NSF GRANTS CONFERENCE

Spring 2019

Directorate for Social, Behavioral & Economic Sciences

Betty Tuller, Ph.D.
SBE/BCS
May 2019

BACKGROUND

National Science Foundation (NSF)

- Independent federal agency created in 1950

- NSF Mission
    - To promote the progress of science;
    - To advance the national health, prosperity, and welfare;
   - To secure the national defense

NSF Funds All Fields of Science & Engineering

Biological Sciences
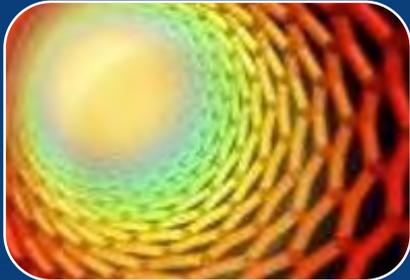
Engineering
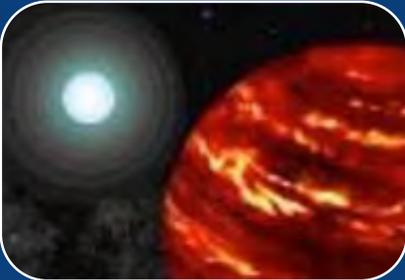
Mathematical & Physical Sciences

Computer & Information Science & Engineering

Geosciences (including Polar Programs)

Integrative Activities

Education & Human Resources

Social, Behavioral & Economic Sciences (SBE)

International Science and Engineering

NSF Support of Academic Basic Research in Selected Fields

Field	Percentage
All Science & Engineering Fields	24%
Physical Sciences	40%
Engineering	41%
Environmental Science	59%
Mathematics	61%
Social & Psychological Sciences	67%
Biology	68%
Computer Science	82%
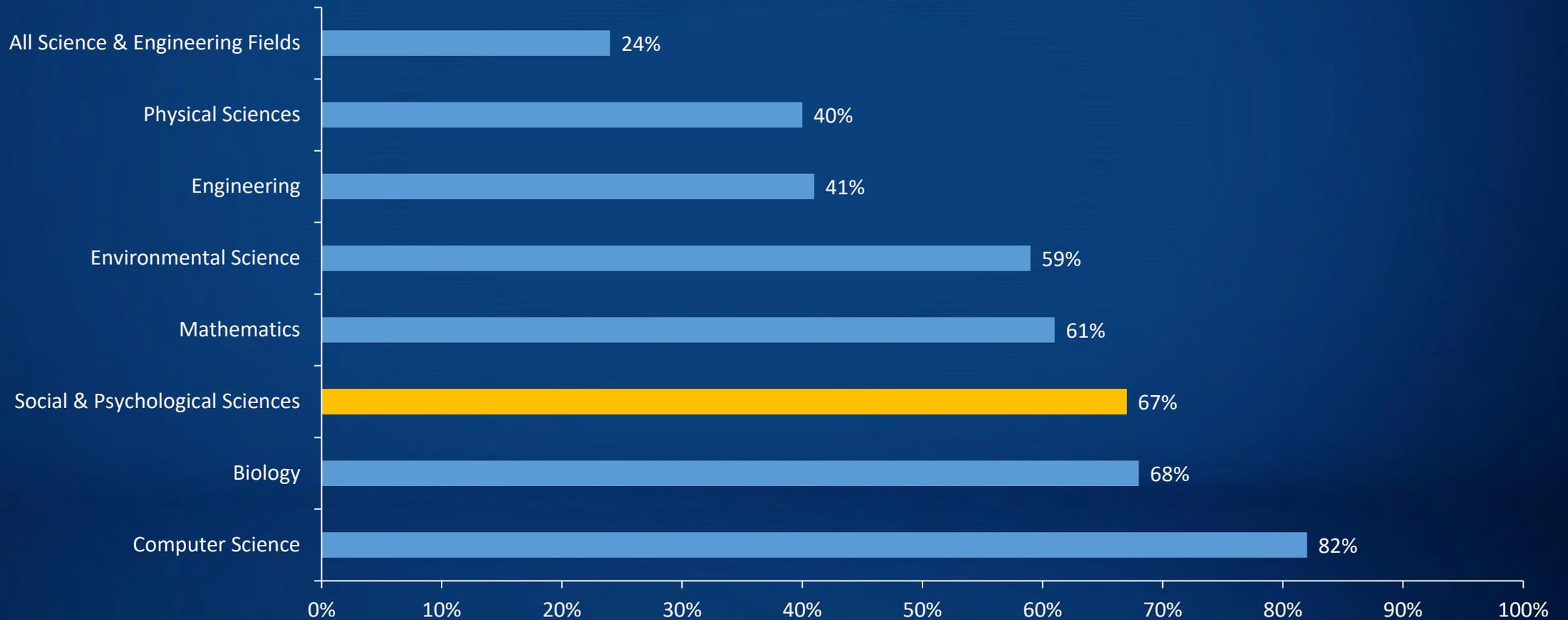
- **SBE's mission is to promote the understanding of people and their lives by supporting research that reveals basic facets of human behavior, social organizations, and institutions**

- **SBE also aims to provide mission-critical statistical information about science and engineering (S&E) in the U.S. and the world through the National Center for Science and Engineering Statistics (NCSES)**

SBE Mission

Directorate for Social, Behavioral and Economic Sciences

Arthur "Skip" Lupia

Assistant Director

Kellina Craig-Henderson

Deputy Assistant Director

Behavioral and Cognitive Sciences

Social and Economic Sciences

National Center for Science and Engineering Statistics

Office of Multidisciplinary Activities

Marc Sebrechts
Division Director

Alan Tomkins
Acting Division Director

Emilda Rivers
Division Director

- Research Experiences for Undergraduates Sites
- SBE Postdoctoral Research Fellowships
- Science of Science and Innovation Policy

- Archaeology
- Biological Anthropology
- Cultural Anthropology
- Geography and Spatial Sciences
- Cognitive Neuroscience
- Developmental Sciences
- Linguistics
- Perception, Action and Cognition
- Science of Learning
- Social Psychology

- Economics
- Political Science
- Sociology
- Decision, Risk and Management Sciences
- Law and Social Sciences
- Methodology, Measurement and Statistics
- Science of Organizations
- Science, Technology and Society
- Secure & Trustworthy Cyberspace

- Statistical information about science and engineering in the U.S. and the world
  - The nation's investment in R&D
  - Education and workforce info of scientists and engineers
- Developing indicators of the nation's competitiveness and innovation capacity

NSF

Behavioral and Cognitive Sciences (BCS) Division

- Supports research to develop and advance scientific knowledge on:
  - Human cognition
  - Language
  - Social behavior
  - Culture
  - Interactions between human societies and the physical environment

Marc Sebrechts
BCS Division Director

Archaeology and Archaeometry

- Funds research that furthers anthropologically relevant archaeological knowledge.

- While within the broad range of "archaeology" the focus is on projects judged to be significant from an anthropological perspective.

- Program sets no priorities based on time period, geographic region or specific research topic.

- The Program administers "senior" archaeology, archaeometry, doctoral dissertation and "high risk" competitions.

Program Director John Yellen: jyellen@nsf.gov

Biological Anthropology

- Supports basic research in areas related to human evolution and contemporary human biological variation.

- Research areas supported include, but are not limited to:
  - human genetic variation
  - human and nonhuman primate ecology and adaptability
  - human osteology and bone biology
  - human and nonhuman primate paleontology
  - functional anatomy
  - primate socioecology

Program Director: Rebecca Ferrell (rferrell@nsf.gov)

Cognitive Neuroscience

- Funds highly innovative proposals that use brain-based measurements in order to advance our understanding of the neural systems that mediate cognitive processes.

- Human cognitive science encompasses a wide range of topics, including attention, learning, memory, decision-making, language, social cognition, and emotions.

- Proposals will be considered that investigate a particular cognitive process using human brain data.

Program Director: Kurt Thoroughman (kthorough@nsf.gov)

Cultural Anthropology

- Supports fundamental, systematic anthropological research and training to increase understanding of the causes, consequences, and complexities of human social and cultural variability

- The overarching research goals should be to produce empirically grounded findings that will be generalizable beyond particular case studies and contribute to building a more robust anthropological science of human society and culture.

Program Director: Jeffrey Mantz (jmantz@nsf.gov)

Developmental Sciences (DS)

- Supports basic research that increases our understanding of cognitive, linguistic, social, emotional, cultural, motor, and biological processes related to human *development* across the lifespan.

- Supports work with any appropriate population for the topics of interest, including infants, children, adolescents, adults, and non-human animals

- The program also supports research investigating factors that affect developmental change including family, peers, school, community, culture, media, physical, genetic, and epigenetic influences.

Program Director: Chalandra Bryant (cbryant@nsf.gov)

Perception, Action & Cognition (PAC)

- Funds theoretically motivated research aimed at understanding a wide array of basic perceptual, motor, and cognitive processes and their interactions

- The program welcomes perspectives such as individual differences, symbolic and neural-inspired computation, ecological approaches, genetics and epigenetics, nonlinear dynamics and complex systems, experimentation, and modeling

Program Officers: Betty Tuller (btuller@nsf.gov) &

Larry Gottlob (lgottlob@nsf.gov)

Social Psychology

- Supports research and research infrastructure to advance basic knowledge in social psychology
  - Social Cognition
  - Attitudes
  - Social Influence
  - Stereotypes
  - Group Dynamics
  - Aggression
  - Close Relationships
  - Social Neuroscience
  - Emotions
  - Social Development
  - Learning
  - Helping
  - Health
  - Personality

Program Director: Steven Breckler (sbreckle@nsf.gov)

15

Geography & Spatial Sciences (GSS)

- Supports basic science research on topics across the full spectrum of geography (human <-> physical; cartography and GIS) and spatial sciences

- Theoretically strong projects emphasizing spatial dynamics and analytics are especially welcome.

- Regular Proposals

- Doctoral Dissertation Proposals (accepted at any time).

GSS Program Officer can be reached at <u>gss-info@nsf.gov</u>

Linguistics

Supports basic scientific research in human languages, including grammatical properties of human languages, and of natural language generally, as well as interdisciplinary research to address such questions

- The psychological/computational/acoustic/physiological processes in the production, perception, and comprehension of language.
- Role of human neurobiology in shaping the various grammatical properties of language.
- How language develops in children.
- Social and cultural factors underlie language variation and change

Documenting Endangered Languages: NSF/NEH partnership
- to develop and advance knowledge concerning endangered human langu
- data management and archiving

Program Directors: Bill Badecker (wbadecke@nsf.gov) &
Joan Maling (jmaling@nsf.gov)
DEL: Colleen Fitzgerald (cfitzger@nsf.gov)

17

Science of Learning

- Aims to develop basic theoretical insights and fundamental knowledge about learning principles, processes and constraints

- Support research addressing learning in a wide range of domains at one or more levels of analysis including: molecular/cellular mechanisms; brain systems; cognitive affective, and behavioral processes; and social/cultural influences.

- Supports a variety of methods including: experiments, field studies, surveys, secondary-data analyses, and modeling.

Program Director: Soo-Siang Lim (slim@nsf.gov)

Social and Economic Sciences (SES) Division

- Seeks to enhance our understanding of human, social and organizational behavior by supporting disciplinary and interdisciplinary research that advances knowledge in the social and economic sciences, and by building social science infrastructure

Alan Tomkins
Acting SES Division
Director

Economics

- Supports theoretical and empirical research that improves understanding of institutions and processes of economics

- Emphasizes and fund *rigorous* research in economics

- Only Federal government program with broad mandate to maintain and *strengthen basic economic science.*

- *Transformative/innovative* are two operative words

- Funds research in all sub-fields of economics

- Strongly support inter-disciplinary research---across SBE and across the Foundation

Program Directors: Nancy Lutz (nlutz@nsf.gov); Kwabena Gyimah-Frempong (kgyimahb@nsf.gov), & Senay Agca (sagca@nsf.gov)

Decision, Risk, and Management Sciences (DRMS)

- Supports research that explores fundamental issues in judgment and decision making, risk analysis, management science, and organizational behavior

- Research must be relevant to an operational or applied context, grounded in theory, and based on empirical observation or subject to empirical validation

Program Directors: Jon Leland (jleland@nsf.gov) & Robert O'Connor (roconnor@nsf.gov)

Political Science

- Supports scientific research that advances knowledge and understanding of citizenship, government, and politics

- Substantive areas include, but are not limited to:
  - American government and politics
  - Comparative government and politics
  - International relations
  - Methodology
  - Other topics such as public policy and public administration

Program Director: Brian Humes (bhumes@nsf.gov)

Sociology

- Supports theoretically-grounded research on systematic patterns of social relationships examining the causes and consequences of human behavior, social structure and social change, from micro to macro levels of interaction.

- Topics include, but are not limited to:
  - Stratification, labor markets, mobility, social change, environment
  - Organizations, networks, economic and workplace change
  - Crime, delinquency, social organization and social control
  - Race, ethnicity, social identity/interactions, culture, education
  - Family, gender, population, migration, immigration
  - Social movements, political processes, globalization and more

Supports research that uses the range of social science methods.

Program Directors: Toby Parcel: tparcel@nsf.gov &

Joseph Whitmeyer: jwhitmey@nsf.gov

Science, Technology, & Society (STS)

- STS supports research that that uses historical, philosophical, and social scientific methods to investigate the intellectual, material, and social facets of the STEM disciplines, including medicine.

- It encompasses a broad spectrum of STS topics including interdisciplinary studies of ethics, equity, governance, and policy issues closely related to STEM.

- Proposed projects should provide new, important scientific insights into STEM theory or practice, or into the adoption, use, or diffusion of technology.

- It should bring to light underlying assumptions, practices, methods, values, or goals of science, engineering, or technology.

Program Director: Frederick Kronz (fkronz@nsf.gov)

Law & Social Sciences (LSS)

Funds research that:

- addresses social scientific studies of law and law-like systems of rules
- advances scientific theory and understanding of the connections between law or legal processes and human behavior

Fields of study include many disciplines, and often address problems including, though not limited to:

- Crime, Violence and Punishment
- Economic Issues
- Governance
- Legal Decision Making
- Legal Mobilization and Conceptions of Justice
- Litigation and the Legal Profession

Program Directors: Brian Bornstein (bbonste@nsf.gov) & Reginald Sheehan (rsheehan@nsf.gov)

Science of Organizations (SoO)

- Funds basic research that yields a scientific evidence base for improving the design and emergence, development and deployment, and management and ultimate effectiveness of organizations of all kinds

Program Director: Georgia Chao (gchao@nsf.gov)

Secure & Trustworthy Cyberspace

- The goals of the SaTC program are aligned with the Federal Cybersecurity Research and Development Strategic Plan (RDSP) and the National Privacy Research Strategy (NPRS) to protect and preserve the growing social and economic benefits of cyber systems while ensuring security and privacy.

  - The RDSP identified six critical areas: (1) scientific foundations; (2) risk management; (3) human aspects; (4) transitioning successful research into practice; (5) workforce development; and (6) enhancing the research infrastructure.

SBE Program Director: Sarah Kiesler (skiesler@nsf.gov)

SBE Office of Multidisciplinary Activities (SMA)

- SMA supports interdisciplinary research and training in the social, behavioral, and economic sciences including SBE's intersections with other science and engineering fields

Cultivating Cultures for Ethical Stem (CCE STEM)

- Supports research advancing understanding of factors that promote ethical behavior among STEM researchers, and of approaches for cultivating cultures of ethical STEM within and across science and engineering fields.

- Such factors include, but are not limited to:
  - Honor codes
  - Ethics training programs and interventions
  - Professional ethics codes & cultures within labs
  - Other research on creating and maintaining ethical STEM cultures
  - Emphasis on institutions serving under-represented groups

Program Directors: John Parker (joparker@nsf.gov) & Frederick Kronz (fkronz@nsf.gov)

Research Experiences for Undergraduates (REU)

- The Research Experiences for Undergraduates (REU) program supports active research participation by undergraduate students in any of the areas of research funded by the National Science Foundation. REU projects involve students in meaningful ways in ongoing research programs or in research projects specifically designed for the REU program.
  - **REU Sites** - independent proposals to initiate and conduct projects that engage a number of students in research.
  - **REU Supplements** - may be included as a component of proposals for new or renewal NSF grants or cooperative agreements or may be requested for ongoing NSF-funded research projects

Program Director: Josie Welkom (jwelkom@nsf.gov)

Science of Science and Innovation Policy (SciSIP)

- Supports research designed to advance the scientific basis of science and innovation policy.

- The program funds research to develop models, analytical tools, data and metrics that can be applied in the science policy decision-making process and concern the use and allocation of scarce scientific resources.

Program Director: Cassidy Sugimoto (csugimot@nsf.gov)

SBE Postdoctoral Research Fellowships (SPRF)

- The goals of the SBE Postdoctoral Research Fellowship (SPRF)are to:
  - Promote fundamental research in the SBE sciences
  - Enhance the participation of underrepresented groups
  - Provide an opportunity for independence and advanced training under the direction of a sponsoring scientist

- Two Tracks: 1) Fundamental Research

    2) Broadening Participation

1) Applications are submitted directly by, and awards are made directly to, the Fellowship candidate and

2) Fellowship candidates identify a sponsoring scientist and a host institution

Program Director: Josie Welkom (jwelkom@nsf.gov)

National Center for Science & Engineering Statistics (NCSES)

- The National Center for Science and Engineering Statistics (NCSES) is the nation's leading provider of statistical data on the U.S. science and engineering enterprise

- The National Center for Science and Engineering Statistics (NCSES), formerly the Division of Science Resources Statistics, was established within the National Science Foundation by Section 505 of the America COMPETES Reauthorization Act of 2010

Emilda Rivers
NCSES Division Director

NCSES Core Activities

- Gather science and technology (S&T) -relevant data from other agencies and organizations

- Develop and maintain databases on Research and Development (R&D), Science and Engineering (S&E) education, the S&E workforce, and related areas

- Provide global context for U.S. data and enable comparisons and benchmarking through national and international collaborations

- Prepare and publish periodic reports for a broad clientele

Cross-Directorate Initiatives

Relevant Cross-Directorate Initiatives

- Cultivating Cultures for Ethical STEM (**CCE STEM**)
- Cyberlearning for Work at the Human-Technology Frontier (**Cyberlearning**)
- Dynamics of Coupled Natural and Human Systems (**CNH**)
- Historically Black Colleges and Universities Excellence in Research **(HBCU-EiR)**
- Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science (**INCLUDES**)
- Integrative Strategies for Understanding Neural and Cognitive Systems (**NCS**)
- Collaborative Research in Computational Neuroscience (**CRCNS**)
- Innovation Corps **(I-Corps)**
- Resource Implementations for Data Intensive Research in the Social, Behavioral and Economic Sciences **(RIDIR)**
- Innovations at the Nexus of Food, Energy and Water Systems **(INFEWS)**

NSF Big Ideas

RESEARCH IDEAS

Harnessing the Data Revolution — Harnessing Data for 21st Century Science and Engineering

Work at the Human-Technology Frontier: Shaping the Future

Windows on the Universe: Multi-messenger Astrophysics

Quantum Leap: Leading the Next Quantum Revolution

Navigating the New Arctic

Understanding the Rules of Life: Predicting Phenotype

PROCESS IDEAS

Mid-scale Research Infrastructure

NSF 2026

Growing Convergence Research at NSF

NSF INCLUDES: Enhancing STEM through Diversity and Inclusion

Standard Submission Process
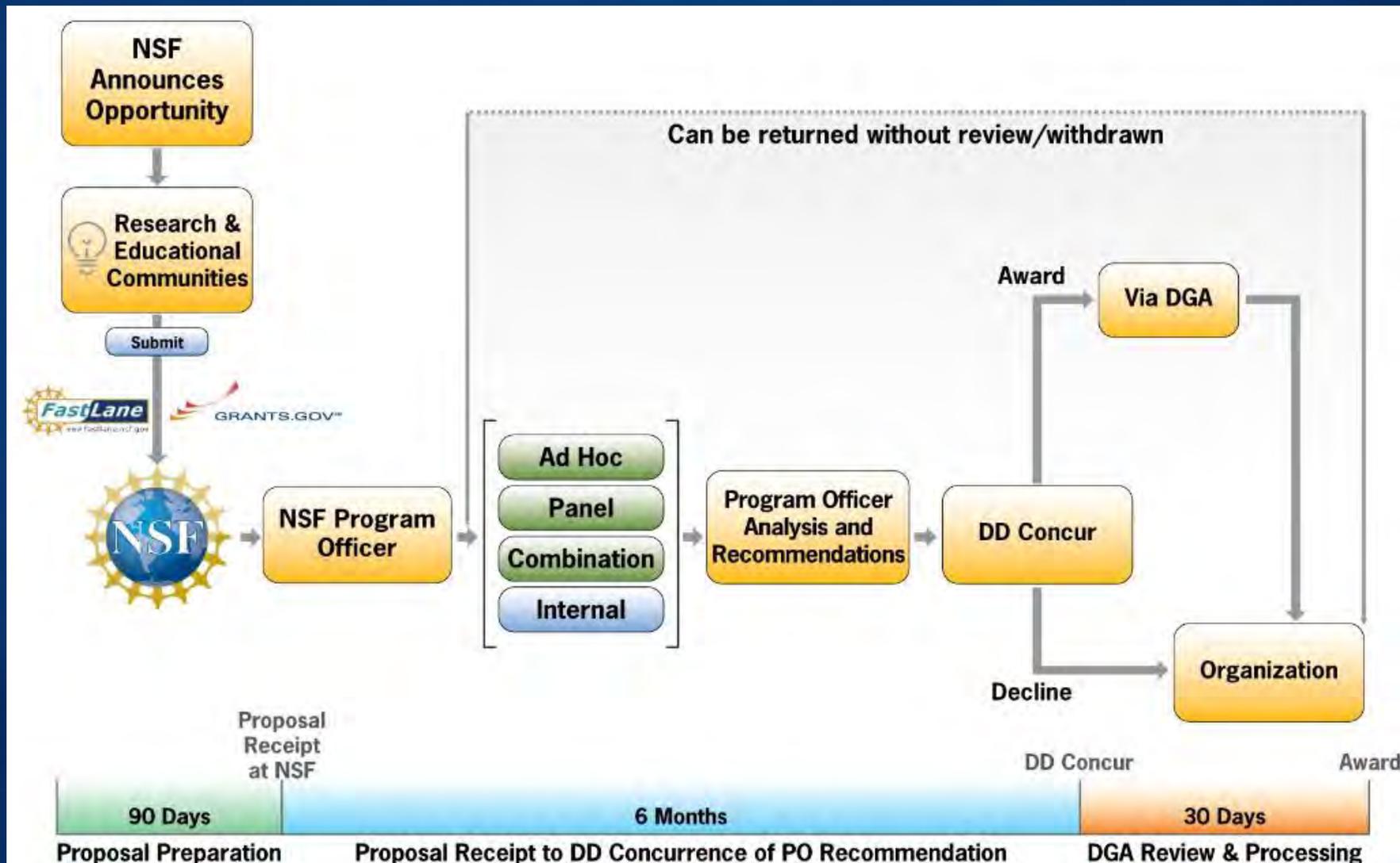
* There are some exceptions to submission procedures (e.g., individual awards such as postdoctoral fellowships)

Navigating NSF Documents/ Websites

Review the SBE Programs Page: https://nsf.gov/funding/programs.jsp?org=SBE
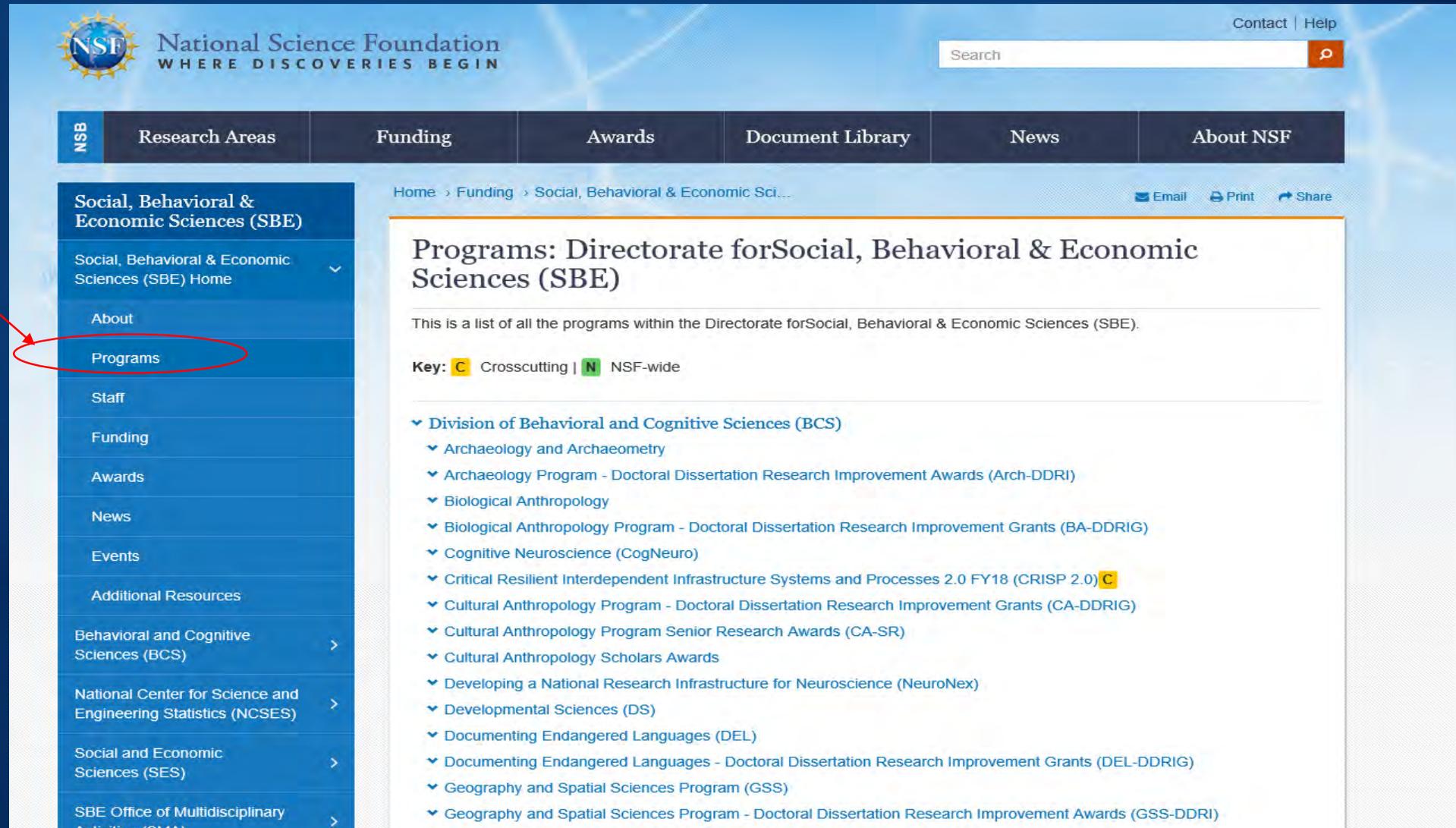
Find the Right Program (e.g., DS program webpage)

Find the right program: (scrolling down....)

How do I know if my research is relevant to a particular program?

Click this!

Find the Right Program: Awards recently made

What has been funded through a particular program?

Click on a title to get the abstract

Find the Right Program: Abstracts of Awards Recently Made

You can review the abstracts of awards made through a particular program.

Program Manager:	Chalandra Bryant BCS Division Of Behavioral and Cognitive Sci SBE Direct For Social, Behav & Economic Scie
Start Date:	September 1, 2018
End Date:	August 31, 2021 (Estimated)
Awarded Amount to Date:	$756,655.00
Investigator(s):	Marianella Casasola mc272@cornell.edu (Principal Investigator) Lisa Oakes (Co-Principal Investigator) Vanessa LoBue (Co-Principal Investigator) Felix Thoemmes (Co-Principal Investigator)
Sponsor:	Cornell University 373 Pine Tree Road Ithaca, NY 14850-2820 (607)255-5014
NSF Program(s):	DS - Developmental Sciences
Program Reference Code(s):	1698
Program Element Code(s):	1698

ABSTRACT

Mental rotation, the ability to mentally manipulate a visual representation of an object and recognize its appearance from a different orientation, shows stability from infancy through preschool. This ability predicts mathematical achievement in kindergarten and beyond as well as entry into the Science, Technology, Engineering, and Mathematics (STEM) fields. The present work focuses on identifying how non-spatial processes contribute to mental rotation abilities. Findings will help identify ideal time points for intervention, advance understanding of the factors that contribute to mental rotation, and address how individual differences in mental rotation during infancy predict later abilities. This work will involve the creation and refinement of measures that can be used to trace the development of mental rotation from infancy into preschool; thereby, not only contributing new tools to the field, but also yielding insights that can inform current theoretical conceptions of mental rotation and its relation to non-spatial processes.

The critical research question is as follows: What are the non-spatial processes that contribute to mental rotation abilities and their development? Associations between mental rotation, object features, processing bias, and motor experience will be examined using a cross-sequential design with overlapping age cohorts. The investigators will recruit an infant cohort at 8 months, a toddler cohort at 20 months, and a preschool cohort at 3 years. Each cohort will be assessed at three time points -- every six months for infants (i.e., 8, 14, and 20 months), every 8 months for toddlers (i.e., 20, 28, and 36 months), and every year for preschoolers (3, 4, and 5 years). When examined at a specific age, the sample will provide a snapshot into the association between mental rotation and non-spatial skills (i.e., object features, processing bias, and motor experience). The longitudinal design will allow the investigators to follow participants across infancy, toddlerhood, or the preschool years. This approach provides an opportunity to understand how non-spatial skills, such as more precocious motor skills during infancy, may shape mental rotation over time. Such findings are central to bolstering understanding of the possible mechanisms by which particular types of

Note:
- **Program Manager**
- **Duration**
- **Awarded amount**
- **Co-funded?**
- **Topic area**

Preparing your Application

Before you apply… READ!!!

Next Steps

After you have narrowed down to programs that match your area of research and you have read the program page and (solicitation):

Reach out to the Program Director by EMAILING a 1-page summary of your planned research project (IM and BI). Get feedback about project fit with program goals

Email ALL relevant programs in a SINGLE email.

Request a phone meeting if the program is a good fit.

- Get in touch EARLY (well before the deadline)
- Follow-up if you have not heard back within 1- week
- Ask about other relevant programs and initiatives

Intellectual Merit: the potential to advance knowledge

- Will the proposed activity advance basic science, knowledge, and understanding within its own field or across different fields?

- Is the project likely to be successful?
    - Qualifications of the proposer/ team
    - Sufficient access to resources

- To what extent does the proposed activity explore creative and original concepts?

- How well-conceived and organized is the proposed activity?

Broader Impacts: the potential to benefit society and contribute to the achievement of specific, desired societal outcomes

- Demonstrate societal impacts with specificity
- Disseminate results broadly to enhance scientific and technological understanding
- Make data available to others, where applicable/appropriate (public access)
- Enhance the infrastructure for research and education, such as facilities, instrumentation, networks and partnerships
- Broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)
- Promote teaching, training and learning   ETC!

Starting a Grant Submission: Your University Submits the Grant Proposal, Not You!

- Start your budget and figure out the direct costs on the activities that you have planned.

- Email your Sponsored Research Office

  - Get a Fastlane ID and log in and start on shorter, but required documents

  - Bring your budget draft to make sure that all necessary costs are included in calculations.

  - Find out what your campus requires for routing timelines and internal approvals are needed. Many campuses require grants to be signed off before the actual grant deadline. Plan for this time.

- Be nice to your SRO

Common Pitfalls to Avoid

- Overlooking key aspects of the program announcement and requirements

- Lacking specificity about methods and/ or predictions

- Underdeveloped or vague data analysis plan

- Disconnect between framing/ motivation and proposed activity

- Failing to establish feasibility

- Not tailoring your proposal to the appropriate audience (disciplinary vs. multidisciplinary panel)

Common Myths

- NSF only funds scholars at elite institutions
- NSF only funds "famous" academics
- Once declined, always declined
- Advisory committees make funding decisions

Your Proposal is Declined. What now?

- Develop a thick skin.
- Take time to digest the reviews and then get back up and resubmit
  - Persistence can pay off!
- Carefully consider how you will address all weaknesses (you don't get extra space) or whether you need to reformulate the project
- Schedule a time to talk to the program director (after you have had time to digest the reviews) to discuss the appropriateness and plans for resubmission

Questions