Funding for statistical science research

Ming-Wen An, Vassar College
Donna LaLonde, ASA
on behalf of the ASA Committee on Funded Research (CFR)

Women in Statistics and Data Science Conference
Charlotte NC
October 21, 2016

Committee on Funded Research (CFR)

Who are we?

- Ming-Wen An, Vassar College
- Donna LaLonde, ASA
- Goncalo Abecasis, University of MIchigan
- William Christensen, Brigham Young University
- Debashis Ghosh, University of Colorado
- Sujit Ghosh, North Carolina State University
- Scott Holan, University of Missouri
- Leslie McClure, Drexel University
- Karen Messer, University of California San Diego
- Cynthia Rudin, Duke
- Steve Pierson, ASA

Who are you?

Poll Time

- How many of you are within your first 5 years out of graduate school?
- How many of you have ever applied for a grant (as PI or co-PI)?
- What funding agencies have you applied to?
- What funding agencies have you received funding from?

To answer these questions,

- Enter this url: http://b.socrative.com/ , login as a student, use 821785 as the room number, and enter your first name.

Committee on Funded Research (CFR)

Our charge

- To facilitate communication and interaction between members of the statistical community and funding organizations that support statistics such as federal agencies, non-profit organizations, and data-intensive companies.
- To collect information on the state of funding for statistics and to provide reports to the ASA Board as needed.
- To recommend statistical scientists for service on national science advisory committees of federal research agencies.

Committee on Funded Research (CFR)

Resources and Sponsored Activities

- Funding Opportunities ASA Community Group
  - Learn about new funding opportunities
- External Funding Sources on the ASA Website: http://www.amstat.org/careers/efs.cfm
- Joint Statistical Meetings (JSM) session
  - Funding Opportunities Panel
- Recent documents
  - *Funding Opportunities: Better Statistical Participation is Needed Across Collaborative Science* (*Amstat News*, December 2015)
  - *Top Statistics Issues Seen in Non-Statistics Proposals* (draft version 1.0, September 2016)
  - *Statisticians Share Insights for Applicants and Reviewers* (prepared by the NIH Center for Scientific Review as a Peer Review Note, September 2016)

ASA Community

search

Home | Getting Started | Communities | Sections | Committees | Chapters | Network | Events | Browse | Participate

Funding Opportunities

Settings

Community Home | Discussion 497 | Library 6 | Blogs 2 | Members 227

Latest Discussion Posts

Add

NSF: Transdisciplinary Research In Principles Of...

By: Steve Pierson , 3 days ago

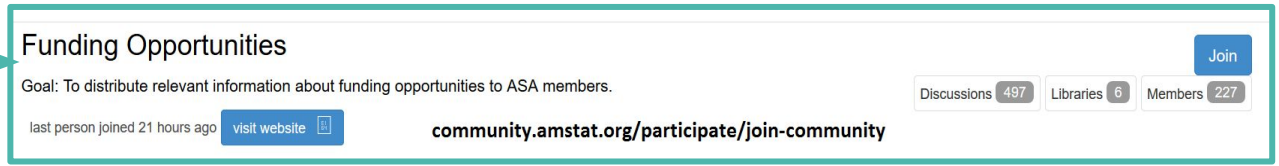
This program looks like a great opportunity for statisticians and we hope the community will submit proposals for it. Steve From the DMS listserve: Dear Colleagues, A new

Announcements

Add Create a new announcement for display here.

Add

To join, visit:
community.amstat.org/participate/join-community
and **search for**:
Funding Opportunities
Or, **sign-up** today on the circulating sheet!



External Funding Sources website

https://www.amstat.org/ASA/Your-Career/External-Funding-Sources.aspx?hkey=fcbc4fca-5d3e-43bd-94e6-9848bc3d0830

TWEETS 3,458 | FOLLOWING 762 | FOLLOWERS 1,706 | LIKES 884

ASA Science Policy

@ASA_SciPol FOLLOWS YOU

American Stat. Assoc. SciPolicy Director: raising the profile of statistics in policymaking and advocating on interests of statisticians; Steve Pierson tweeting

Alexandria, VA

amstat.org/policy

Joined November 2011

Tweets | Tweets & replies | Media

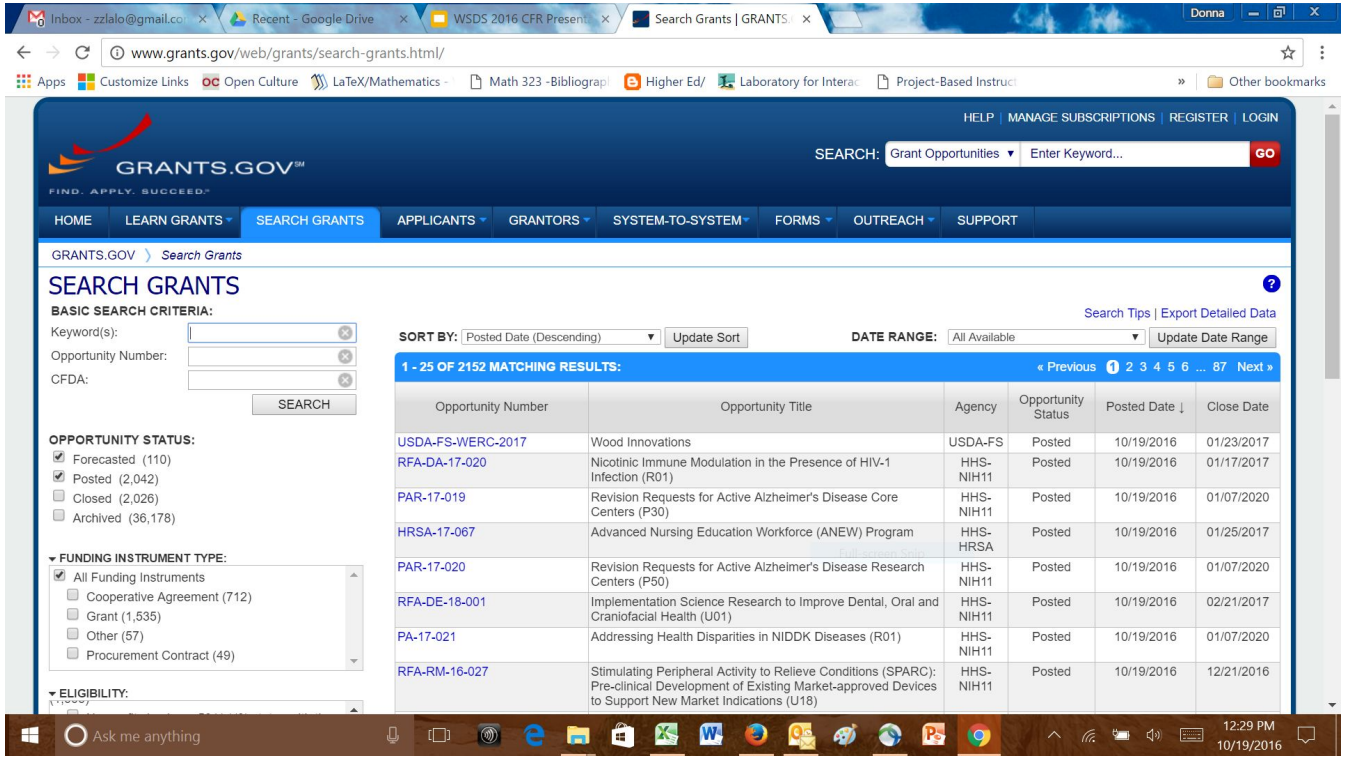
ASA Science Policy @ASA_SciPol · 13h

Call for Papers - IEEE Workshop on Methodologies & Tools to Improve Big Data Projects; Deadline extended to 10/15 midp.info

2 2

Navigating the funding world (and their websites!)

Navigating the funding world

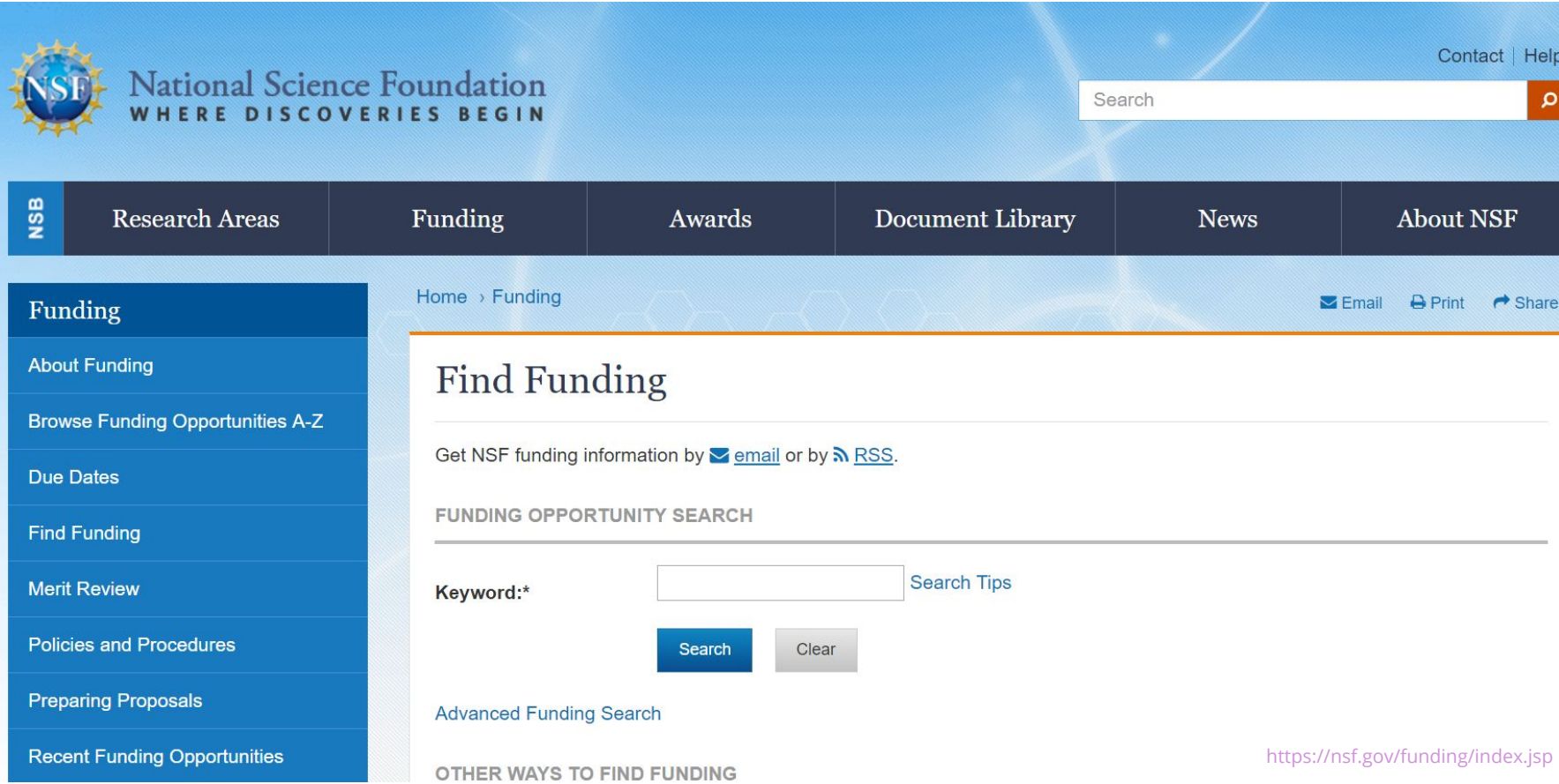


@grantsdotgov

Navigating the funding world

@NSF_MPS

Navigating the funding world



Navigating the funding world

Home | Outreach Events | Fall 2016 Conference | Get Notified | NSF Policies & Procedures | Contact Us

National Science Foundation
Outreach Notifications
Sign Up

REGISTRATION FULL! Fall 2016 NSF Grants Conference

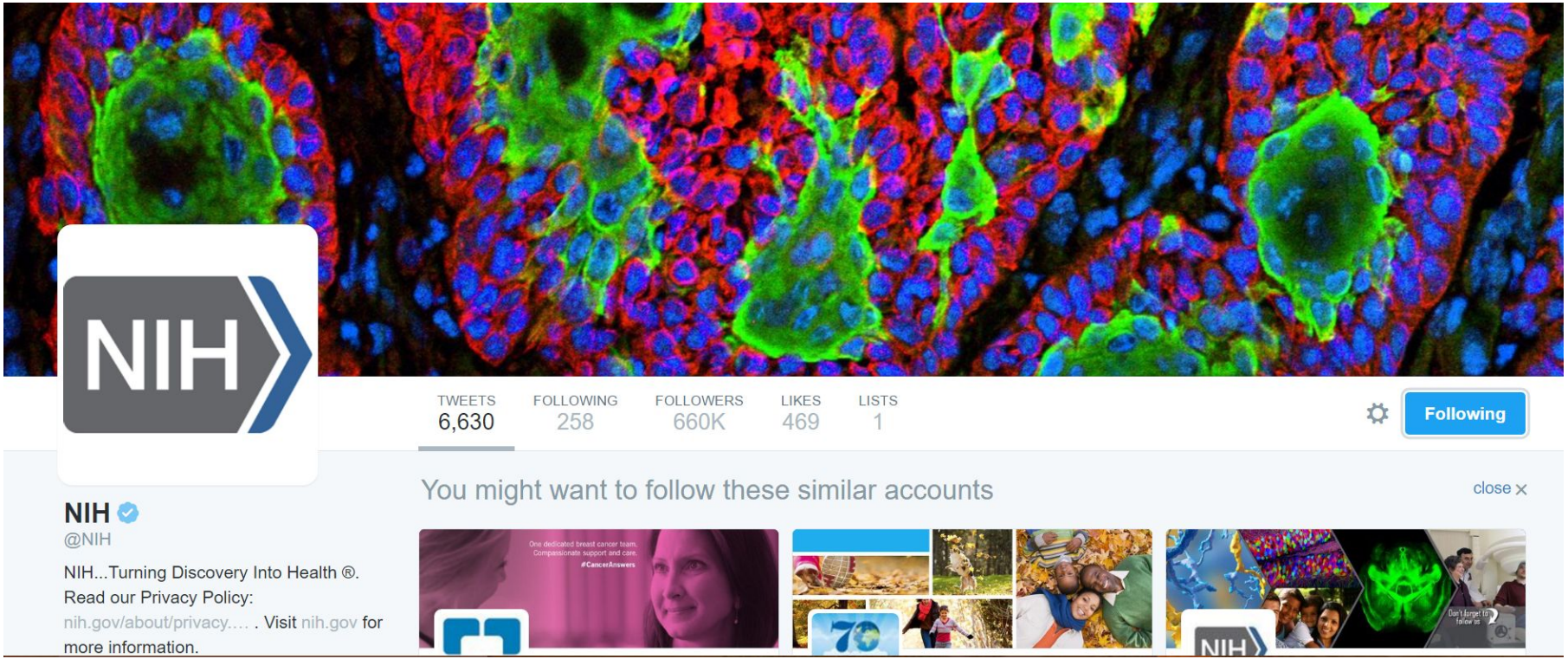
The NSF Fall Grants Conference has reached full capacity. Our waiting list has also closed. Please consider attending our next conference, which will take place on June 5-6, 2017 at a location to be determined. If you are not already on our email list, please click 'Get Notified' on the website menu above to receive our notifications.

Webcasts
Watch webcasts from the Fall 2015 NSF Grants Conference.

Recent Presentations
View presentations from the most recent NSF Grants Conference, hosted by Portland State University February 29 – March 1, 2016.

Proposal & Award Policy Guidance
Visit NSF's website to review the organization's most recent presentation on proposal and award policy updates.

Navigating the funding world



@NIH

Navigating the funding world

NIH National Institutes of Health
Office of Extramural Research

Grants & Funding
NIH's Central Resource for Grants and Funding Information

Entire Site | Search this Site

eRA | Glossary & Acronyms | FAQs | Help

HOME | ABOUT GRANTS | FUNDING | POLICY & COMPLIANCE | NEWS & EVENTS | ABOUT OER

Home » Funding

- Grants (NIH Guide to Grants and Contracts)
- Research Training and Career Development
- Contracts
- Loan Repayment Programs

Funding

NIH offers funding for many types of grants, contracts, and even programs that help repay loans for researchers. Learn about these programs, as well as about NIH's budget process, grant funding strategies, and policies, and more.

Grants (NIH Guide to Grants and Contracts)

The NIH Guide for Grants and Contracts is our official publication for NIH grant policies, guidelines and funding opportunities. We publish daily, and issue a table of contents weekly. Learn more about the NIH Guide and subscribe today!

View all Parent Announcements
(for unsolicited applications)

Search for funding opportunities and notices

Avoid Grant Scams

Related Resources

- NIH Funding Strategies
- Types of Grant Programs
- Find and Understand Funding Opportunity Announcements

grants.nih.gov/funding

Navigating the funding world

National Institutes of Health
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HOME | ABOUT GRANTS | FUNDING | POLICY & COMPLIANCE | NEWS & EVENTS | ABOUT OER

Home » About Grants » Grants Basics

- Grants Basics
  - Understand NIH
  - What Does NIH Look For
  - Who is Eligible
  - Types of Grant Programs
  - Types of Applications
- Grants Process Overview
- Plan Your Application
- How to Apply +
- Receipt & Referral
- Peer Review
- Pre-Award and Award Process
- Post-Award Monitoring and Reporting
- Forms Library
- Information For +

Grants Basics

Before getting started, learn why it is important to understand the structure of NIH and how we approach grant funding, what types of organizations and people are eligible to apply, what we look for in a research project, and the types of grant programs we offer.

Understanding NIH: Finding the Right Fit for Your Research

As you begin your journey in search of NIH grant funding, learn why understanding the structure of NIH is important to successfully navigate the grants process. Learn more.

What Does NIH Look For?

The NIH provides financial support in the form of grants, cooperative agreements, and contracts to support the advancement of the NIH mission to enhance health, extend healthy lives, and reduce the burdens of illness and disability. We encourage submission of unique projects of high scientific caliber. Learn more about our interest in both NIH-requested research and unsolicited research projects. Learn more.

Who is Eligible

grants.nih.gov/grants/grant_basics.htm

Game Time!

Alphabet Soup

How many of the following funding-related acronyms can you “spell” out?

1. NSF	7. NIBIB
2. NIH	8. DOD
3. NCI	9. ARO
4. DMS	10. DDDAS
5. DHIT	11. SBE
6. DARPA	12. BAA

Alphabet Soup

How many of the following funding-related acronyms can you “spell” out?

1. **NSF** = National Science Foundation	7. **NIBIB** = National Institute of Biomedical Imaging and Bioengineering
2. **NIH** = National Institutes of Health	8. **DOD** = Department of Defense
3. **NCI** = National Cancer Institute	9. **ARO** = Army Research Office
4. **DMS** = Division of Mathematical Sciences	10. **DDDAS** = Dynamic Data Driven Application Systems
5. **DHIT** = Division of Health Informatics Technologies	11. **SBE** = Social, Behavioral and Economic Sciences
6. **DARPA** = Defense Advanced Research Projects Agency	12. **BAA** = Broad Agency Announcement

Connecting statisticians with funding agencies

Connecting statisticians and funding agencies

Monthly calls with funding agency representatives

Over the past year, CFR invited funding agency representatives to join some of our monthly calls:

- Jennifer Roberts and Wade Shen, Defense Advanced Research Projects Agency (DARPA)
- Joseph Myers, Mathematical Sciences, Army Research Office (ARO)
- Frederica Darema, Air Force Office of Scientific Research, Dynamic Data Driven Application Systems (DDDAS)
- NIH
    - Grace Peng, National Institute of Biomedical Imaging and Bioengineering (NIBIB)
    - Dr. Vinay Pai, NIBIB Division of Health Informatics Technologies (DHIT)
- NSF
    - Sara Kiesler, NSF Social Behavioral & Economic Sciences (SBE)

Tip for early career researchers: Look at other agencies besides NSF/NIH. There may be opportunities that don't require the time commitment of an NSF/NIH grant and could be relatively less competitive.

Connecting statisticians and funding agencies

Common themes

- Identify a scientific research question
- Engage with discipline-specific scientists as collaborators (vs. apply as individual PI)
- Browse websites for requests for proposals, Broad Agency Announcements (BAA), examples of funded projects, and other funding opportunities
- Contact program officers in the early stages of applying
- Accept opportunities to engage as statisticians with funding agencies, either as applicants or as reviewers

Connecting statisticians and funding agencies

Defense Advanced Research Projects Agency (DARPA)

Jennifer Roberts and Wade Shen

- DARPA is mission-focused: applications around national security but funds research at earlier stages.
- Two offices having most overlap with statisticians:
  - Information Innovation Office (I2O), http://www.darpa.mil/about-us/offices/i2o - most relevant I2O programs for statistics deal with data analysis and cybersecurity
  - Defense Sciences Office (DSO), http://www.darpa.mil/about-us/offices/dso
- Tip: Better to apply as part of a team (vs. as individual PI)
- More information, specifically funding opportunities:
  - www.darpa.mil/work-with-us/opportunities - for Broad Agency Announcements (BAA)
  - www.fbo.gov - Federal Business Opportunities, for complete listing of BAA
  - http://opencatalog.darpa.mil - DARPA Open Catalog

Connecting statisticians and funding agencies

Mathematical Sciences, Army Research Office (ARO)

Joseph Myers

- ARO has probability and statistics, whereas Office of Naval Research (ONR) and Air Force Office of Scientific Research (AFOSR) do not
- Average grant size: $120K/year for 3 years for single investigator
- Current thrusts include:
  - Stochastic Analysis and Control
  - Statistical Analysis and Methods
- Tips:
  - Young Investigator Program (YIP) - included in the ARL Core BAA for Basic and Applied Scientific Research (search BAA page below)
  - Look at scientific opportunity (fundamental scientific question) intersected with potential impact for Department of Defense (DOD)
- More information:
  - http://www.arl.army.mil/www/default.cfm?Action=6&Page=8 - for Broad Agency Announcements (BAA)

Connecting statisticians and funding agencies

Dynamic Data Driven Application Systems (DDDAS), Air Force Office of Scientific Research / DOD

Frederica Darema

- Smaller, more focused than NSF
- Process for submitting a proposal
  - Submit a whitepaper that will be used to decide whether you'll be invited to submit a full proposal
- Tips:
  - Best timing: February - March to avoid slipping into following fiscal year considerations
  - Engage with domain scientists as collaborators
- More information:
  - Air Force Office of Scientific Research: http://www.wpafb.af.mil/afrl/afosr
  - DDDAS websites: http://www.1dddas.org/home, http://www.dddas.org/
  - Dr. Darema's presentation:

    http://cyberbridges.org/2012/Darema-CyberBridgesKeynoteNSF-June-2012-OverlaysExpanded.pdf

Connecting statisticians and funding agencies

Mathematical Modeling, Simulation, and Analysis at the National Institute of Biomedical Imaging and Bioengineering (NIBIB) / NIH

Grace Peng

- Supports three directions:
  - Mathematical models and computational algorithms with potential clinical or biomedical applications
  - Simulation algorithms for understanding and prediction of health and disease
  - Novel methods for analysis of complex biomedical systems, clinical diagnosis and patient monitoring
- Interagency Modeling and Analysis Group (IMAG) - supports funding initiatives targeted to multiscale modeling of biomedical, biological, and behavioral systems; consists of program officers from multiple U.S. Government agencies; facilitates the Multiscale Modelling (MSM) Consortium of investigators, featuring working groups, etc
- More information:
  - https://www.nibib.nih.gov/research-funding/mathematical-modeling-simulation-and-analysis

Connecting statisticians and funding agencies

Division of Health Informatics Technologies (DHIT) at the NIBIB / NIH

Vinay Pai

- Dr. Pai's Program Areas:
  - **Biomedical Informatics** - development of structures and algorithms to improve collection, storage, classification, retrieval, integration, analysis, and dissemination of biomedical data
  - **Image Processing, Visual Perception and Display** - development of algorithms for post-acquisition image processing and analysis; models and analysis tools to evaluate and improve perception of medical images; and statistical models for evaluation of observer performance; optimization of image display for improved detection
- Tip:
  - Engage as part of a team (vs. as individual PI)
- More information:
  - https://www.nibib.nih.gov/research-funding/division-health-informatics-technologies-dhit

Connecting statisticians and funding agencies

Social, Behavioral, and Economic Sciences (SBE), NSF

Sara Kiesler

- Dr. Kiesler is a computer scientist with the following program areas:
  - Smart and Connected Communities (SCC)
  - Secure and Trustworthy Cyberspace (SaTC)
- Sees need for more sophisticated statistical work, but not much involvement by statisticians
  - Currently, statistical work by non-statisticians is being funded
  - Especially the case in SaTC
- Tips:
  - To be invited to serve on a review panel, it helps to first serve as a PI
  - Watch for “Dear Colleague” letters, an upcoming one encouraging new collaborations of computer scientists with SBE scientists
- More information:
  - SCC Website: https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505364&org=SBE&from_org=SBE
  - SaTC Website: https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=504709

Tips from the experts

Tips from the experts

Advice from NSF: How NOT To Get Funded by NSF (Fast Path)

- Assume deadlines are not enforced
  - Example: If the deadline is 5:00 pm and your proposal comes in at 5:01pm, you are out of luck. The fastlane computer is as sympathetic as HAL was in *2001 A Space Odyssey*.
- Assume page limit and font size restrictions are not enforced
- Leave out any discussion of Postdoc Mentoring
- Don't include Results of Prior Support in the Project Description
- Leave out any discussion of Broader Impacts from the Project Description
- Assume the program guidelines have not changed, or better yet, ignore them

Source: NSF Division of Astronomical Sciences, NSF Division of Undergraduate Education, and Middlebury College Professor Emeritus Frank Winkler

Tips from the experts

Advice from NSF: How NOT To Get Funded by NSF (Slow Path)

- Cram as much into the Project Description as possible
- Substitute flowery prose for concrete examples
- Make the figures really small
- Cut your proposal budget until you can't do the project, or Inflate your proposal budget to allow for negotiations
- Provide a generic letter of commitment for your genuine supporters to use
- Don't download the completed proposal to make sure it's OK
- Don't proof read

Source: NSF Division of Astronomical Sciences, NSF Division of Undergraduate Education, and Middlebury College Professor Emeritus Frank Winkler

Tips from the experts

Advice from NSF: How NOT To Get Funded by NSF (Slow Path)

- Don’t put your work in context
- No matter what you do, don’t talk to your Program Officer. They might offer advice, tips, or ideas for funding.
- It’s also not a good idea to try to sit on some panels to get a feel for what successful proposals look like.

Source: NSF Division of Astronomical Sciences, NSF Division of Undergraduate Education, and Middlebury College Professor Emeritus Frank Winkler

Tips from the experts

Advice from NIH

- Understand NIH
- Use RePORTER to Help Identify Where Your Research Fits
- Contact NIH
- Ensure Your Idea is Original
- Find a Funding Opportunity Announcement
- Determine Application Submission Date
- Plan within your Institution
- Obtain Any Prior Approvals from NIH
- Get to Know the NIH Peer Review Process & Criteria
- Consider These Additional Application Elements
- Organize Your Time to Complete the Application

(Each of the above bullet points is a hyperlink to more information)

Tips from the experts

Advice from NIH: Preparing your application

- Make sure your specific research aims can be accomplished within the proposed time and resources.
- Make sure you have adequate preliminary data.
- Consider identifying experienced investigators in your organization, or in other organizations, who might be able to review a draft of your application and provide you feedback.
- Develop a feasible timeline with draft application deadlines. Be realistic about the time it can take to write and revise the application, incorporate feedback, and get the application to your Office of Sponsored Research on time.
- Build in extra time for unforeseen circumstances (e.g. equipment issues, personnel issues, etc.)
- We strongly recommend you plan submit your application to NIH well ahead of the deadline (days, not hours).

Tips from the experts

Advice from a Department Chair

- Don’t wait to the last minute
- Find others to read the grant and get their feedback
  - statisticians and non-statisticians
  - people familiar with your work and others who are not
- Learn how to read grant reviews (and also how not to take them personally!)
  - One of the downsides of “blinded” peer review is that reviewers will often say something that they wouldn’t otherwise say if they had to be identified (this is true for manuscripts as well!).

Tips from the experts

Advice from a Department Chair

- Keep in mind that submitting a grant is a **crapshoot** – how you fare is very much a function of who reviews the grant, and that you could send the same grant to two different study sections, and get completely different reviews.
    - This is especially hard with resubmissions, when you could address all the first reviews' comments, but then have a new set of reviewers who find new things. There is just nothing you can do about this!

- **Keep trying.** We are in a situation when getting funding is not easy, and faculty these days have to submit a lot more grants (or the same grant multiple times) in order to have the "hit" rate that people 20 years ago had.
    - This does not necessarily reflect on this generation's scientists, but is more a function of the number of scientists and the amount of money devoted to research.

- Look for **alternative funding sources** (besides NSF and NIH), e.g. Robert Wood Johnson Foundation, the American Heart Association, etc.

Tips from the experts

Advice from a Dean

- Start **early in your career** and look for opportunities that are slated for early-career faculty

- Use **every** outlet at your university/institution to help you
  - Get early review from colleagues
  - Take classes in proposal writing
  - Go to the research office to see if they provide example proposals, or writing help.
  - In medical settings, medical schools often do very good training for MD researchers. See if you can get in those classes.

- **Talk** to the program / project officer (some people are reluctant to do this)

Tips from the experts

Advice from a Dean

- **Avail** yourself of every professional opportunity to learn
- Write the proposal for the reviewers, not yourself. If the reviewers are not statisticians, or the majority are not, know that and **write for that audience**.
- Getting money is **hard** but **not impossible**.

YOUR Top 10 List

Discussion

- What lessons have you learned or tips would you like to share with us?

Questions?

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Donna - DonnaL@amstat.org