NSF Support for the Social, Behavioral, and Economic Sciences

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Outline

- Basics of the National Science Foundation
  - SBE's place in the hierarchy
- Opportunities for support of SBE research
  - Core Programs
    - Special competitions
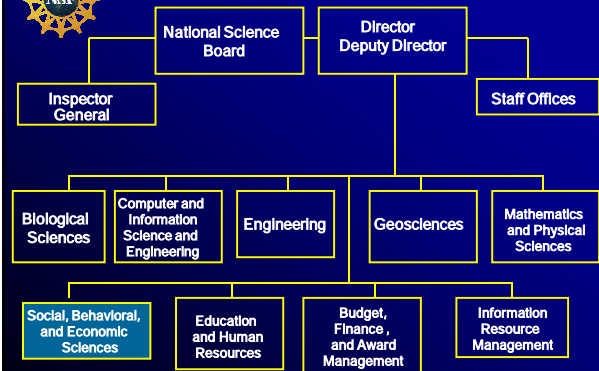- Points to remember as you think/write

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NSF in a Nutshell

- Independent agency
- Supports basic research
- Uses grant mechanism
- Low overhead; highly automated

- Discipline-based structure
- Cross-disciplinary mechanisms
- Use of rotators
- National Science Board

National Science Foundation

- National Science Board
- Director / Deputy Director
- Inspector General
- Staff Offices

- Biological Sciences
- Computer and Information Science and Engineering
- Engineering
- Geosciences
- Mathematics and Physical Sciences
- Social, Behavioral, and Economic Sciences
- Education and Human Resources
- Budget, Finance, and Award Management
- Information Resource Management

- Office of the Director
- Directorate for Social, Behavioral & Economic Sciences
  - Social and Economic Sciences
  - Behavioral and Cognitive Sciences
  - SME Multi-disciplinary Activities
  - Science Resources Statistics

What NSF Supports

NSF supports basic research across all fields of science, including:

- Behavioral and Cognitive Sciences
- Geographic and Anthropological Sciences
- Social and Economic Sciences
  - Chemical sciences
  - Computer and information science
  - Engineering
  - Geosciences
  - Life sciences
  - Mathematical sciences
  - Physics and astronomy

NSF does not support applied research, such as:

- Clinical research
- Counseling
- Business
- Management
- Social work
- Practice-oriented, professional degree programs

Much of NSF's Funding Goes to Support Basic Research

What is <u>basic</u> research?

"It's like true love!"

You can't really define it,
but you know it when it's there.

Let's Try to Describe Basic Research Anyway...

- Basic scientific research is grounded in a broader theoretical framework.
- It focuses on one or a few questions grounded in that broader framework.
- It uses scientifically sound approaches to assess the viability of answers to those questions.
- Its focused results also contribute to enhancement of broader theoretical knowledge.

As a result...

- Basic scientific research contributes to general understanding.
- It's research that's well grounded in a general theoretical framework or that generates development of new frameworks.
- It's research that's valuable even if we don't care about its specific findings or applications.
- It's research that often increases knowledge regarding how we expand knowledge.

Basic "vs." Applied Research

- It's not "either/or."
- Basic research results often have great direct and indirect utility and applicability.
- But at its core, basic research is first and foremost about broader theoretical development, not the focused application of specific research results.
- Analysis and synthesis are favored over prescription.
- Normative studies do not fare well at NSF.

How Do You Gain Access to Some of NSF's Funds?

- Submit a proposal to compete in one of the standing program competitions for "unsolicited proposals"
- Submit a proposal for a special program competition

In Addition to Its Standing Programs, NSF Has Many Special Funding Opportunities

CAREER RAPID IGERT EAGER ADVANCE
PECASE EPSCoR Minority RPGs/CAAs SciSIP
CI-TEAM SBIR RUI/ROA
REU GOALI GK-12 NANO CDI CNH TUES

Check the NSF Web site for more information or contact relevant program officers

Division of Behavioral and Cognitive Sciences

...supports research to develop and advance scientific knowledge about humans spanning areas of inquiry including brain and behavior, language and culture, origins and evolution, and geography and the environment.

Division of Social and Economic Sciences

...seeks to enhance understanding of human, social, and organizational behavior by building social science infrastructure and by supporting disciplinary and interdisciplinary research projects that advance knowledge in the social and economic sciences.

Social, Behavioral, and Economic Sciences Programs

Disciplinary

- Cultural Anthropology
- Physical Anthropology
- Archaeology
- Linguistics
- Social Psychology
- Economics
- Sociology
- Political Science

Interdisciplinary

- Cognitive Neuroscience
- Developmental and Learning Sciences
- Documenting Endangered Languages
- Perception, Action, and Cognition
- HOMINID
- Geography and Spatial Sciences
- Environmental, Social & Behavioral Science
- Decision, Risk, and Management Sciences
- Science of Science and Innovation Policy
- Innovation and Organizational Sciences
- Methodology, Measurement, and Statistics
- Science and Society
- Law and Social Sciences

The NSTC Report
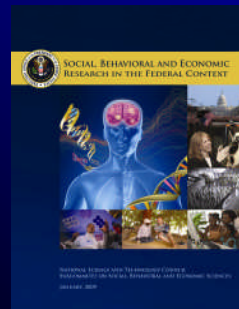
SBE Research in the Federal Context

Signed January 2009
Printed/Distributed April 2009

http://www.nsf.gov/sbe/prospectus_v10_3_17_09.pdf

Social, Behavioral, and Economic Sciences Joint Funding

Jointly Funded Programs

- Cognitive Neuroscience
- Ecology of Infectious Disease
- Biology and Society
- Dynamics of Coupled Natural and Human Systems (CNH)
- Sensors
- Nanotech & Society
- Cyber-Enabled Discovery and Innovation (CDI)
- Cyberinfrastructure
- National Security, Conflict, and Cooperation

Funding Partners

- NIH
- CISE and NIH
- BIO
- GEO
- ENG and DoD
- MPS
- NSF-Wide Initiatives
- DoD

Where to Start?

- AN IDEA (preferably a brilliant one)
- www.nsf.gov
- Check awards by program, keyword, etc. (www.nsf.gov/awardsearch/)
- Read the solicitation, program announcement, or program description carefully
- Read *Grant Proposal Guide*
- Think about scale and budget

Paths to SBE Support

- Core Program Proposals
- CAREER Proposals
- Student Support
- Internal Merit Review
- Dear Colleague Letters
- Special Solicitations

Paths to SBE Support
Core Program Research

Division of Behavioral and Cognitive Sciences
FY09 Program Allocations (millions of dollars)

Archaeology and Archaeometry	$6.9
Cultural Anthropology	$3.7
Cognitive Neuroscience	$7.6
Developmental and Learning Sciences	$6.6
Geography and Spatial Sciences	$7.0
Linguistics	$5.9
Documenting Endangered Languages	$2.1
Perception, Action, and Cognition	$7.0
Physical Anthropology	$4.1
Social Psychology	$6.4

Paths to SBE Support
Core Program Research

Division of Social and Economic Sciences
FY09 Program Allocations (millions of dollars)

Decision, Risk, and Management Sciences	$7.5
Economics	$25.8
Innovation and Organizational Sciences	$3.4
Law and Social Science	$5.1
Methodology, Measurement, and Statistics	$4.0
Political Science	$9.9
Science and Society	$9.0
Sociology	$9.5

Paths to SBE Support
Core Program Senior Research

Division Funding Rates (FY08)

Behavioral & Cognitive Sciences

Competitive Proposal Actions	Competitive Awards	Funding Rate
2,356	584	25%

Social & Economic Sciences

Competitive Proposal Actions	Competitive Awards	Funding Rate
1,931	499	26%

Paths to SBE Support
CAREER Proposals

CAREER Solicitation (NSF 08-557)

- Available in all NSF programs
- Single scholar award
- Must have doctoral degree
- Must be in a tenure-track (or comparable) position
- Must not yet have tenure
- "Three strikes and you're out" (3 proposals lifetime limit)
- $400,000, 5-years minimum award
- Mid- to late-July deadline (varies by discipline and year)
- High-prestige awards with high expectations
- Highly competitive (often <10% success rate)
- Presidential Early Career Awards for Scientists and Engineers (PECASE)

Paths to SBE Support
Student Support

Doctoral Dissertation Research Improvement Grants (DDRIs or DDIGs)

- Small grants for dissertation research
- Support dissertation costs only; do not provide salaries or stipends
- Available in some SBE programs:

- Archaeology
- Cultural Anthropology
- Decision, Risk, and Management Science
- Economics
- Geography and Spatial Sciences
- Law and Social Science
- Linguistics
- Methodology, Measurement, and Statistics
- Physical Anthropology
- Political Science
- Science and Society
- Sociology

Paths to SBE Support
Student Support

<u>Research Experiences for Undergraduates</u>

- Available in all programs
- Two types of awards
  - REU Supplements: Awards added onto senior awards to sponsor undergraduate student research
  - REU Sites: training programs, often in the summer months, for teaching research methods to undergrads

Paths to SBE Support
Internal Merit Review

<u>Grants for Rapid Response Research (RAPID)</u>

- Research when data are ephemeral
- $200,000 maximum; 1-year duration
- 5-page project description
- Internal review required; external review is optional
- Available in all programs
- *Contact program officer first*
- *"You're wanting the money rapidly is not a good reason to request a RAPID award."*

For projects having a severe urgency with regard to availability of or access to data, facilities, or specialized equipment, including quick-response research on natural or human-related disasters and similar unanticipated events.

Paths to SBE Support
Internal Merit Review

<u>Early-Concept Grants for Exploratory Research (EAGER)</u>

- Exploratory work on untested, potentially transformative ideas
- High-risk, high-potential payoff
- $300,000 maximum; 2-year duration
- 8-page project description
- Internal review required; external review is optional
- *Contact program officer first.*
- *"Your eagerness to get NSF funding is not a good reason to request an EAGER award."*
- *"Many programs prefer you to submit proposals that undergo merit evaluation by peers before you argue that your ideas are so innovative and unorthodox that they can't be evaluated fairly through normal evaluation processes."*

Paths to SBE Support
Dear Colleague Letter

<u>Dear Colleague Letters</u>

- Official requests for research proposals on specific topics
- Often cross-disciplinary, applicable to a number of programs

<u>Examples:</u>

Dear Colleague Letter: Research on Mathematical and Physical Sciences and Society

Dear Colleague Letter: Climate, Energy, and Sustainability

Paths to SBE Support
Special Solicitations

<u>Special Solicitations</u>
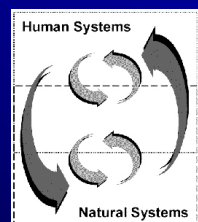
- Opportunities for funding on selected topics

<u>Examples:</u>

- Dynamics of Coupled Natural and Human Systems (CNH)
- Science of Science and Innovation Policy (SciSIP)
- Ecology of Infectious Disease (EID)

Special Programs

- Example
  - Dynamics of Coupled Natural and Human Systems (SBE, BIO, and GEO)

  Dynamics of Coupled Natural AND Human Systems

- Provides support for larger-scale interdisciplinary projects
- Also looking to support research coordination networks and developmental projects.

Special Competitions

- Examples
  - New suite of Climate Research Initiative competitions (Water, Sustainability, and Climate; Dimensions of Biodiversity; Climate Change Education)
  - Computationally related competitions (Cyber-enabled Discovery and Innovation; Cloud Computing; Software; CI-TEAM)
- Read solicitations and sound out possibilities with program officers.
- Recognize that joint review with standing programs may not be a possibility.
- Appeal to the broadest possible audience.

What's Included in a Competitive Research Proposal?

- An explanation of the theoretical framework within which the research question is set.
- Specification of the methods to be used to answer the question.
- Elaboration of how expected results will enhance the broader theoretical framework and have positive broader impacts.
- Biographical information about investigator(s).
- A budget with justification of expenses.

Decisions Will Be Based on NSF Merit Review Criteria

NSF now asks reviewers to comment on two major criteria:

- **Intellectual merit**
- **Broader impacts**

Criterion 1: What is the **intellectual merit** of the proposed activity?

The following are suggested questions to consider in assessing how well the proposal meets the criterion:

- How important is the proposed activity to advancing knowledge and understanding within its own field and across different fields?
- How well qualified is the proposer (individual or team) to conduct the project? (If appropriate, please comment on the quality of prior work.)
- To what extent does the proposed activity suggest and explore creative, original, or **potentially transformative** concepts?
- How well conceived and organized is the proposed activity?
- Is there sufficient access to resources?

Potentially Transformative Research

- The addition of "potentially transformative" to the Intellectual Merit review criterion is the first change to the NSF merit review criteria in more than a decade.
- "Transformative research is defined as research driven by ideas that have the potential to radically change our understanding of an important existing scientific or engineering concept or leading to the creation of a new paradigm or field of science or engineering. Such research also is characterized by its challenge to current understanding or its pathway to new frontiers." (National Science Board)

Criterion 2: What are the **broader impacts** of the proposed activity?

The following are suggested questions to consider in assessing how well the proposal meets the criterion:

- How well does the activity advance discovery and understanding while promoting teaching, training, and learning?
- How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, geographic, etc.)?
- To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships?
- Will the results be disseminated broadly to enhance scientific and technological understanding?
- What may be the benefits of the proposed activity to society?

Advice

- Team up
  - Collaborate
  - Ask colleagues to comment on proposals
- E-mail or call a program officer with specific questions
- Think about possible joint review of your proposal before you begin to write it
- Learn to get beyond rejection

More Tips

- Give yourself plenty of time
  - Don't expect to be successful by "throwing something together at the last minute. "
- Consider theoretical foundations and prospective theoretical contributions.
- Read solicitations, GPG, etc.
- Learn how proposals will be evaluated; think like those who will review and make decisions
- Talk to program officers

Human Subjects

- No award for a project involving human subjects can be made without prior Institutional Review Board (IRB) approval/exemption of the research activity.
- IRB approval is not needed at the time of proposal submission, but be prepared to get IRB certification quickly if you are notified that NSF wants to fund your project.

Examples of Funded Projects?

- NSF makes basic information available to the public: name of the investigator, organization receiving award, the award title and abstract, and the amount awarded to date.
- Link at bottom of each funding program's web site that reads "Abstracts of Recent Awards Made Through This Program"
- Search at http://www.nsf.gov/awardsearch/

QUESTIONS?

Contact Thomas Baerwald
703-292-7301
tbaerwal@nsf.gov

OR....

www.nsf.gov

Program Information

- The following slides are for your reference
- They provide a brief sense of SBE Program and Program Officer names.
- Word to the Wise:
  - Dates, names, etc change, so double-check the program's website.

Division of Social and Economic Sciences (SES)

- Supports research to develop and advance scientific knowledge focusing on economic, legal, political and social systems, organizations, and institutions
- Supports research on the intellectual and social contexts that govern the development and use of science and technology

Directorate for Social, Behavioral, and Economic Sciences

SES Target/Deadline Dates
(DDRIs/DDIGs may differ)

January 15, August 15
Law and Social Science
Political Science
Sociology

January 16, August 16
Methodology, Measurement, and Statistics

January 18, August 18
Decision, Risk, and Management Sciences
Economics

February 1, August 1
Science and Society

February 2, September 3
Innovation and Organizational Sciences

Decision, Risk, and Management Sciences

- 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 Officers: Robert O'Connor, Jacqueline Meszaros, and Jon Leland

Economics

- Supports:
  - Both empirical and theoretical economic analysis as well as work on methods for rigorous research on economic behavior
  - Research designed to improve the understanding of the processes and institutions of the U.S. economy and of the world system of which it is a part
  - Almost all subfields of economics including: econometrics, economic history, finance, industrial organization, international economics, labor economics, public finance, macroeconomics, and mathematical economics

Program Officers: Nancy Lutz, Andrew Feltenstein, and Michael Reksulak

Innovation and Organizational Change

- Supports research which uses theory combined with empirical validation
- Looks to expand the concepts, models and methodologies of change in organizations and institutions
- In FY06, IOC is particularly interested in studies that shed light on how best to organize for scientific knowledge creation when researchers must share critical resources, such as major instruments or IT infrastructure.

Program Officer: Jacqueline Meszaros

Law and Social Science

- Supports social scientific studies of law and law-like systems of rules, institutions, processes, and behaviors
- Topics can include, but are not limited to
  - research designed to enhance the scientific understanding of the impact of law
  - human behavior and interactions as these relate to law
  - the dynamics of legal decision making
  - the nature, sources, and consequences of variations and changes in legal institutions

Program Officers: Scott Barclay and Christian Meissner

Methodology, Measurement, and Statistics

- Seeks proposals that are interdisciplinary in nature, methodologically innovative, and grounded in theory, such as:
  - Models and methodology for social and behavioral research
  - Statistical methodology/modeling directed towards the social and behavioral sciences
  - Methodological aspects of procedures for data collection

Program Officer: Cheryl Eavey

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
  - political behavior
  - political economy
  - political institutions
- Supports Doctoral Dissertation Research Improvement Grants

Program Officers: Brian Humes and Carol Mershon

Science, Technology, and Society

S&S considers proposals that examine questions that arise in the interactions of engineering, science, technology, and society.

There are four components:

- Ethics and Values in Science, Engineering and Technology (EVS)
- History and Philosophy of Science, Engineering and Technology (HPS)
- Social Studies of Science, Engineering and Technology (SSS)
- Studies of Policy, Science, Engineering and Technology (SPS)

The components overlap, but are distinguished by the different scientific and scholarly orientations they take to the subject matter, as well as by different focuses within the subject area.

Program Officers: Fred Kronz, Kelly Joyce, and Michael Gorman

Sociology

- The Sociology Program supports theoretically-grounded research on systematic patterns of social relationships that examine the causes and consequences of human behavior, social structure and social change. Studies range from micro to macro levels of interaction.
- Topics include, but are not limited to:
  - Stratification, labor markets, mobility, social change
  - 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
- The Sociology Program supports research that uses the range of social science methodologies — experimental, quantitative, qualitative and the combinations of multiple methods — for original data collection and secondary data analysis.

Program Officers: Pat White and Regina Werum

Division of Behavioral and Cognitive Sciences

- Supports research to develop and advance scientific knowledge focusing on human cognition, language, evolution, social behavior, and culture
- Supports research on the interactions between human societies and the physical environment

Directorate for Social, Behavioral, and Economic Sciences

BCS Target/Deadline Dates
(DDRIs/DDIGs may differ)

January 24, August 27
- Cognitive Neuroscience

January 15, July 15
- Developmental and Learning Sciences
- Linguistics
- Social Psychology

January 15, August 15
- Cultural Anthropology
- Geography and Spatial Sciences

January 20, August 20
- Physical Anthropology

February 1, August 1
- Perception, Action, and Cognition

July 1, December 1
- Archaeology

September 15
- Documenting Endangered Languages


Archaeology

Funds:

1. Archaeological research that contributes to an anthropological understanding of the past
2. Anthropologically significant archaeometric research

Program Officer: John Yellen

Cognitive Neuroscience

- Program supports highly innovative and interdisciplinary proposals
- Proposals should aim to advance a rigorous understanding of how the human brain supports:
  - thought
  - perception
  - affect
  - action
  - social processes
  - and other aspects of cognition and behavior, including how such processes develop and change in the brain and through evolutionary time.
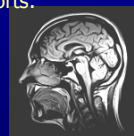
Program Officer: Lynne Bernstein

Cultural Anthropology

- Promotes basic scientific research on the causes and consequences of human social and cultural variation
- Supports social scientific research of theoretical importance in all theoretical and empirical subfields

Program Officers: Deborah Winslow and Stephen Langdon

Developmental and Learning Sciences

- Supports studies that increase our understanding of cognitive, social, and biological processes related to children and adolescents' learning in formal and informal settings
- Supports research on learning and development that:
  - incorporates multidisciplinary, multi-method, microgenetic, and longitudinal approaches
  - develops new methods and theories
  - examines transfer of knowledge from one domain to another
  - assesses peer relations, family interactions, social identities, and motivation
  - examines the impact of family, school, and community resources
  - assesses adolescents' preparation for entry into the workforce
  - investigates the role of demographic and cultural characteristics in children's learning and development

Program Officer: Peter Vishton

Documenting Endangered Languages

- Responds to loss of world's languages
  - Research grants
  - Fellowships in partnership with NEH
- Data collection, preparation of grammars & dictionaries
- Requires creation of archives
- Training & Workshops

Program Officer: Susan Penfield

Geography and Spatial Sciences

- Supports research on human, physical, and biotic systems on the Earth's surface, as well as their related subfields
- Investigations into the nature, causes, and consequences of human activity within particular "places and spaces" are encouraged
- Both international & domestic projects which may contribute to related fields are also funded
- Strategic plan is posted at
  http://www.nsf.gov/sbe/bcs/grs/GSS_StrategicPlan_2008.pdf

Program Officers: Tom Baerwald, Ezekiel Kalipeni, and Antoinette WinklerPrins

Linguistics

- Supports scientific research of all types that focus on human language as an object of investigation
  - the syntactic, semantic, phonetic, and phonological properties of individual languages and of language in general
  - the psychological processes involved in the use of language
  - the development of linguistic capacities in children
  - social and cultural factors in language use, variation, and change
  - the acoustics of speech and the physiological and psychological processes involved in the production and perception of speech
  - the biological bases of language in the brain

Program Officers: Joan Maling and William Badeker

Perception, Action, and Cognition

- Supports basic research on human cognitive and perceptual functions
- Topics include, but are not limited to:
  - Attention
  - Memory
  - Spatial Cognition
  - Language Processing
  - Perceptual and Conceptual Development
  - Visual, Auditory, and Tactile Perception
  - Reasoning
- Research supported by the program encompasses a broad range of theoretical perspectives such as Symbolic Computation, Connectionism, and Dynamical Systems

Program Officers: Betty Tuller and Lawrence Gottlob

Physical Anthropology

- Supports basic research in areas related to:
  - Human evolution
  - Anthropological genetics
  - Human adaptation
  - Skeletal biology
  - Primate biology
  - Ecology and behavior
- Grants are often characterized by:
  - An underlying evolutionary framework
  - A consideration of adaptation as a central theoretical theme
  - Generalizable results
- Serves as a bridge between the social and behavioral sciences and the natural and physical sciences

Program Officer: Kaye Reed

Social Psychology

- Supports research on human social behavior, including cultural differences and development over the life span
- Among the many research topics supported are:
  - Attitude formation and change
  - Social cognition
  - Personality processes
  - Interpersonal relations and group processes
  - The psychophysiological correlates of social behavior

Program Officers: Kellina Craig-Henderson and Brett Pelham

Cross-Directorate Activities

- Serves both divisions – SES and BCS
- Administers and coordinates programs to increase underrepresented groups in science and engineering
  - Research Experiences for Undergraduates
  - Minority Postdoctoral Fellowships
- Provides information on cross-NSF/ cross-cutting programs

Program Officer: Fahmida Chowdhury