



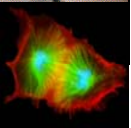
The National Science Foundation

Advancing Discovery, Innovation and Education

Martha Flanders, PhD
Program Director
IOS/BIO

Janice Hicks
Executive Officer
Division of Chemistry
jhicks@nsf.gov

The National Science Foundation

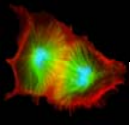


Martha Flanders
Professor
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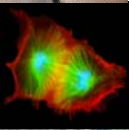


Janice Hicks, Executive Officer, Division of Chemistry
Math and Physical Sciences Directorate, jhicks@nsf.gov



The National Science Foundation

- Independent agency
- Supports basic research and education
- Uses grant mechanism
- Low overhead;
highly automated
- Discipline-based
structure
- Cross-disciplinary mechanisms
- Use of rotators and IPAs
- Supports change

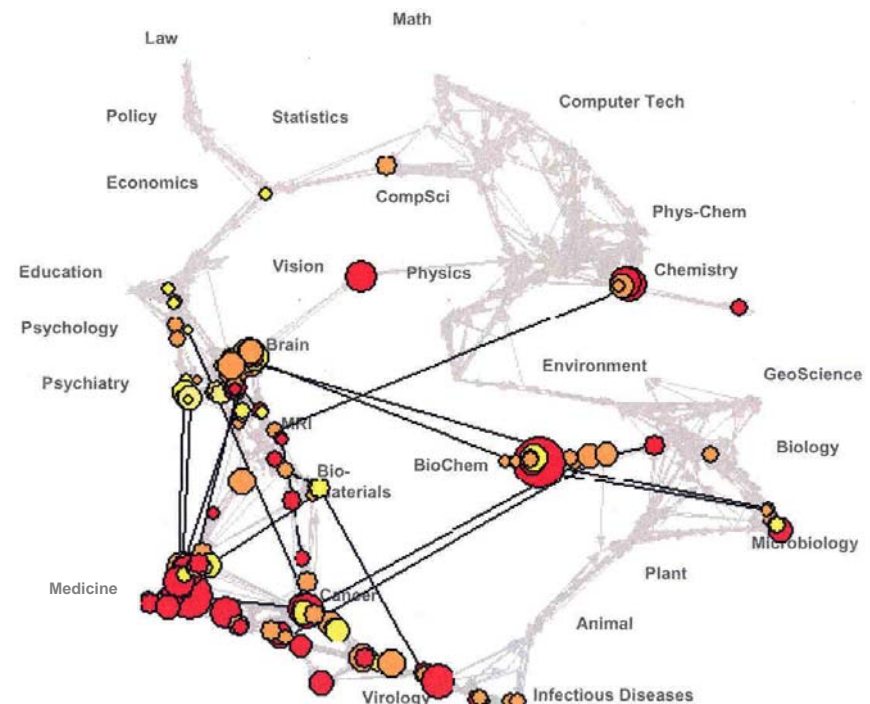
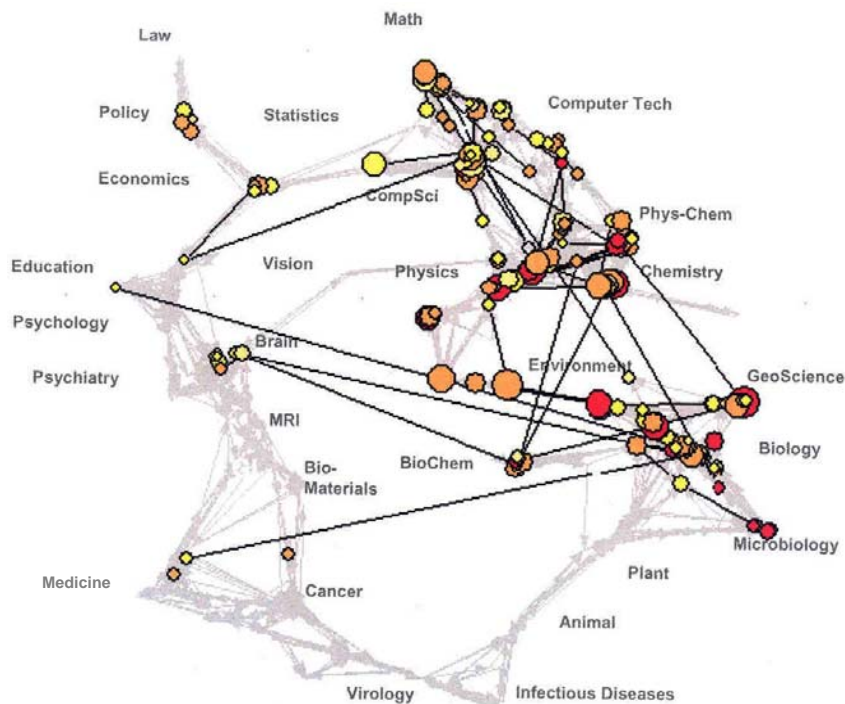


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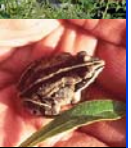
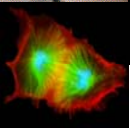
Science funding

NSF

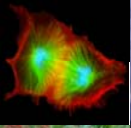
NIH



Research: Katy Börner Indiana University



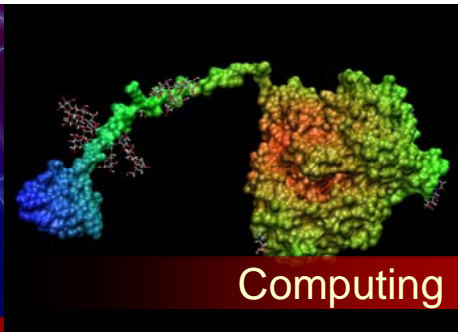
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Astronomy



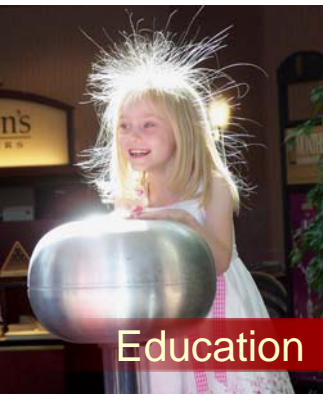
Biology



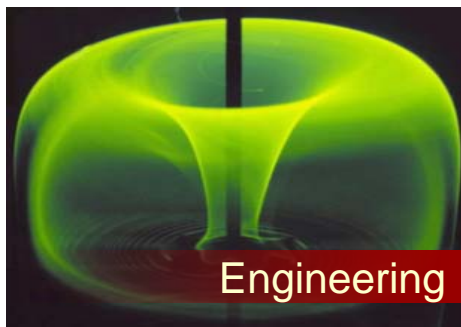
Computing



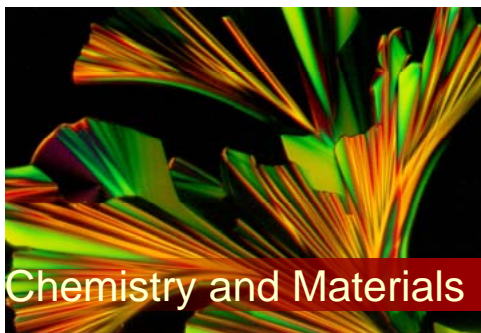
Earth & Environment



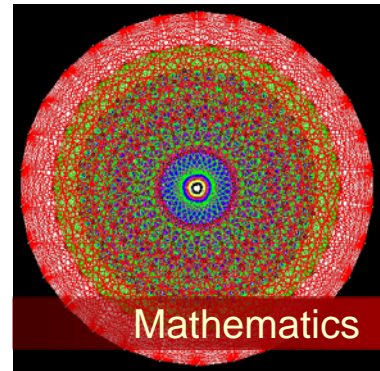
Education



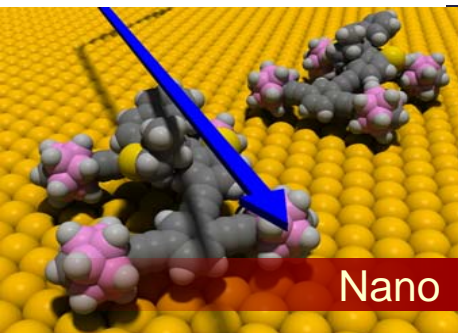
Engineering



Chemistry and Materials



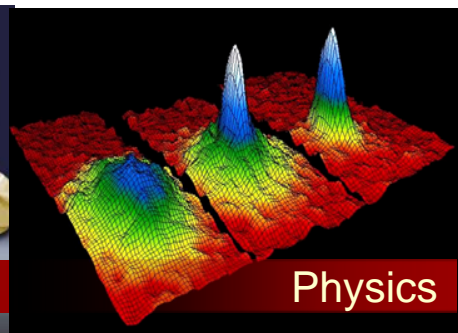
Mathematics



Nano



People & Society

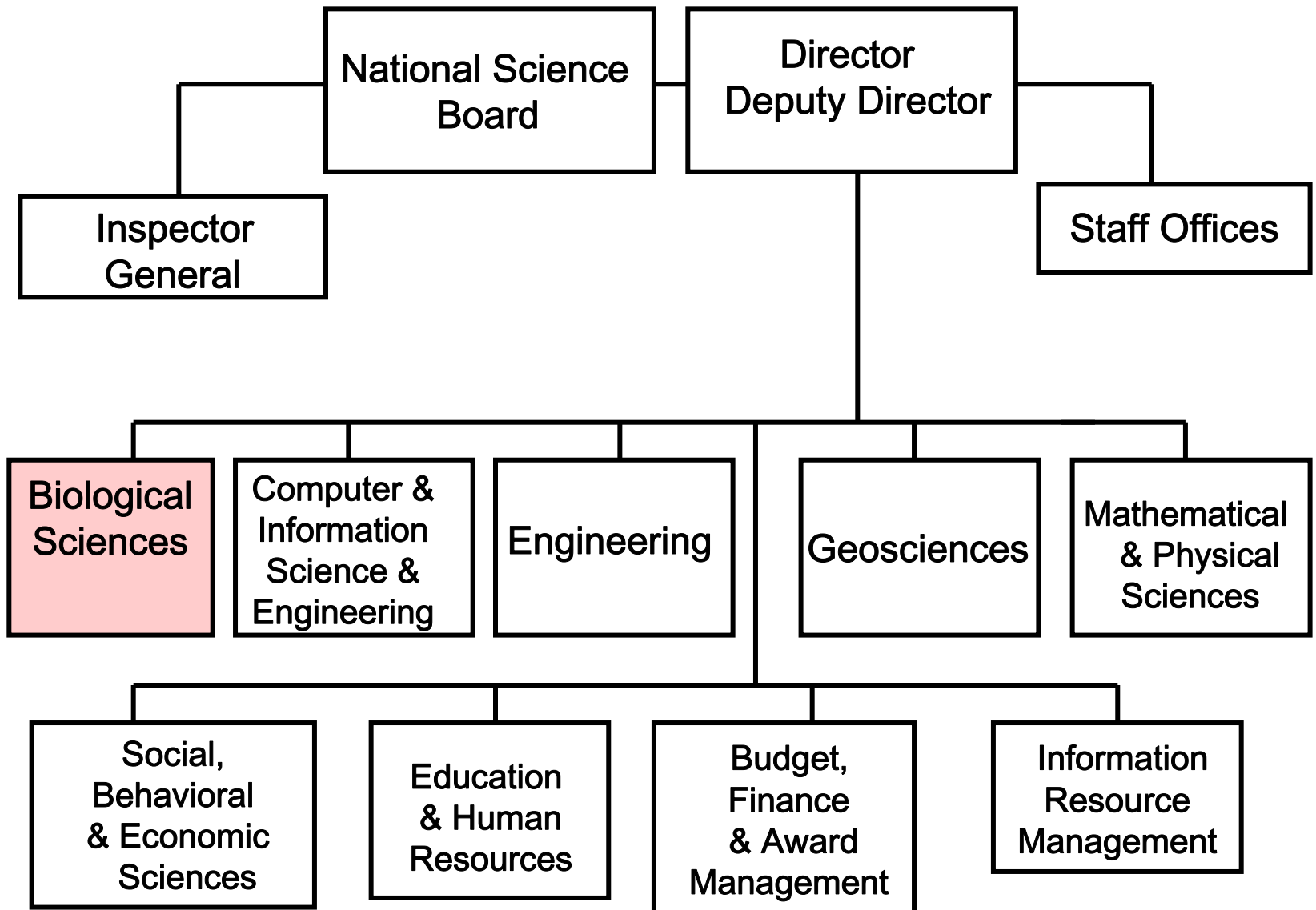


Physics

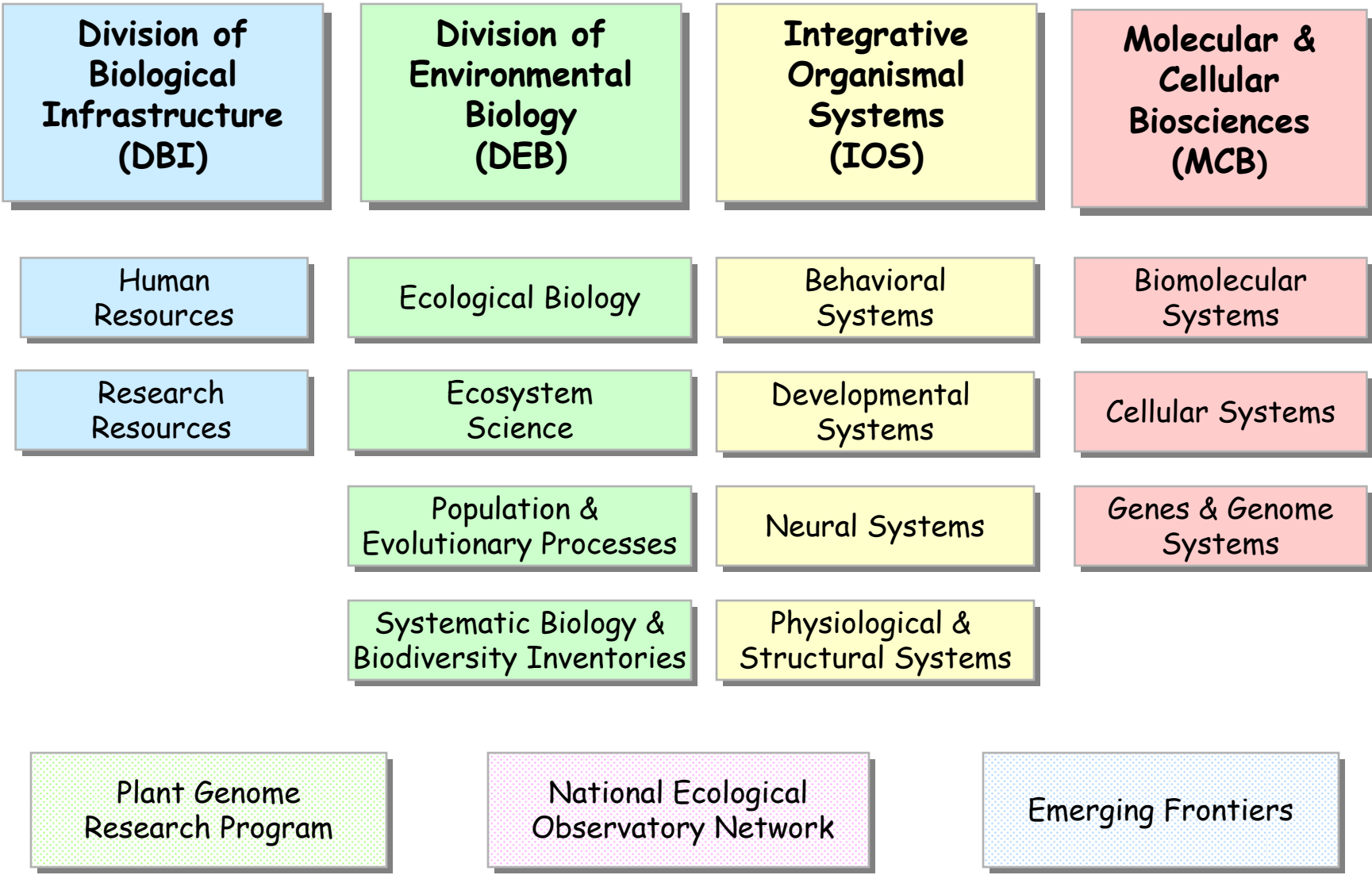


Polar

The National Science Foundation



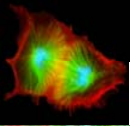
Directorate for Biological Sciences



Integrative Organismal Systems (IOS)

Neural Systems

- How do genetics, developmental processes, and experience/environment interact to produce structure and function?
- Information extraction from the environment and integration within the organism to form a decision, perception, or action
- Robust emergent properties that underlie adaptive behavior, learning, and complex social interactions



Integrative Organismal Systems (IOS)

NSF/BIO/IOS/NEURAL SYSTEMS CLUSTER

ORGANIZATION

ACTIVATION

MODULATION

Differentiation

Nervous System Formation

Integrative Physiology

Sensory-Motor Integration

Complex Behavior

Immune, Hormonal Interactions

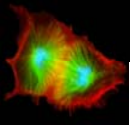
Learning, Memory

Computational & Theoretical Neuroscience

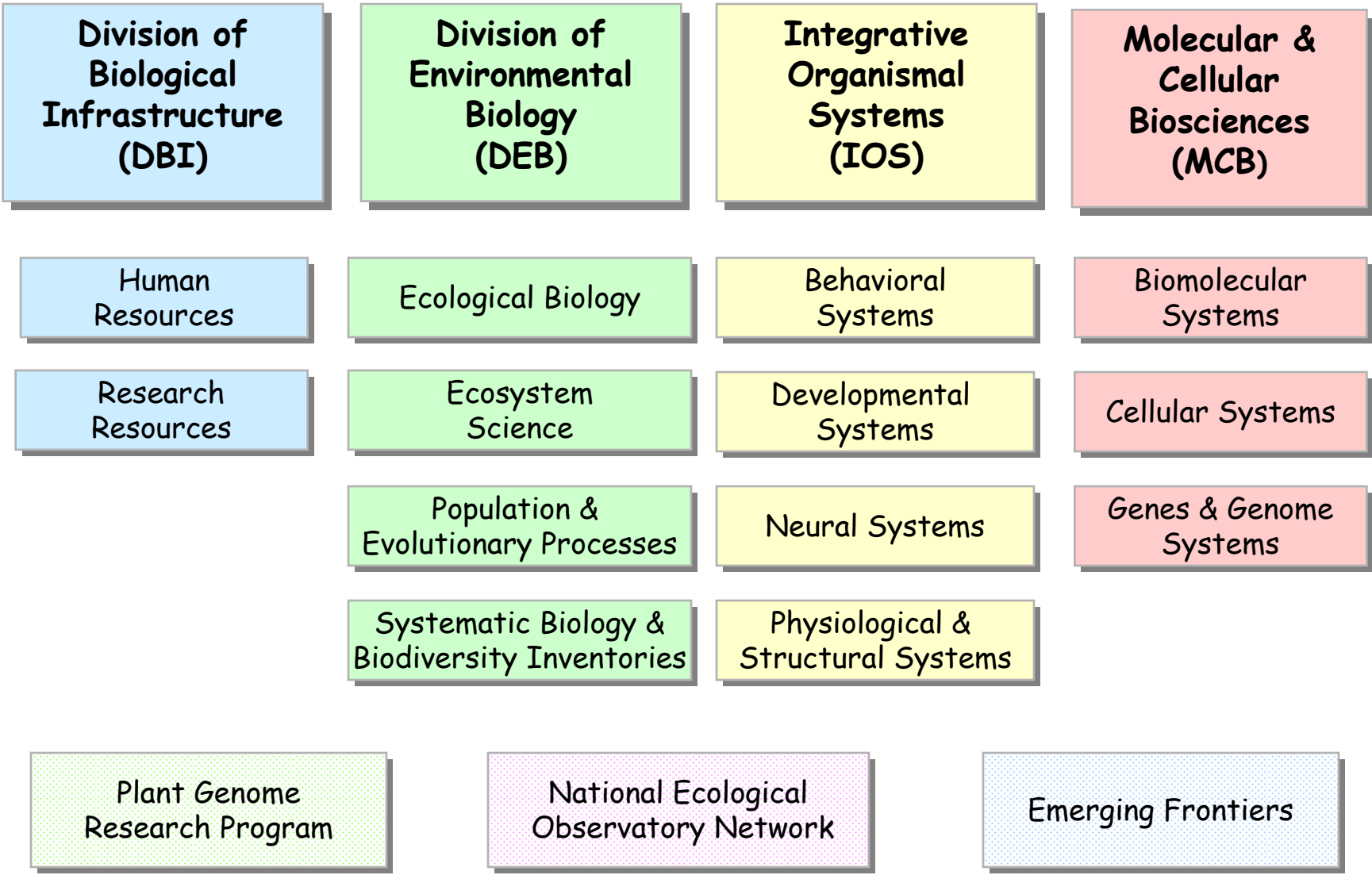
Genetic & Epigenetic Regulation

Evolutionary Influences

Plasticity

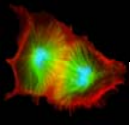


Directorate for Biological Sciences



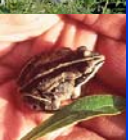
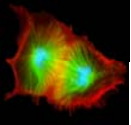
"Regular" (unsolicited) Proposals

- Follow GPG instructions (NSF web site)
- Reviewed in core programs
- Usually under \$150 total costs per year
- Usually 3 years
- Two Target Dates per year
 - January 12
 - July 12



Supplements to Active Awards

- Research Experiences for Undergraduates (REU)
- Research for Assistantships for High School Students (RAHSS)
- Research Opportunity Awards (ROA)
- Research Experiences for Teachers (RET)



http://nsf.gov/

US NSF - National Science Foundation - Microsoft Internet Explorer provided by National Science Foundation

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National Science Foundation
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SEARCH

NSF Web Site

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A Special Report



Spider Venom for
Insecticides



Geomagnetic
Landmarks Guide



VLA Explores
Magnetar Explosion

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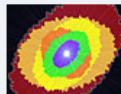
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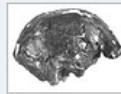
See All



[VLA Probes Secrets of Mysterious Magnetar](#)
Released February 18, 2005



[Bipedal Bots Star at AAAS Media Briefing](#)
Released February 17, 2005



[New Clues Add 40,000 Years to Age of Human Species](#)
Released February 16, 2005

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Microsoft Po...

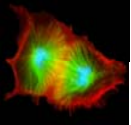
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Set your own profile - weekly e-mail updates.



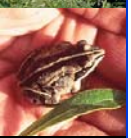
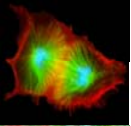
<http://www.nsf.gov/mynsf/>



We Need YOU!



- Reviewers
 - Panelists
- Program Directors
- Division Directors
- Assistant Directors



You

- Who are you?

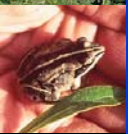
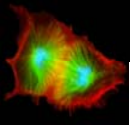
your expertise/interests

your career/life goals

your position/resources

Your proposal should fit into your life plan.

What is your life plan?
Do you need to develop a
Strategic plan?



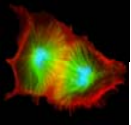
Your Proposal

- Should advance you toward your life goals
 - should be a stepping stone to the next thing

Should be compatible with your institution's goals

Should represent a contribution to society at large

Test - if you accomplish your research objectives are you better off for the effort? Who will care about your results?

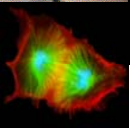


Be realistic - take the long view

- NSF Funding rates are about 25% on average.
- New PI funding rates are around 20%
- Prior PI funding rates are around 30%

Average number of Proposals per PI before
Receiving a grant: 2.2

When you send your first proposal, consider this a trial balloon - you are gathering information from the reviewer community for future planning - and IT'S FREE.

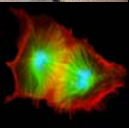


Proposal Basics

Write to the reviewers

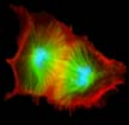
Reviewers want to know four things:

- What is it about (the research objective?)
- How will you do it (the technical approach?)
- Can you do it (you and your facilities?)
- Is it worth doing (intellectual merit and broader impact)



DOs

- Differentiate this proposal from your other sponsored work.
- Locate the appropriate Program Director by searching Fastlane for similar awards; note scope of work, range of funding, broader impacts
- Read successful proposals
- Have others read your proposal, preferably others like the likely reviewers
- Read Grant Proposal Guide and abide by rules - Pay attention to deadlines, windows (see Division websites), fonts, margins, etc.
- Address both merit review criteria (intellectual merit, broader impact) and any special criteria associated with a solicitation.
- Suggest reviewers to use or not to use. OK to request a previous reviewer or ask to not use a previous reviewer.
- Utilize Graduate Research Fellowship program (Div. Grad. Ed.)

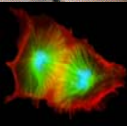


Mentoring for Postdoctoral Researchers

New!

- Beginning January 5, 2009, proposals that include funding to support postdoctoral researchers must include a description of the mentoring activities that will be provided for such individuals (as a separate section).
- Mentoring activities may include:
 - Career counseling;
 - Training in preparation of grant proposals;
 - Publications and presentations;
 - Guidance on ways to improve teaching and mentoring skills;
 - Guidance on how to effectively collaborate with researchers from diverse backgrounds and disciplinary areas; and
 - Training in responsible professional practices.
- Proposed mentoring activities will be evaluated as part of the merit review process under the Foundation's broader impacts merit review criterion.
- Proposals that do not include a separate section on mentoring activities within the Project Description will be returned without review.

This was done to address the mentoring requirement of the America COMPETES Act.





Think like a Program Director

Program Directors have to balance their portfolios with respect to:

- topical areas of research
- risk
- geographic, demographic, institution-type diversity

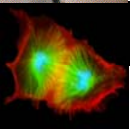
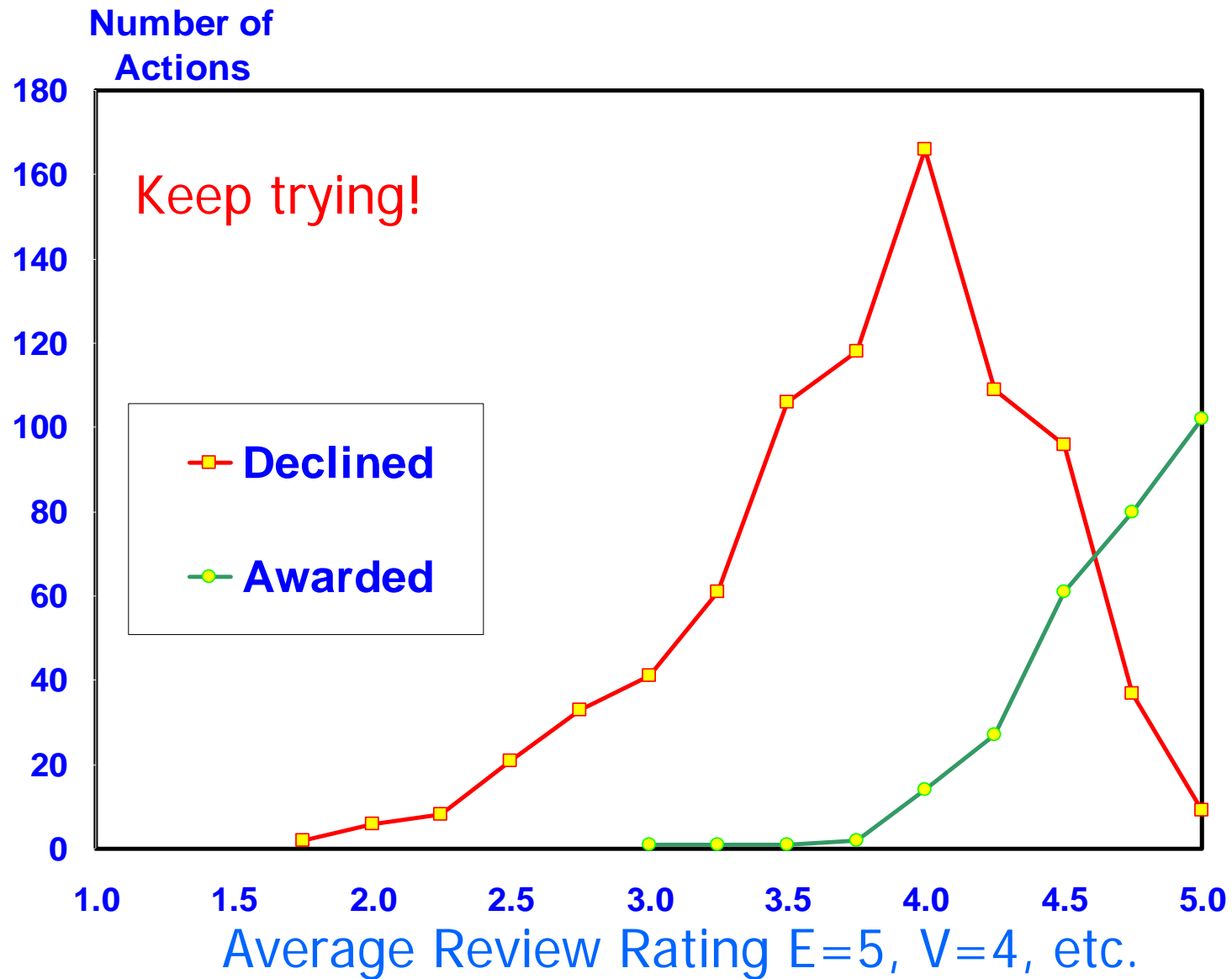
Award decisions must be responsive to:

- NSF strategic plan (NSF.gov)
- President's priorities (OSTP.gov)
- Current budget request (OMB.gov) and Congressional response (appropriations and authorization bills)

Know what these priorities are!



Distribution of Average Ratings Individual Investigator CHE Programs





FY2010 Budget Priorities

- Cyber-enabled Discovery and Innovation (\$102.63M requested)
 - Science and Engineering Beyond Moore's Law (\$46.68M requested)
 - Climate Research (\$197.26M requested)
-
- Faculty Early Career Development (CAREER) request up 11.6%
 - Graduate Research Fellowships request up 6%
 - Advanced Technology Education (2 year colleges) up 24%
 - Climate Change Education Program (\$10M requested)

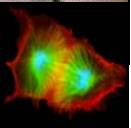
Cyber-enabled Discovery and Innovation

- \$70.94M SOLICITATION NSF 08-604, watch for next year's solicitation

From Data to Knowledge: enhancing human cognition and generating new knowledge from a wealth of heterogeneous digital data;

Understanding Complexity in Natural, Built, and Social Systems: deriving fundamental insights on systems comprising multiple interacting elements; and

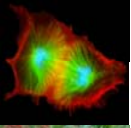
Building Virtual Organizations: enhancing discovery and innovation by bringing people and resources together across institutional, geographical and cultural boundaries



CAREER

- Funds career development - research and education activities - of new faculty
- Tenure-track or equivalent, untenured, three attempts allowed.
- Duration: 5 years
- Min amount: \$400K (\$500K in BIO)
- Deadline: July each year
- See FAQ's

http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503214&org=CHE&from=home



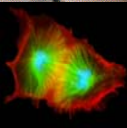
New!

EARLY-concept Grants for Exploratory Research (EAGER)

- Exploratory work in its early stages on untested but potentially transformative research ideas
- Up to \$300K for 2 years
- CALL PROGRAM OFFICER BEFORE SUBMITTING
- Internal review (optional external input)
- 5-8 page project description
- No cost extensions/supplements



American Recovery and Reinvestment Act (ARRA) Signed Feb. 17, 2009; \$787B



NIH \$10.4B (\$30.3B)
DOE/OS \$1.6B
NSF \$3B (\$6B)

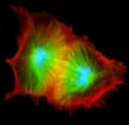
\$3B for NSF, \$2B for R & RA
\$300M for MRI
\$200M for ARI
\$500 M for education and facilities
GOAL (from Congress): raise success rate

See recovery.gov

NSF Important Notice 131, American Recovery and Reinvestment Act of 2009

Which proposals will be targeted for ARRA funding?

- Excellent proposals that are already in house and are reviewed or are under review as usual in the current fiscal year (Oct. 1, 2008-Sept. 30, 2009)
- Projects that will create and/or retain jobs.
- Projects where the money can be gotten out and activities started as quickly as possible.
- Funding of new Principal Investigators
- Funding of high-risk, high-return research
- Might involve IN A LIMITED WAY Program Director-initiated reconsideration of some excellent proposals declined since Oct. 1, 2008 due to lack of funds. PD will initiate and notify the SRO and PI.
- No supplement requests to existing awards using ARRA funds
- See nsf.gov/recovery



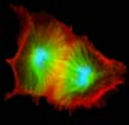
NSF: American Recovery and Reinvestment Act of 2009

Will ARRA awards from NSF be the same as other NSF awards?

NO

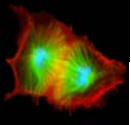
1. The institution will have quarterly reporting on the funds spent and jobs created/retained (reports will be public). PI's are expected to spend funds in a timely manner.
2. ARRA awards cannot be supplemented in future years (no comingling of funds)
3. ARRA awards will provide all the \$ upfront (2, 3, 4, and 5 year awards to mitigate the influx of renewals in 2012.)

CHE plans to commit its ARRA funds by June 2009.



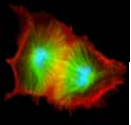
NSF ARRA Program Solicitations

- the Academic Research Infrastructure (ARI) program (\$200 million) NSF 09-562
Deadline: July 1 (letter of intent), August 24, 2009 (full proposal)
- the Major Research Instrumentation Program (MRI) \$300 million NSF 09-561
Deadline: August 10, 2009
- the Science Masters program (\$15 million) (not out yet)



ARRA Plans for CHE

- \$103M on a \$211M FY2009 budget
- Raise success rate from 25% to 37%
 - single investigators, CAREER, instrumentation, facilities, fellowships
- ARRA buys "headroom" for future years.





NSF Budgets: FY 2009, FY 2010

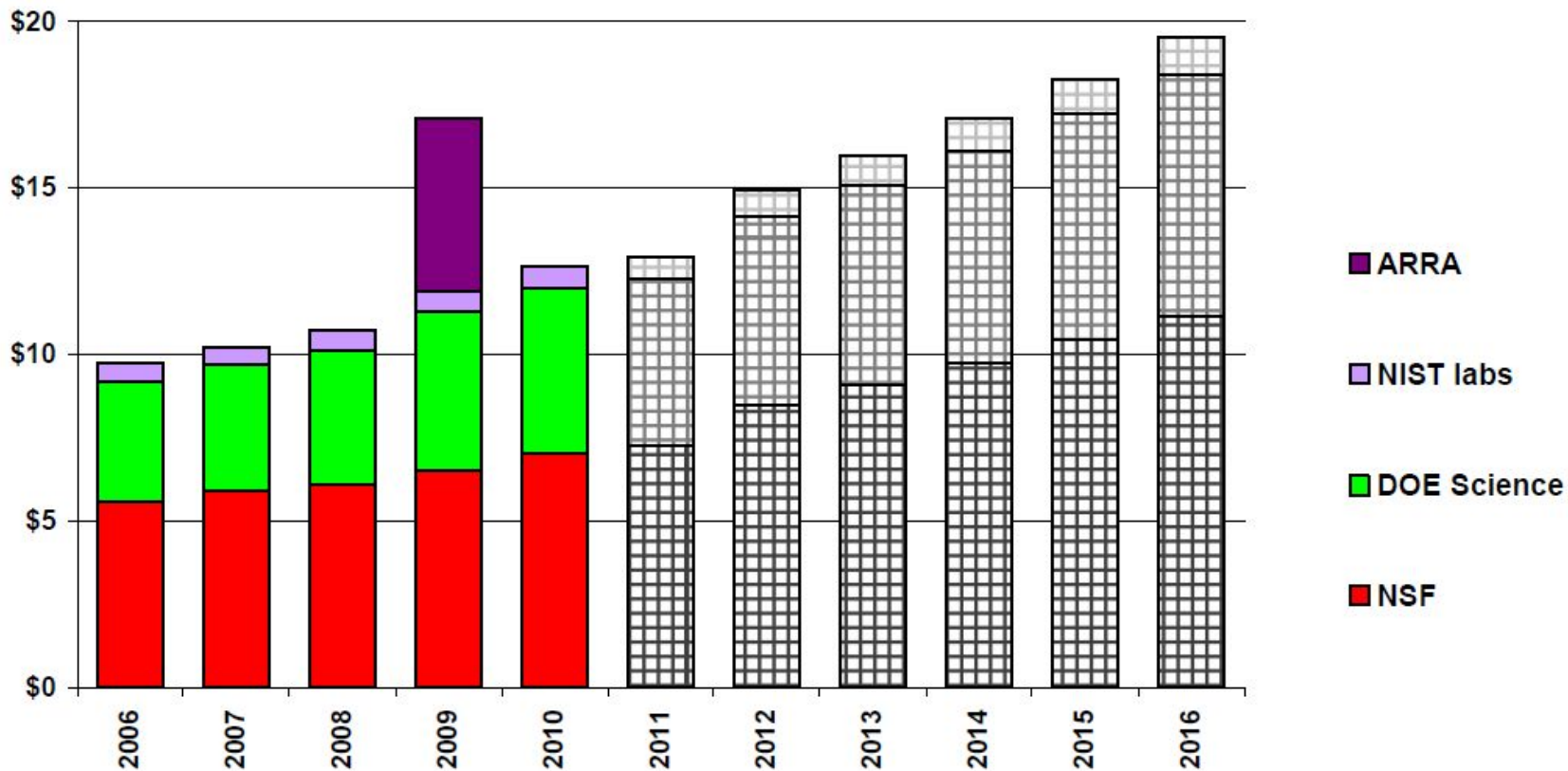
- FY 2009 Omnibus Appropriation
\$6.5B - a 5.9% increase over FY 2008; increase in R&RA is 7.4%
- FY 2010 - President's Request to Congress May 7, 2009
\$7.0B - an 8.5% increase over FY 2009; increase in R&RA is 10.6%

AMERICA COMPETES ACT - NSF, NIST and DOE BES authorized to double in 10 years.



President's Plan for Science and Innovation, FY 2006-2016 (basic research doubling)

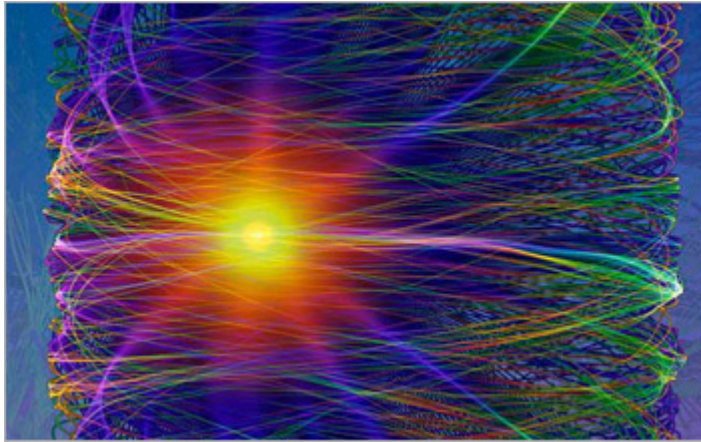
(budget authority in billions of current dollars)



2006-2009 figures are enacted budget authority; 2011-2016 figures are projections in the 2010 budget.

MAY '09 OSTP





We are driven by the
community;
be imaginative.
Come visit us in
Arlington VA
or arrange a cyber
visit for your
department



Top 10 Moves to Not Get a Grant

1. Get declined; get offended. (I am NEVER submitting to that agency again!)
2. Get an award, and it's party time! (No need to get results or publish.)
3. Don't call the program officer. (What does a bureaucrat in D.C. know?)
4. Ignore requirements & review criteria (Why bother to read the solicitation?)
5. Ignore what's happening in DC. (Why should I review for NSF, Why should I care about budget development?)
6. Ask for the max. (\$2M and a new building!)
7. No references. (I am the EXPERT in the field!)
8. Don't involve students. (Who needs 'em?)
9. Why describe methods and pilot data? (Everyone knows I can do it.)
10. No hypothesis. (I already know the answer!)

