosciences (GEO)

- Atmospheric and Geospace Sciences (AGS)
- Earth Sciences (EAR)
- Ocean Sciences (OCE)
- Polar Programs (PLR)

## Mathema-tical & Physical Sciences (MPS)

- Astronomical Sciences (AST)
- Chemistry (CHE)
- Materials Research (DMR)
- Mathematical Sciences (DMS)
- Physics (PHY)

## Social, Behavioral & Economic Sciences (SBE)

- Social and Economic Sciences (SES)
- Behavioral and Cognitive Sciences (BCS)
- National Center for Science and Engineering Statistics (NCSE)
- Office of Multidisciplinary Activities (SMA)

# NSF Directorate and Division Structure

***Each NSF Division is divided into sections or clusters, which house grantmaking programs.***

*Example:*

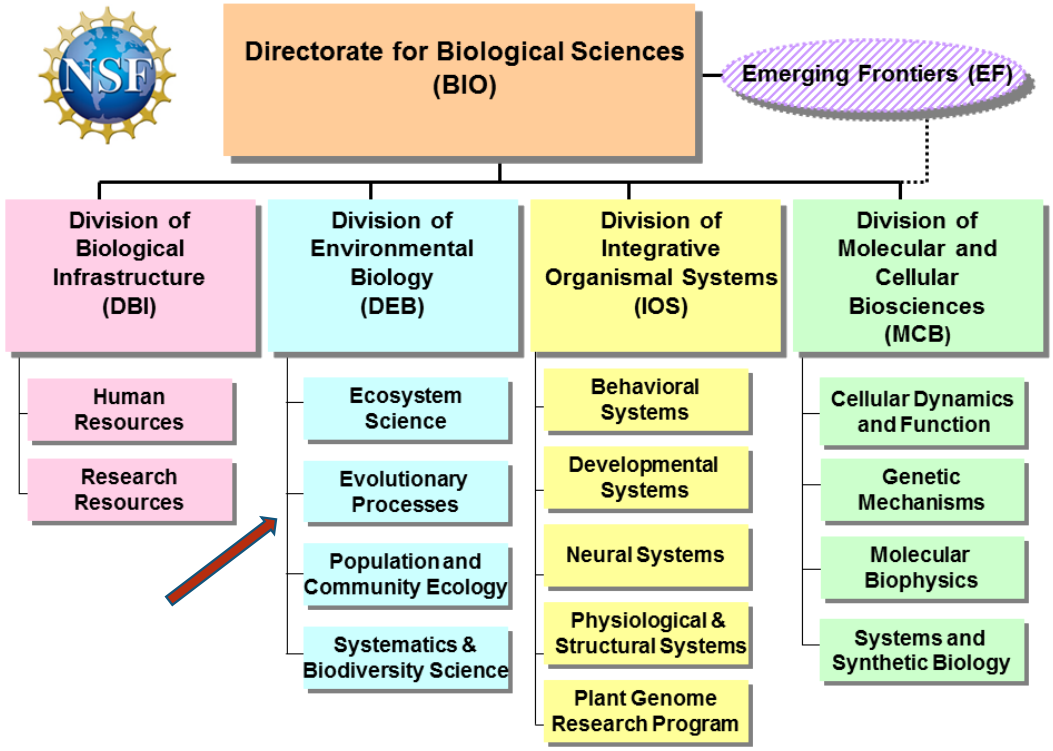
Directorate: BIO

Division: DEB

Cluster: Evolutionary Processes

Program 1: Evolutionary Genetics

Program 2: Evolutionary Ecology



# NSF Staff Roles

***NSF staff members have clearly defined roles and responsibilities.***

**NSF Director:** Leads the agency, sets the overall agenda.

**Assistant Directors:** Lead Directorates; set research directions.

**Division Directors:** Lead Divisions; manage research areas.

**Program Directors:** Manage individual grantmaking programs.

**Program Directors are the primary contacts for grant inquiries.**

# NSF Opportunities: Beyond Individual Programs

***NSF-wide opportunities* and *crosscutting programs* go beyond the boundaries of one NSF organization or program.**

*Examples of NSF-wide opportunities include:*

- ADVANCE: Increasing the Participation and Advancement of Women
- Faculty Early Career Development Program (CAREER)
- Experimental Program to Stimulate Competitive Research (EPSCoR)
- Grant Opportunities for Academic Liaison with Industry (GOALI)
- Innovation Corps (I-Corps)
- Major Research Instrumentation Program (MRI)
- National Science Foundation Research Traineeship Program (NRT)
- Grants for Rapid Response Research (RAPID) & Early Concept Grants for Exploratory Research (EAGER)
- Research Advanced by Interdisciplinary Science and Engineering (RAISE)
- Research Experiences for Undergraduates (REU)
- Facilitating Research at Primarily Undergraduate Institutions (RUI)

# Elements of an NSF Proposal

***An NSF grant proposal has many "moving parts."***

*A typical application package includes, in addition to FastLane forms:*

- Project Summary
- Project Description
- Budget and Budget Justification
- Biographical Sketches
- Current and Pending Support
- Facilities, Equipment, and Other Resources
- Data Management Plan
- Post-Doctoral Mentoring Plan

**While the Project Description is the heart of the proposal, note that other documents may also require significant time and energy.**

# The NSF Project Description

***Many NSF Program Solicitations will require specific information in a specific order, though some do not specify. Most Project Descriptions are limited to 15 pages.***

*Sample Project Description outline:*

- Introduction/Vision
- Literature Review/Preliminary Work
- Results from Prior NSF Support
- Conceptual Framework
- Hypotheses or Research Questions
- Methodology/Strategy
- Scope of Work
- Management Plan
- Staff and Institutional Qualifications
- Evaluation Plan
- Broader Impacts
- Intellectual Merit

***The underlined sections are required by the 2018 PAPPG in every NSF Project Description, unless the solicitation states otherwise.***

***The PAPPG does not specify where in the Project Description they should occur, so you can adjust them to fit the trajectory of the document (unless the solicitation prescribes a specific order).***

# Writing a Strong Project Description

***A strong Project Description clearly conveys the importance and impact of the work.***

*Key tips for a strong Project Description:*

- Be specific about the project's potential impact on your field (intellectual merit) and society (broader impacts).
- An NSF PO once said "Let no question fester"—this is important! Don't let reviewers be distracted by unanswered questions as they read.
- Make sure all content is relevant to the project at hand.
- Use plain language. Keep it simple and clear. "Show, don't tell." Avoid hyperbole.
- Use the first person ("I/we") and the active voice ("We will do X" rather than "X will be done").
- Use clear, simple formatting, with easy-to-navigate headers.
- Present information in well-crafted tables and figures.
- Use skillful repetition to emphasize key points.
- Edit and proofread!

**Always assume that your reviewer is exhausted!**

**An experienced PO once said, "Think of your proposal as the 40th in a stack."**

# The Project Summary

***NSF uses the Project Summary to sort and screen proposals.***

- A Project Summary is not an abstract.
  - NSF will ask for an abstract during the funding process.
- NSF Project Summaries must not exceed one page in FastLane.
  - Note that this could be less than a page as shown in your word processor.
- Three sections are required:
  - Overview
    - Activities, objectives, and methods
  - Intellectual Merit
    - Knowledge to be created, impact on the scientific field
  - Broader Impacts
    - Impact on society and NSF's goals
- The Project Summary is traditionally written in the third person, though this is no longer required.

# NATIONAL INSTITUTES OF HEALTH

# National Institutes of Health

Mission: to seek fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to enhance health, lengthen life, and reduce illness and disability

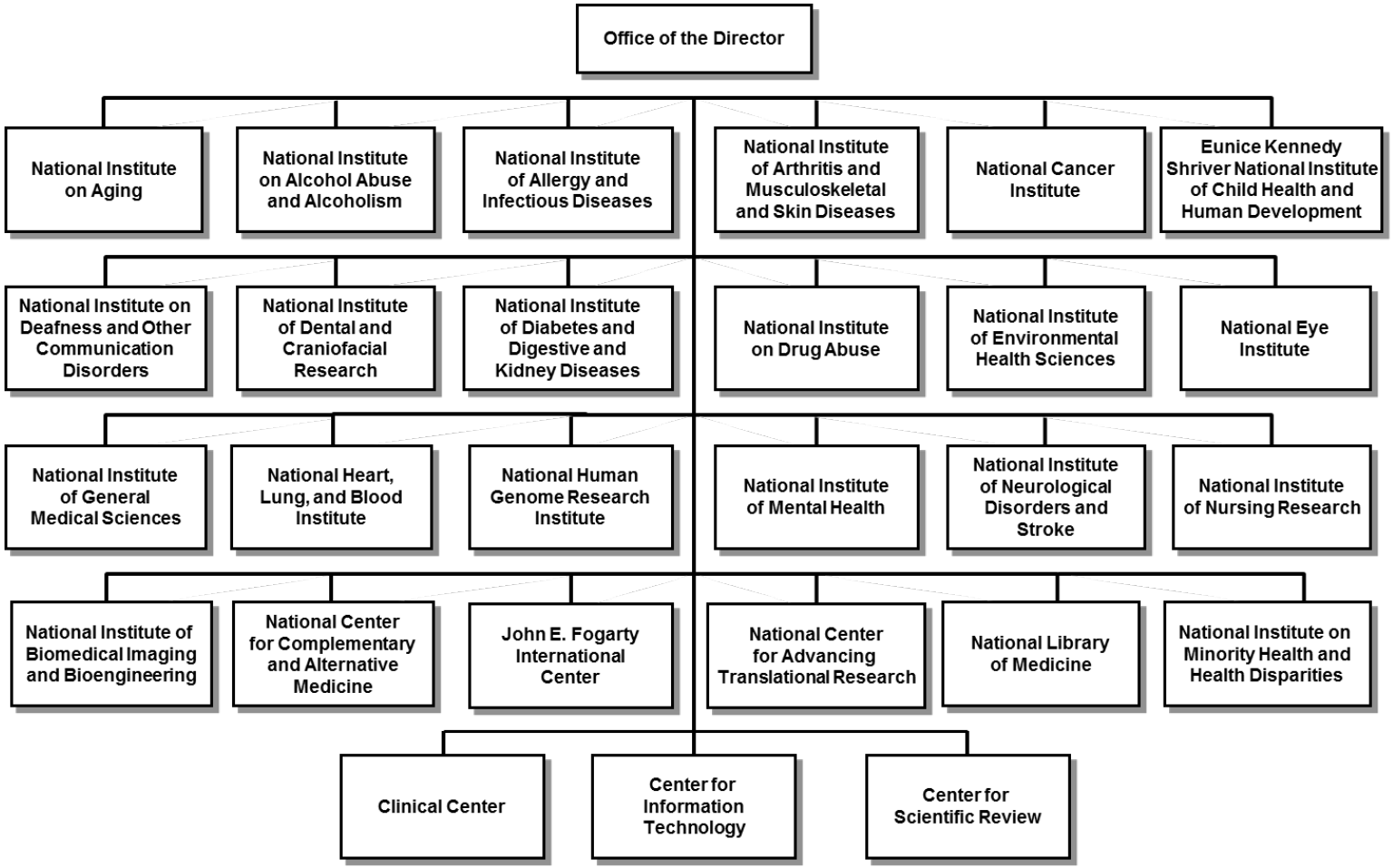
The goals of the agency are:

- to foster fundamental creative discoveries, innovative research strategies, and their applications as a basis for ultimately protecting and improving health;
- to develop, maintain, and renew scientific human and physical resources that will ensure the Nation's capability to prevent disease;
- to expand the knowledge base in medical and associated sciences in order to enhance the Nation's economic well-being and ensure a continued high return on the public investment in research; and
- to exemplify and promote the highest level of scientific integrity, public accountability, and social responsibility in the conduct of science


**Invests $32 Billion Annually in Medical Research**

**Over 80% of funding goes to 2,500 institutions**

# NIH Structure



# NIH Types of Awards

- Type descriptions: http://grants.nih.gov/grants/funding/funding_program.htm

| Types of Awards | Purpose of Award |
|---|---|
| R Series - R01, R03, R15, R21 | Research |
| K Series | Career Development |
| T & F Series | Research Training and Fellowships |
| P Series | Program Project / Center Grants |
| Various Others | Resource Grants, Trans-NIH Programs, and Others |

# Write the Research Plan

- Prepare research plan narrative outline/draft with holes
  - The research plan is the main part of the grant application describing a principal investigator's proposed research, stating its importance and how it will be conducted
- A typical research plan has four main sections:
  - A. Specific Aims
  - B. Significance
  - C. Innovation
  - D. Approach
- Request  any templates/examples needed for attachments such as letters of support, budgets, biosketches, other support sections, etc.

# Specific Aims: Organizational Structure

Organize bullet points in *four* distinct categories that will become four paragraphs.

- Introductory paragraph – definition of problem/critical need
- Proposed solution paragraph – objective(s) and rationale (what, who, how, why)
- Specific Aims list – steps to meeting objective (s) and thereby addressing critical need
- Significance paragraph – novelty, expectations, and impact



Sources: Colson (2009); Dresbeck (2013); Giddings (n.d.); Jelinski (n.d.); NIH (November 25, 2015); Univ. of Washington (n.d.)

# NIH Specific Aims Example Introductory Paragraph

Viruses are thought to be involved in 15% to 20% of human cancers worldwide, thus providing critical tools to reveal common mechanisms involved in human malignancies. As the etiologic agent of adult T cell leukemia/lymphoma (ATLL), human T cell leukemia virus type I (HTLV-1) is just such a virus. HTLV-1 encodes a potent oncoprotein, Tax, which regulates important cellular pathways including gene expression, proliferation, apoptosis, and polarity. Over the years, Tax has proven to be a valuable model system in which to interrogate cellular processes, revealing pathways and mechanisms that play important roles in cellular transformation. Although the Tax oncoprotein has been shown to transform cells in culture and to induce tumors in a variety of transgenic mouse models, the mechanism by which Tax transforms cells is not well understood. A large number of Tax mutants have been generated and their biological activities have been thoroughly characterized, primarily in cell culture systems. Currently, a major obstacle in the field is that the transforming activity of Tax mutants cannot be compared using available transgenic models due to random transgene integration sites, variable transgene copy number, and inconsistent transgene expression levels, making it difficult to link the biological activities of Tax mutants with their transforming potential.

# NIH Specific Aims Example Proposed Solution Paragraph

To solve this problem we will develop an innovative mouse model system in which to study Tax tumorigenesis using targeting vectors containing wild-type or mutant Tax genes that are silenced by a preceding floxed stop cassette. These vectors will be knocked in to the Rosa26 locus of recipient mice by recombination. After crossing these mice with Lck-CRE mice, the stop cassette will be specifically excised in developing thymocytes where the Lck promoter is active, allowing conditional expression of wild-type or mutant Tax proteins in T cells, the natural target of HTLV-1 infection. The feasibility of our proposed mouse model is supported by Lck-Tax transgenic mice having been developed and producing a leukemia that closely resembles ATLL. Thus, targeting of Tax expression in cells in which the Lck promoter is active is expected to produce a similar disease in our model. In our improved model system, insertion into the Rosa26 locus will eliminate random integration sites and standardize gene copy number resulting in consistent levels of wild-type and mutant Tax protein expression.

Note: this example does not include a statement of qualifications and the hypothesis is the last sentence, illustrating the ability of the author to flex the model to meet descriptive needs/preferences.

# Significance

- Critically evaluate existing knowledge, including background literature and relevant data
  - References should reflect an updated knowledge of the field
  - Specify existing gaps that the project is intended to fill
- States the research problem including the proposed rationale, current state of knowledge and potential contributions and significance of the research to the field
- Discussion should convey the importance and relevance of the research aims
- Highlight why research findings are important beyond the confines of the specific research project (e.g., significance; how research results can be applied)

# Significance Outline

- Paragraph 1: Introduce the problem/barrier/gap in evidence you plan t address
- Paragraph 2: Provide additional background as needed
  - Cover the most important points that support the first paragraph's informatio
- Paragraph 3: Describe your approach/proposed solution that will overcome the problems mentioned in the first paragraph
- Paragraph 4: Emphasize the significance in a broader context

# Example 1

**3.A** **Significance:** Diabetes patients are at high-risk for cardiovascular disease (CVD) (Malik , Lopez, Cher et al, 2007; Saydah, Fradkin, and Cowie 2004; Buse JB et al 2007), the leading cause of death, disability, and health care expenditure in the US (CDC 2007). While randomized control trials have repeatedly shown the effectiveness of medications to control hypertension, hyperlipidemia, and hyperglycemia in reducing CVD-related death and complications (ADA 2003; Snow, Aronson, Hornbake et al 2004; Snow, Weiss, Mottur-Pilso 2003), these medications are often underutilized (Shrank, Asch, Adams et al 2006). Studies suggest only 50-70% of patients with diabetes achieve good adherence to their medications (DiMatteo 2004; Feldman, Bacher Campbell et al 1998; Avorn, Monette, Lacour 1998), and up to half of chronic illness patients prescribed medication discontinue use within a few years (get cite for this). This non-adherence to CVD risk factor medications in patients with diabetes is associated with increased rates of hospitalization and death (Ho, Rumsfeld, Masoudi et al 2006; Laur and Nau 2004; Sokol, McGuigan, Verbrugge et al 2005).

Lack of timely access to medication refills can be a significant barrier to achieving good medication adherence (Duru, Gerzoff, Selby et al 2009). Mail order pharmacies, which can streamline the process of access to medications and reduce the need to travel to medical facilities, can potentially improve access to needed medications for patients with chronic illness (Duru, Schmittdiel, Dyer et al 2009). Recent research suggests that mail order pharmacy use is associated with greater adherence to medications in patients with diabetes and with greater improvements in LDL control in new users of statin medications (Schmittdiel, Duru, Dyer et al under review).

# Example 1

While mail order pharmacies are widely used in the U.S. – one recent estimate suggests that up to 1/3 of medications for chronic illness are delivered to patients via the mail (Federal Trade Commission 2005)– the impact of mail order pharmacy on patient safety and use of preventive health services is largely unexplored. For example, mail order pharmacy may improve clinical outcomes through increased access to CVD risk factor medications, but it may also serve as a barrier to access to pharmacy consultation and other services designed to prevent adverse events (Duru, Schmittdiel, Dyer et al 2009). The proposed research will contribute to our knowledge of the effects of mail order pharmacy by assessing whether mail order use is associated with improved patient safety, appropriate services utilization, and clinical outcomes in diabetes patients. *This contribution will be significant because understanding the effects of mail order pharmacy use on patient safety and clinical outcomes will help health systems design safe and efficient medication delivery systems with the potential to improve CVD-related outcomes in diabetes patients.* Improved medication adherence through mail order pharmacy use has the potential to decrease CVD-related hospitalizations and deaths in diabetes patients. Through a full assessment of the risks and benefits of mail order pharmacy use, we can gain important knowledge on how to potentially improve and expand the use of mail order pharmacy services.

# Example 2

Depressive disorders affect approximately 10% of the population in the United States annually with a lifetime prevalence of 10% in men and 15% in women. Along with the high prevalence, the costs associated with depressive disorders have also grown. The annual economic burden of depressive disorders is estimated at $83 billion[35] and depressive disorders are predicted to be the greatest contributor to global health burden by the year 2030.[36] Even among individuals who do not meet diagnostic criteria for Major Depressive Disorder (MDD), depressive symptoms have negative influences on health. Elevated depressive symptoms are associated with an increased risk of MDD,[37] functional impairment,[38-40] higher rates of disability,[41] and increased social dysfunction.[39,42] Further increasing the burden of depressive disorders is the limited accessibility and effectiveness of treatments. Only 55% of people afflicted with a depressive disorder are receiving treatment, while alleviation of depressive symptoms is seen in only 32% of those receiving treatment.[43] Even with optimal access and treatment, data indicate only 34% of disability associated with depression would be averted.[44] **These data highlight the public health burden of depressive disorders and the need for implementation of strategies to prevent depressive disorders.**

The Institute of Medicine and the National Institute of Mental Health have each produced reports calling for major efforts to develop, evaluate, and implement prevention interventions focused on mental, emotional, and behavioral disorders.[45,46] The IOM paradigm for preventive interventions includes "selective" interventions, which target at-risk individuals that are not yet symptomatic. It has been argued that the use of selective interventions to prevent depression in medical illness should be prioritized.[47] Selective prevention interventions targeting medically ill populations, such as post-stroke[48] and macular degeneration patients[49] have been efficacious in preventing the incidence of depression. **The proposed research involves a selective intervention aimed at preventing depression among Hepatitis C (HPC) patients receiving Interferon-α (IFN-α) treatment.**

# Example 2

IFN-α is an efficacious treatment for HPC; however, IFN-α treatment results in a significant increase in depressive symptoms, *with between 30-50% of patients developing MDD.*[50-53] *In one of the largest prospective studies of HPC patients receiving IFN-α treatment, 39% of patients experienced moderate to severe levels of depression.*[54] This increased depressive symptomatology in HPC patients is associated with significantly impaired quality of life,[55,56] reduced IFN-α treatment adherence[57] and poorer IFN-α treatment outcomes.[58] This is in addition to the burdens typically associated with elevated depressive symptoms, such as functional impairment,[38,39,59] higher rates of disability,[41] and increased social dysfunction.[39,60] **Given the high risk of increased depressive symptoms during IFN-α treatment and the effects this increase in depressive symptomatology has on treatment adherence, treatment outcomes and patient quality of life, it is important to identify effective strategies for preventing the development of depressive symptoms in this population.**

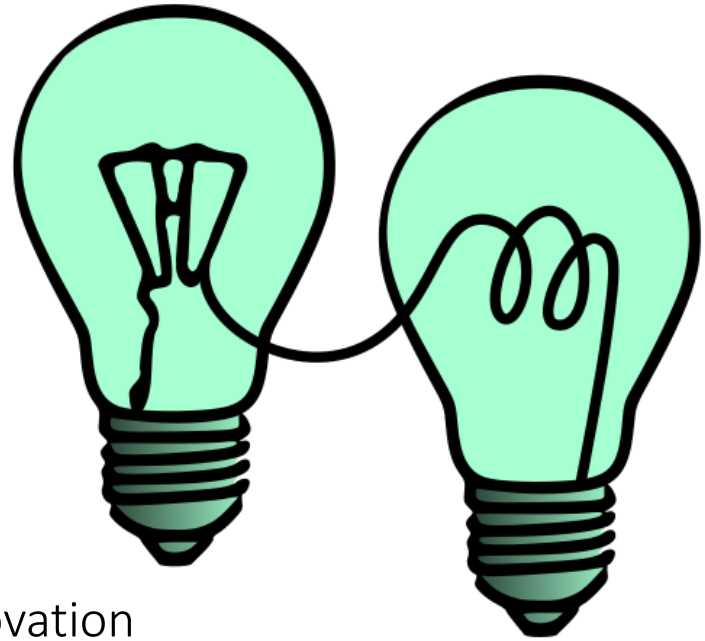
To date, research has focused on the prophylactic use of selective serotonin reuptake inhibitors (SSRIs) in the prevention of IFN-α induced depression in HPC patients. Open label trials[61-63] suggest that the administration of SSRIs may reduce the incidence of depression during IFN-α treatment. *However, out of four randomized controlled trials (RCTs), only one trial has shown a significantly lower rate of MDD in patients receiving SSRIs compared to those receiving placebo.*[64-67] Furthermore, SSRI treatment did not result in improved adherence to IFN-α treatment compared to placebo. In addition to these results, it has been postulated that non-depressed patients might be resistant to taking SSRIs, therefore non-pharmacological interventions may be more suitable for prevention.[68] **Taken as a whole, this indicates the need for alternative strategies for the prevention of IFN-α-induced depression.**

# Example 2

Within the HPC population, the successful completion of this project offers several potential benefits. First, the prevention of IFN-α induced depression will eliminate the physical, psychosocial and economic burdens often associated with depression. Additionally, the successful implementation of an exercise intervention during IFN-α therapy may have the potential to improve treatment adherence and outcomes. Considering the reduced treatment adherence associated with depression, prevention of depression is likely to improve adherence to IFN-α therapy, thus improving treatment outcomes. Furthermore, it has been postulated that weight loss and increased of insulin sensitivity associated with exercise may be especially beneficial for patients with HPC.[69]

*Perhaps more importantly, the examination of exercise in the prevention of interferon-induced MDD has implications beyond the HPC population. MDD is a heterogeneous disease and it has been postulated that the biological underpinnings of MDD are equally varied. As a result, there are likely multiple biological targets for the prevention and treatment of MDD and therefore, multiple treatment options are likely necessary to effectively treat and prevent MDD. Inflammation has been implicated in the development MDD and inflammatory responses to SSRI treatment may provide insights into inadequacy of current MDD treatments. Patients with a history of non-response to SSRIs have elevated levels of IL-6.[70] Similarly, elevated baseline inflammation is predictive of non-response to a variety of depressive treatments.[71-73] The model of IFN-α induced depression provides strong evidence for the role of inflammation in the development of MDD.[74] Completion of the proposed project will provide further insight into the role of inflammation in the etiology of MDD, while also exploring the role of exercise as a treatment option for MDD patients with elevated systemic inflammation. Furthermore, several medical illnesses are associated with an increased risk of depression.[75] This increased co-morbidity may be at least partially explained by elevated inflammation associated with these medical illnesses.[76] If exercise proves to be efficacious in preventing depression in HPC patients, the results may be generalizable to other medically ill groups.*

# Innovation



- Innovation can be
  - Novel approach
  - Novel population
  - Novel question
  - All the above
- ½-1 page
- Balance novelty and palatability
- Use literature to make the case for innovation
- Clearly state what is innovative

# Innovation Common Mistakes

- Making claims of novelty that are not true or not supported by the literature cited
- Failing to identify all innovative aspects of the work
- Relying on minimally incremental innovation (e.g., previous work was with men ages 30-45 and the proposed work is ages 30-50)
- Promoting innovation without impact

# Approach

- This section is critical for demonstrating that the applicant has developed a clear, organized and thoughtful study design
- Include any Preliminary Studies (if applicable)
- Describe how the research will be carried out
  - Should provide an overview of the proposed design and conceptual framework
  - Study goals should relate to proposed study hypotheses
  - Include details related to specific methodology; explain why the proposed methods are the best to accomplish study goals
  - Describe any novel concepts, approaches, tools or techniques (NIH Innovation)
  - Include details of how data will be collected and results analyzed
  - Consider required statistical techniques
  - Include proposed work plan and timeline
  - Consider and discuss potential limitations and alternative approaches to achieve study aims

# SELECTING A STUDY SECTION FOR SUCCESS

# Study Section Assignment Request

- Assignment Request Form
- Suggest a particular study section
- Suggest an awarding component such as an NIH institute or center you think would be interested in your research
- Specify potential reviewers who you feel might be in conflict with your application
- Describe the expertise needed to review your application
- *Such requests made in a cover letter will not be accepted*

# Suggesting a Study Section

- More than one study section may have the expertise to review your grant
- Scientific staff members make the final assignment decisions
- Ways to identify an appropriate study section include searching by topics, and using the CSR Assisted Referral Tool and NIH RePORTER to identify where similar funded proposals were reviewed
- **Examine recent study section rosters** to help you gauge the scope of our study sections
- **CSR scientific review officer of a study section you** think could best review your application
- **NIH Institute or Center program officer**.

# DEPARTMENT OF DEFENSE

# Department of Defense

DOD funds R&D relevant to its mission predominantly in engineering, computer/information science, and physical sciences. DOD also funds limited social science, medical, and life science research.

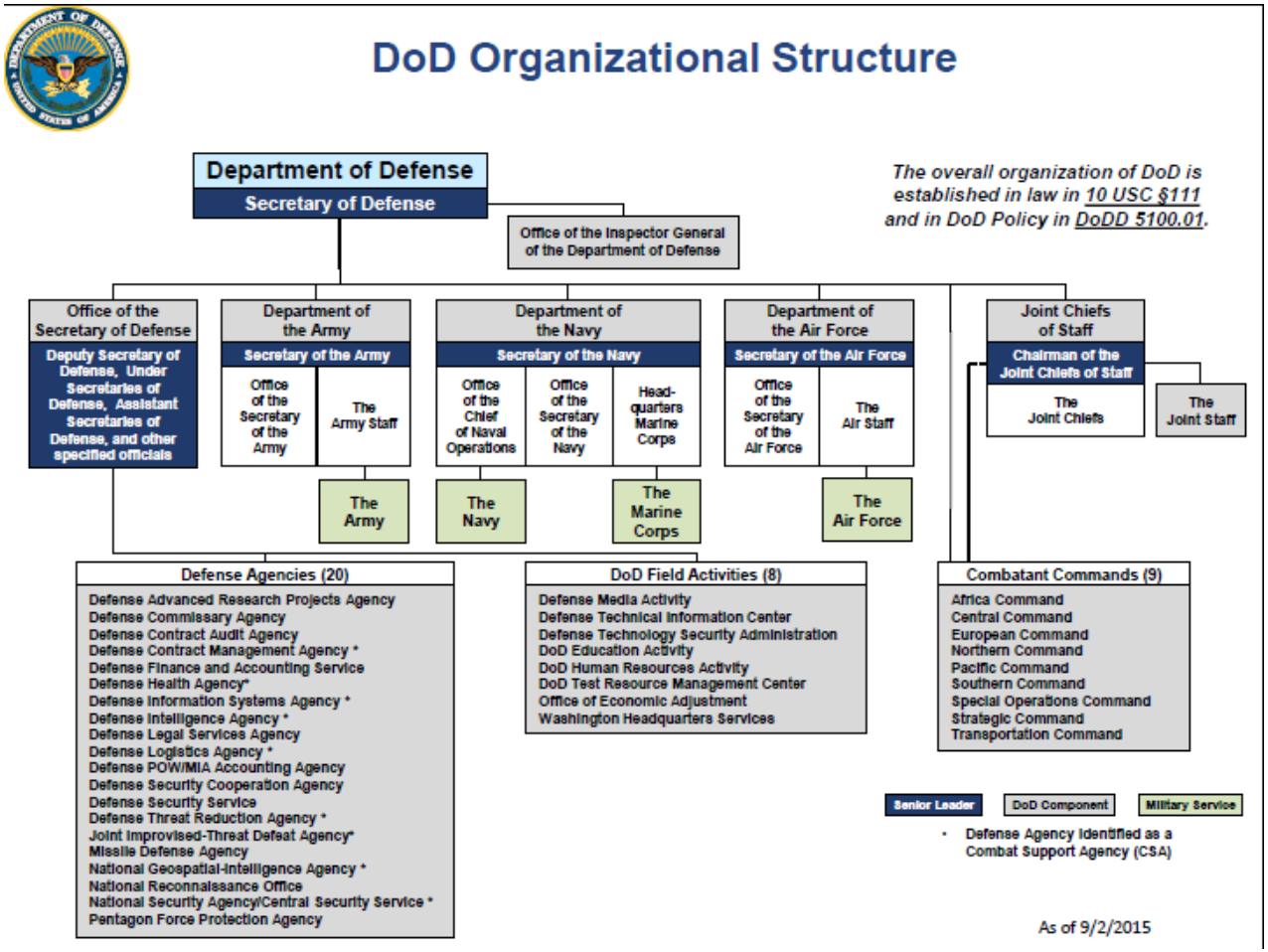
DOD has many different funding organizations each with its own foci and idiosyncrasies. Best known are the three Services (Air Force, Army, and Naval) and the Defense Advanced Research Projects Agency (DARPA).

DOD funds basic research, applied research and advanced technology development. The Department has identified 7 priorities: Autonomy, Counter Weapons of Mass Destruction, Cyber Science and Technology, Data-to-Decisions, Electronic Warfare / Electronic Protection, Engineered Resilient Systems, and Human Systems.

**60% of Basic Research Funding goes to Universities**

**Majority of funding is single investigator efforts**

# DoD Organizational Structure



# DoD Basic Research Funding

- Funding is available from several DOD agencies, each having its own particular focus:
  - Army Research Office (ARO): www.arl.army.mil/www/default.cfm?page=29
    - Focus: soldier, ground force mission
  - Air Force Office of Scientific Research (AFOSR): www.wpafb.af.mil/afrl/afosr/
    - Focus: pilot, aerospace mission
  - Office of Naval Research (ONR): www.onr.navy.mil/
    - Focus: sailor, marine, ship, ocean mission
  - Defense Advanced Research Projects Agency (DARPA): www.darpa.mil/
    - Focus: defense-wide technology innovation
  - Defense Threat Reduction Agency (DTRA): www.dtra.mil/
    - Focus: weapons of mass destruction
  - Office Secretary of Defense (OSD): www.acq.osd.mil/rd/
    - Focus: overarching Defense issues
  - Army Medical Research and Materiel Command: http://mrmc.amedd.army.mil/
    - Defense Medical R&D Program (DMDRP): dmrdp.dhhq.health.mil/home.aspx/
      - Focus: military specific medical research
    - Congressional Directed Medical Research Program (CDMRP): cdmrp.army.mil/
      - Focus: medical research of interest to a Congress person

# What does the DoD fund?

- Focus: health of the warfighters before, during, and after conflict
- Have a problem and are looking for a solution
  - Can be very specific: i.e. development of diagnostic assays for Ebola using Luminex MAGPIX platform
  - Or very broad: (From DTRA Fundamental Research BAA) i.e. “development of diagnostics for existing and emerging infectious disease threats; increasing knowledge and improved capabilities for development of new or improved medical and material countermeasures to chemical and biological threats for both pre- and post-exposure scenarios”

# DoD Preparing your Idea

- Be able to explain your idea in both technical and plain language
- How does your idea fit with the DoD strategy?
  - Organization (Missions, Language)
  - Development Strategy and timeline
  - How can you make a difference
  - Know the risks

# DoD Broad Agency Announcements

- A majority of DoD research funding is invested in single investigator efforts and advertised through BAAs
- Funding for these efforts typically ranges between $100-200K/yr for three years; with continuation possible
- Approximately 20% of the projects are turned over annually
- Program officers have far greater latitude than NSF/NIH
  - Essential to contact a program officer and explore mutual interests
    - University of Southern California resource
- A white paper is very useful for outreach
  - Program Officers do not want to waste your time writing, or their own time reading, an inappropriate proposal
- Most BAA proposals may be submitted at any time
  - Many tentative decisions for the coming fiscal year (October 1) are made in late Spring
- No standard DOD proposal format
  - Each agency/office has its own requirements

# GRANTSEEKING STRATEGY: PLAYING A COMPETITIVE LONG GAME

# Start with a Strategy

***A strategic approach to grantwriting is most effective over the long term.***

*Steps for grant funding strategy development:*

1. Articulate your long-term goals.
2. Delineate the role of funding in achieving your goals.
3. Map out an ideal grant funding trajectory.
4. Make a plan to stay on track.
5. Work the plan.
6. Revisit the plan and revise as necessary.

**In every grantseeking cycle, keep your long-term trajectory and "roadmap" in mind: how will this grant process advance your goals?**

# Know the Territory: Funding in Your Field

***With the overall field in mind, survey the funding landscape.***

- Who are the key funders in your field?
  - Federal, state, foundation, corporate
- What are their priorities?
  - Stated and unstated
- What are the overall funding trends in the field?
- Are their potential untapped sources of funding in your field?

**Keep an eye on changes and trends.**

# Develop a Long-Term Strategy

***Design a long-term strategy to build your grant funding.***

- Identify individuals (or institutions) in your field who have had exceptional success with grant funding.
  - Retrace their steps: what contributed to their success?
  - Establish mentoring relationships if possible.
- Given the lay of the land in your field, map out an ideal funding trajectory.
  - Identify long-term targets. What grants will you need to get in the short- and medium-term in order to be competitive for these key opportunities?
- Create a concrete plan with action steps; implement it.
  - Revisit and revise this plan regularly.

# Return on Investment

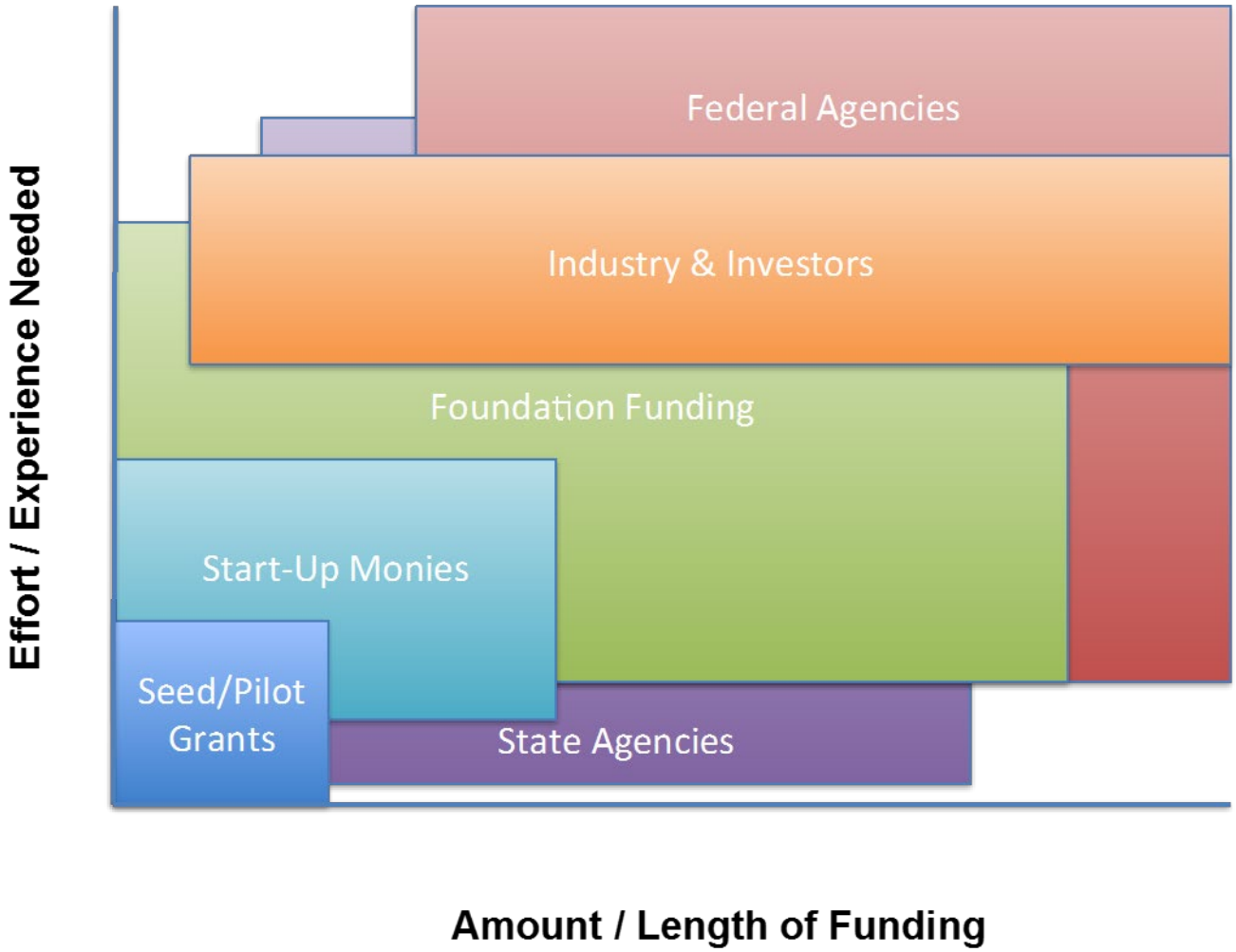
***The return on your investment in grantseeking will be multifaceted; grantseeking is not just about money.***

*ROI from grantseeking may include:*

- Grantseeking skills
- Relationships
- Prestige
- Money

**Grantseeking takes time and energy. Be clear about what you are getting from each grantseeking process.**

# Survey the Funding Landscape: Difficulty and Payoff



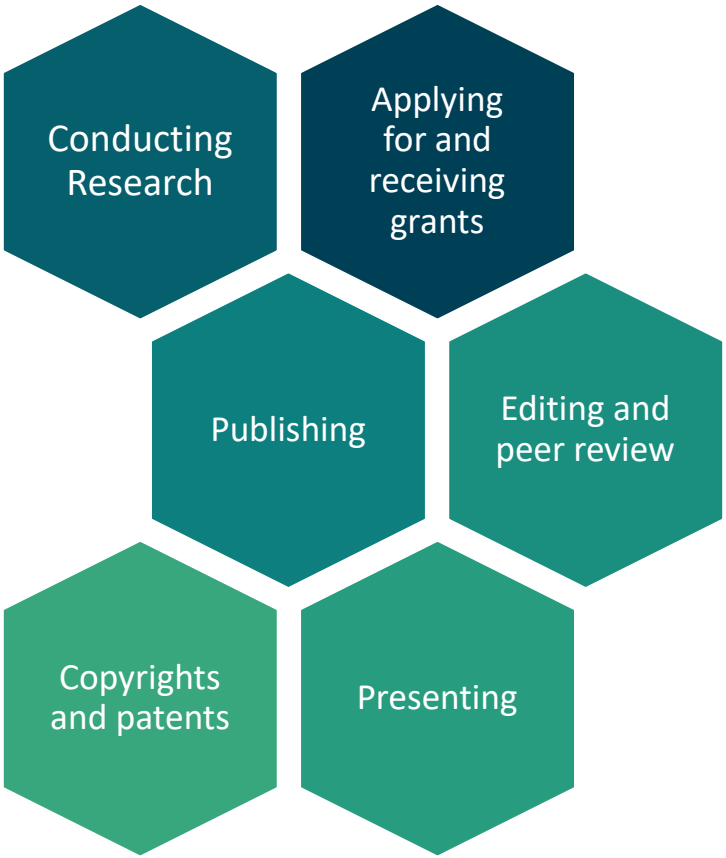
# Grant-Funded Career

*Four actions to take to improve your odds of being funded, now and later:*

1. Start small, with pilot projects and internal funding mechanisms.
2. Publish, publish, publish.
3. Serve as a grant reviewer.
4. Apply!

**Remember that you will build your grantseeking skills with each application cycle.**

# Areas of Focus for Leadership in Grantseeking



# Distribution of Effort

| Focus Area | # Hours/Week | % of Total Duties |
|---|---|---|
| Conducting research | | |
| Presenting | | |
| Publishing | | |
| Applying for and receiving grant funding | | |
| Copyrights and patents | | |
| Editing and peer review | | |

# Grantseeking Calendar

- Set monthly goals
- Establish Action Steps to meet each goal
- Do this annually

| January 2018 | February 2018 | March 2018 | April 2018 |
|---|---|---|---|
| *Goal:*<br>➢ Rewrite proposal for NIH March Resubmission deadline | | ➢ Submit resubmission<br>➢ Prospecting | ➢ Write new proposal for NIH June deadline |
| *Action Steps:*<br>❖ Develop strategy and timeline<br>❖ Reach out to any collaborators<br>❖ Begin rewriting | ❖ Complete Research Plan<br>❖ Revise Ancillary Documents including budget<br>❖ Collect updated biosketches and letters of support | ❖ Prioritize funding prospects based on findings | ❖ Develop strategy and timeline<br>❖ Reach out to any collaborators<br>❖ Begin writing |

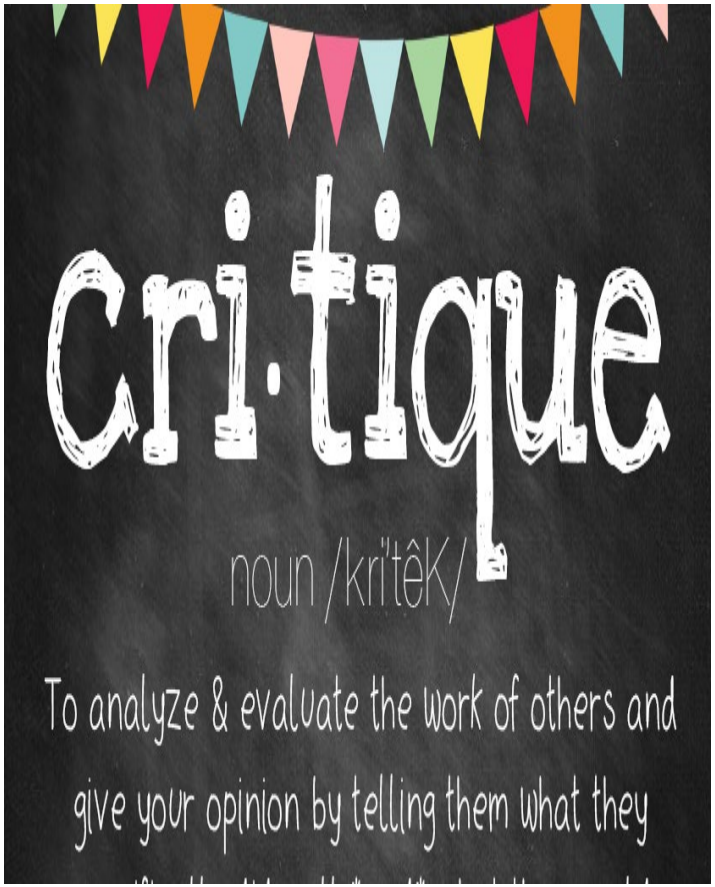
# RESUBMISSION STRATEGIES

# Key Points

- Reviews are not comprehensive
- Reviewers are only human
- A poor program or panel fit will lead to a poor review of a good proposal
- No two reviewers agree on everything
- Reviewers will always find flaws – avoid the fatal flaws
- Not all reviewer comments are created equal
- Some proposals receive worse reviews on resubmission
- If you do this enough times, you will receive a resubmission review that is in direct conflict with the original review
- Addressing reviewer comments does not guarantee anything…

# First Steps

- Read and understand the reviews
- Re-read your proposal
- Have a conversation with the Program Officer
- Assess your options
  - Can I address the critiques?
  - Should I address the critiques?
  - Is this the correct funding opportunity?



# Review Document

- Describes the outcome of the scientific review process
- Summarizes the basis for your score
- Not an exhaustive critique
- It is best to:
  - Assume comments are helpful
  - Not be defensive
  - Learn from the feedback
  - Remember that the reviewer is **always** right
  - Assume there are more flaws than listed
- Key reminders
  - Reviews are not comprehensive
  - Your peers are valuable in providing alternative interpretations
  - Poor reviews can be from bad science or bad fit

# What can you learn from the Review Document?

- Did they get it? – does the description match what you propose
- Dominant reviewer – summary will most closely match this reviewer's comments
- Enthusiasm for the work – emphasis on strengths or weaknesses?
- Did they identify a fatal flaw? – e.g., untestable "hypothesis"

# What can you learn from the Review Document?

- Reviewer Comments
  - Strengths/Weaknesses in Intellectual Merit
  - Strengths/Weaknesses in Broader Impacts
  - Score – Poor, Fair, Good, Very Good, Excellent
- Panel composition
- Technical understanding
- Readability of the proposal
- Reviewer understanding of the funding opportun
- Areas for improvement

# Worth Resubmitting?

- Rejection on the first submission is common
- It is important to remember that some major flaws may not be “fixable” in the short-term
- Concerns more easily addressed in the short-term
  - Scope of work
  - Insufficient discussion
  - Rigor/reproducibility
- Contact a Program Officer
  - Give opinion on score and reviewer comments
  - Budget issues
  - Resubmission of application
  - Appropriateness of your response to reviewers comments

# Develop a Resubmission Plan

- Decide how/whether to address critiques
- Rewriting (including lit review, additional preliminary studies, addressing comments)
- Request peer feedback and revise again

# Resubmission Plan Considerations

- Resubmission timing
  - Sooner is usually better
  - Lack of preliminary studies as a review concern
- Identify the most important concerns
  - Weaknesses related to the Impact or Significance are most serious
  - Concerns regarding Approach are more easily addressed
  - Evaluate reviewer concerns for consistency/inconsistency
  - Concerns shared by more than one reviewer
  - Concerns highlighted in the “Overview” or “Discussion” sections

# Crafting a Response

- Be responsive, not defensive
  - If the suggested change is feasible, make the change
- Avoid Disagreeing
  - If you can't make a change or respond
    - Acknowledge the reviewer
    - Discuss any revisions that are related to the concern even if it is a bit different than what was suggested
    - Discuss revisions you are unable to make and why
- Address reviewers' missed information
  - If a reviewer comments regarding something you addressed in your proposal, but which they have missed
    - Apologize for lack of clarity
- Don't skip comments

# EXERCISE (10 minutes) – Responsive not Defensive

- Review the example responses to reviewer comments and rewrite them with our previous tips on responsiveness in mind.

# Example Responses

## Response 1

**R1. Recommend the addition of a 6-month follow-up study to ascertain if the effect persists after the structured intervention.**

We chose not to conduct a follow-up study as our primary focus in this application was to determine whether the intervention could be effective in real time.

Source: Writing Dissertation and Grant Proposals: Chapter 20, Resubmission of the Grant Proposal

## Response 2

We already included age as a matching criteria as noted on page 18 of the original application.

Source: Writing Dissertation and Grant Proposals: Chapter 20, Resubmission of the Grant Proposal

# Improved Response Examples

Improved Version Response 1

R1. Recommend the addition of a 6-month follow-up study to ascertain if the effect persists after the structured intervention.

The reviewer raises an important point. Therefore, we have added a 3-month postintervention focus group that will assess whether the family continues to dance together, how often, and in what format. We are unable to follow the participants for 6 months due to the fact that recruitment is rolling over the first 2 years of the grant, leaving insufficient time to follow the last recruited family. However, we will also perform a 6-month focus group in a subgroup of the first 50 recruited families.

# Improved Response Examples

## Improved Version Response 2

We apologize for our lack of clarity in describing the study design. We will include age as a matching criteria. Specifically, cases and controls will be matched on age <18, age ≥ 18 (see Section C.4. Study Design).

# Addressing Weaknesses/Missed Information

- Reviewers identified several weaknesses
  - Indicator of enthusiasm for the idea and desire to help improve
- Reviewers missed information that was in the proposal
  - Grant writing issue – get help
  - Repetition, structuring, special formatting can help
  - Summarize important points

# Addressing Grant Writing Concerns

- Tell a logical story
- Focus on making your proposal easy to read and technically flawless
- Formatting
- Spelling/Grammar
- Tables/Figures
- Goals, Objectives, and Expected Outcomes
- Define all technical terms
- Remember that most reviewers are not experts in your field

# Addressing Significance Weaknesses

- Connect the work to the mission of funder
- Connect the work to your field
- Clearly show how your proposal addresses a critical need or gap in understanding
- Common Mistakes:
  - Delivering a dull science lecture without connecting the content
  - Assuming too much about the reviewers' background
  - Ignoring or misinterpreting the literature
  - Failing to make a step-by-step logical progression from broad context to specific problem
  - Failing to address the potential for other avenues of research that could address/answer the issue

# Addressing Expertise Weaknesses

- Poor Investigator(s) score or concerns about experience/expertise
  - Don’t rely solely on biosketches to state experience/expertise
  - Recruit collaborators/consultants if needed

# Addressing Methods Comments

- Update preliminary findings
- Add what is missing
- Revise and focus on providing sufficient detail
- Structure methods to match aims
- Point to common methods in the literature, but give at least broad outlines of the approach
- Explain design decisions – provide rationale, especially for unusual or potentially contentious choices
- Possible challenges and alternatives
  - Include this section for each aim/major method
  - Explain why you think challenges are possible but unlikely – or describe how you have or will address them
  - Offer alternative approaches

# Submission Updates

- Solicit new Letters of Support
- Use any new templates and follow any new guidelines/requirements
- Update Biographical Sketches
- Do not obsess over prior critiques
- Ask for outside help and peer reviewers
- Don’t give up! (unless a Program Officer says you should)

# Learning from the Grant Process

Grantseeking is a competitive, iterative process.

- Many grants aren't funded on the first submission.
  - For some opportunities, the expectation of resubmission is built in.
- Learn as much as you can from each grantseeking process.
- Reviewers' comments are very valuable: pay attention.
- A grant decline can be the opening step in funder relationship development.

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