



BIO Advisory Committee

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Acting Assistant Director
Directorate for Biological Sciences

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NSF Staffing Updates

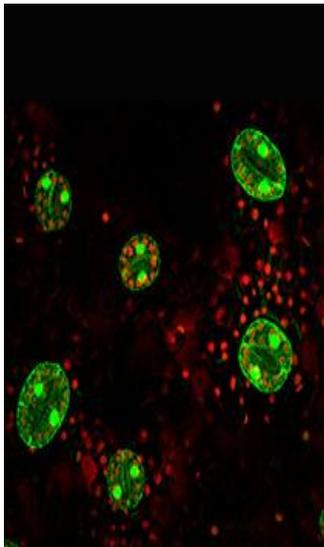
- NSF Director
- BIO Assistant Director
- IOS Division Director
- New BIO Senior Staff





NSF's Sensational 60 Years

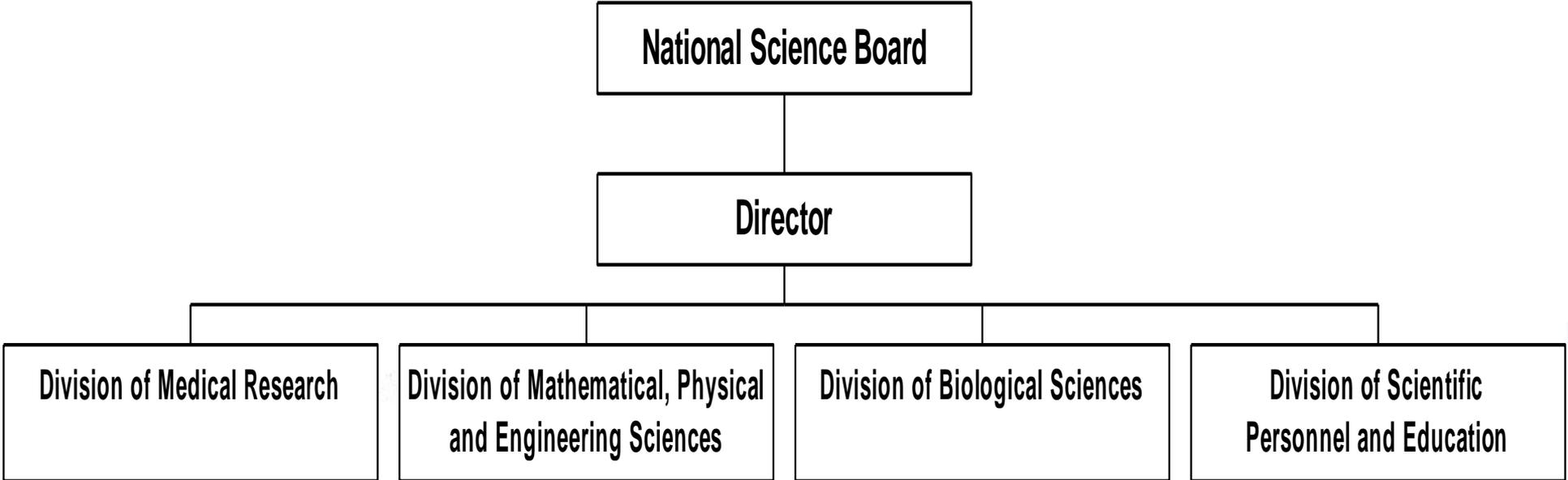
The FY 2011 budget keeps the agency at the forefront of science and engineering innovation, where it has been since its founding in 1950.





BIO's Sensational 60 Years

National Science Foundation
Organization Prescribed in the Enabling Act





BIO's first born...

Control of Metamorphosis in *Hyla brunnea*

Award Amount - \$1000

1952 BIO Award Data

72 of total 98 Awards

Average Award Size - \$10,897

(\$88,221 in 2009 Dollars)





Look at us now...

2009 BIO Award Data

of Awards - 1823

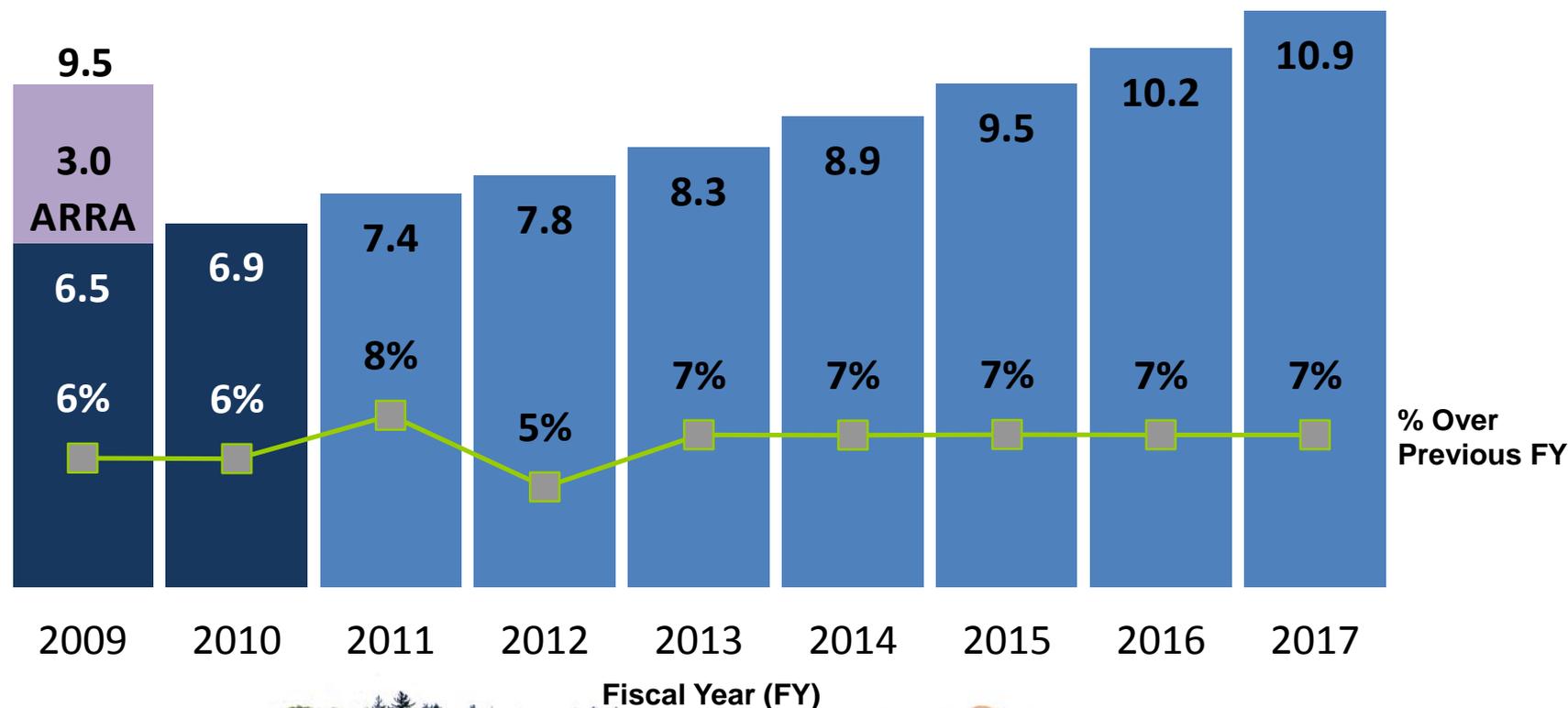
Average Award Size - \$199,695





President's Plan for Science and Innovation

Total NSF Funding: FY 2009-FY 2017 (dollars in billions)





FY2011 Budget Request for Research & Related Activities by Directorate

(Dollars in Millions)

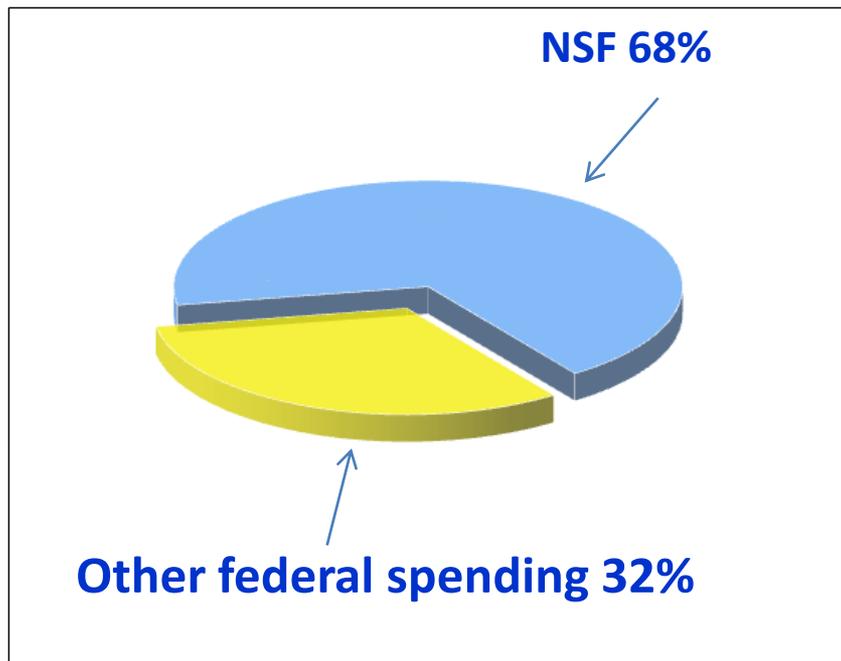
	FY 2009	FY 2009	FY 2010 Estimate	FY 2011 Request	Change over		
	Omnibus	ARRA			FY 2010 Estimate	FY 2010 Estimate	Percent
	Actual	Actual			Amount	Percent	
Biological Sciences	\$656.62	\$260.00	\$714.54	\$767.81	\$53.27	7.5%	
Computer & Information Science & Engineering	574.50	235.00	618.83	684.51	65.68	10.6%	
Engineering	664.99	264.99	743.93	825.67	81.74	11.0%	
Geosciences	808.53	347.00	889.64	955.29	65.65	7.4%	
Mathematical & Physical Sciences	1,243.88	474.97	1,351.84	1,409.91	58.07	4.3%	
Social, Behavioral & Economic Sciences	240.56	84.97	255.25	268.79	13.54	5.3%	
Office of Cyberinfrastructure	199.23	80.00	214.28	228.07	13.79	6.4%	
Office of International Science & Engineering	47.45	13.98	47.83	53.26	5.43	11.4%	
Office of Polar Programs ¹	473.55	171.89	451.16	527.99	76.83	17.0%	
Integrative Activities	241.58	129.85	275.04	295.93	20.89	7.6%	
U.S. Arctic Research Commission	1.50	-	1.58	1.60	0.02	1.3%	
Total, R&RA	\$5,152.39	\$2,062.64	\$5,563.92	\$6,018.83	\$454.91	8.2%	



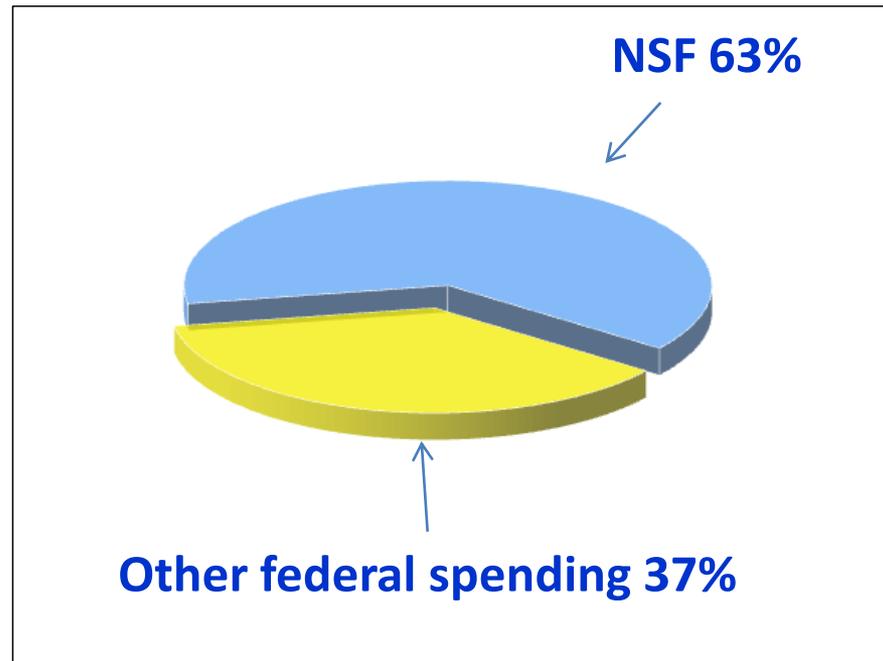


BIO Support for Basic Research

Federal Support for Basic Research in Non-Medical Biological Sciences at Academic Institutions



Federal Support for Basic Research in Environmental Biology at Academic Institutions



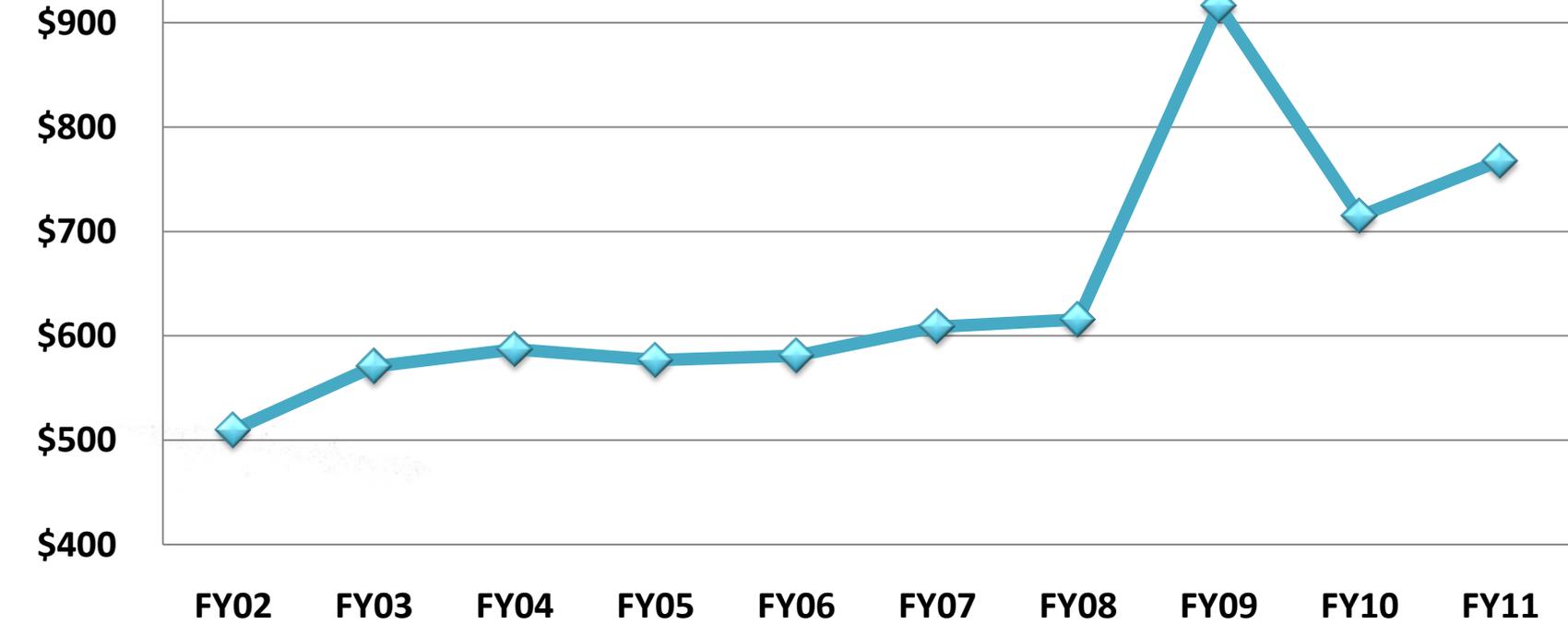


Recent Funding History of BIO FY 2002-2011

Millions

\$1,000

FY 2009 Current Plan + ARRA Funding





BIO ARRA Portfolio - \$260M

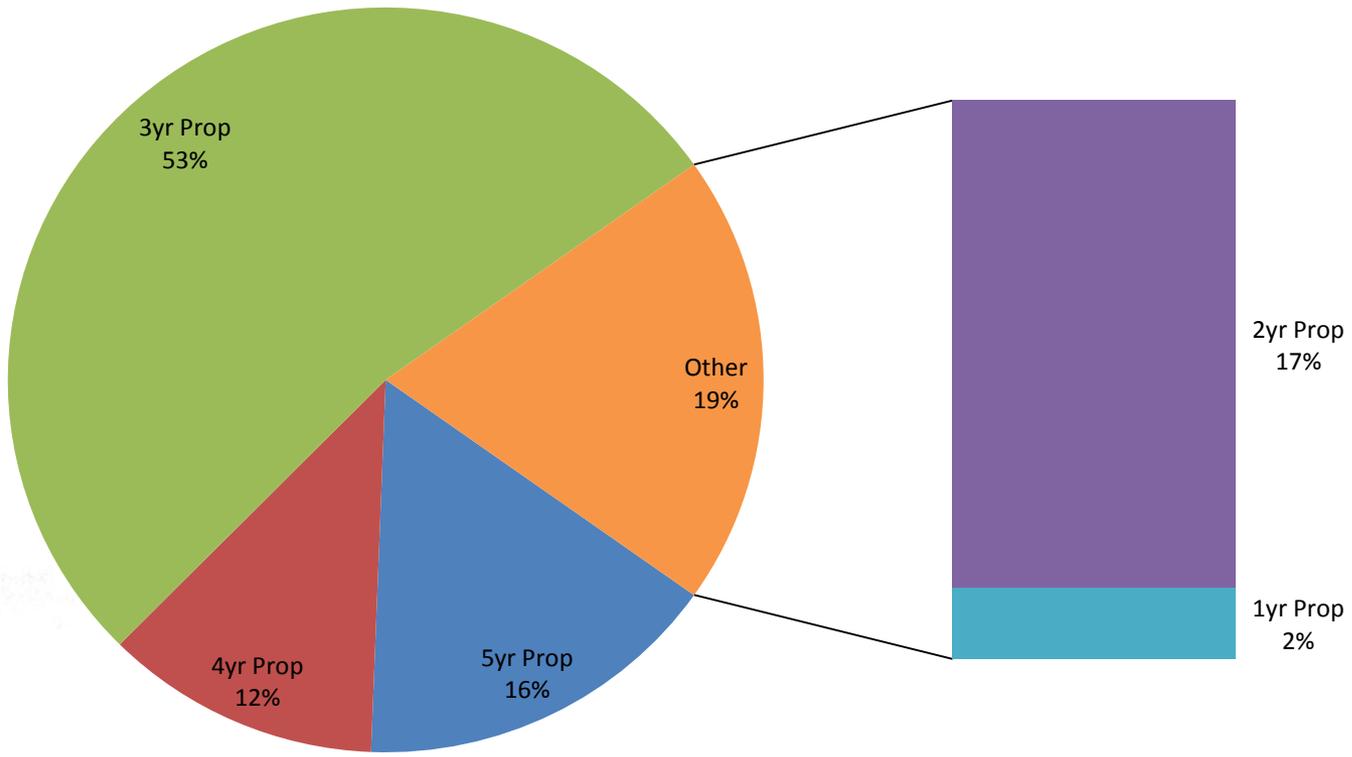
- 555 awards across 47 states, District of Columbia, Puerto Rico, and the Virgin Islands.
- Average award was \$455,769 and 3.21 years
- 57 high risk awards
- 39 awards targeting energy
- 126 climate change focused awards
- 55 CAREER awards
- 157 beginning investigators
- BIO FY 2009 funding rate was 28% (compared to 20% in FY 2008)





ARRA Awards by Duration

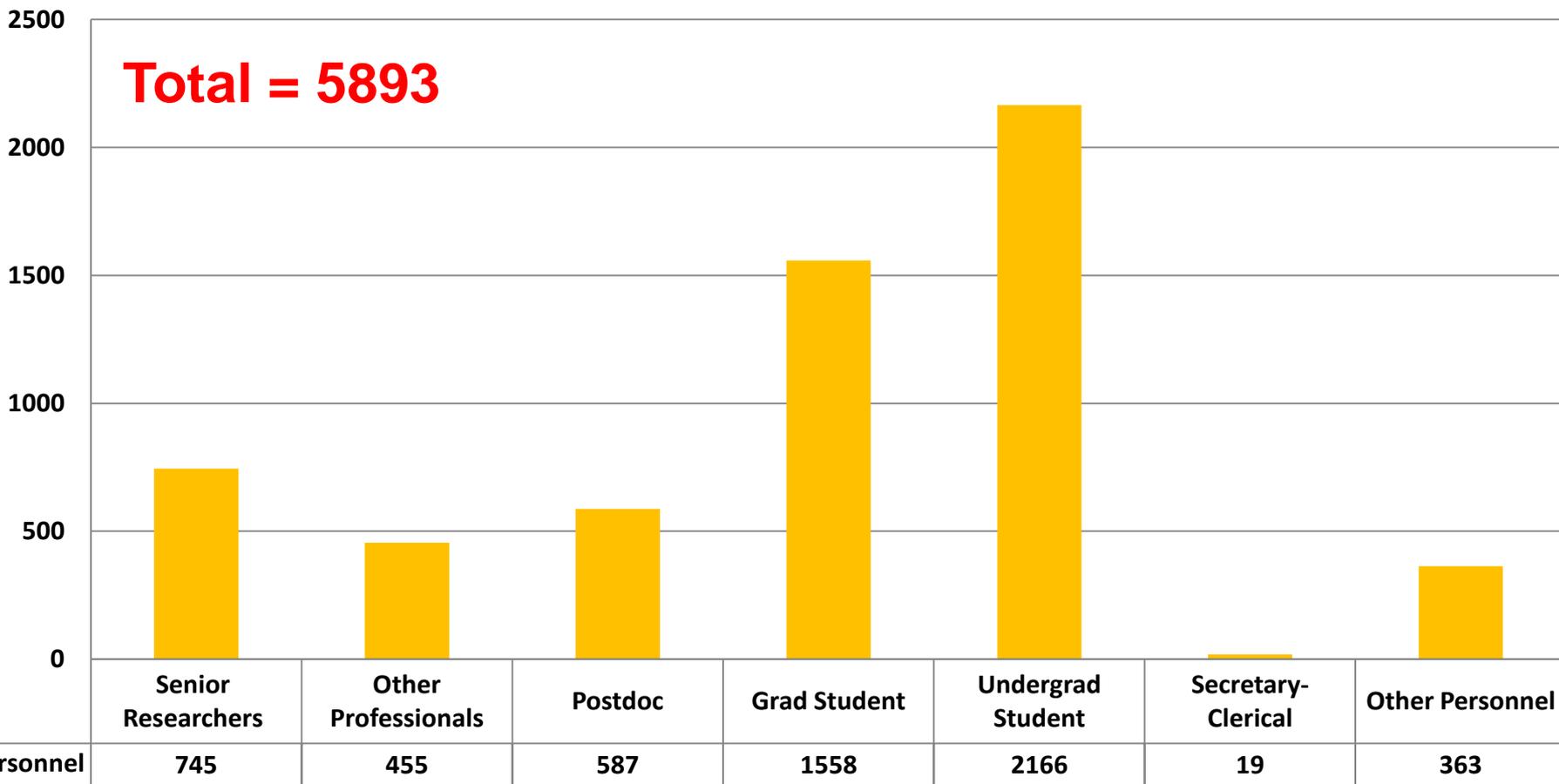
Percent of All Awards by Award Duration





ARRA & Biological Sciences Jobs

Personnel* Supported by BIO ARRA Awards as of 9/8/09



*Note this is not equivalent to the jobs created information that will be reported by recipients. PIs are required to report full-time equivalent (FTE) whereas NSF captures headcount statistics from the award (as submitted in the proposal). <http://www.nsf.gov/recovery/>



FY 2010 New Activities

Climate Research Investments

Water Sustainability and Climate
Ocean Acidification
Earth System Modeling
Dimensions of Biodiversity
Climate Change Education

National Ecological Observatory Network (NEON)

Macrosystems Biology

Transforming Undergraduate Biology Education

Research Resources- Digitization

Experiments in Innovation





BIO FY 2011 Budget Request

(dollars in millions)

Division	FY 2009	FY 2009	FY 2010	FY 2011	Change over
	Actuals	ARRA	Estimate	Request	FY2010 Request Amount
MCB	121.28	61.53	125.59	133.69	8.10
IOS	212.34	61.71	216.25	226.70	10.45
DEB	120.37	63.23	142.55	155.59	13.04
DBI	117.95	38.74	126.86	145.63	18.77
EF	84.68	34.80	103.29	106.20	2.91
BIO Total	\$656.62	\$260.00	\$714.54	\$767.81	\$53.27





Administration Priorities



- Economic prosperity, creating the industries and jobs of the future
- Energy, environment, sustainability
- Education (particular emphasis on STEM)





FY 2011 Priorities

- **Bio-economy**
- **Intersection of Biological and Physical Sciences**
- **Science, Engineering, and Education for Sustainability (SEES)**
- **U.S. Global Change Research Program**
- **Experiments in Innovation**
- **Transforming Undergraduate Biology Education**
- **Digitization of Collections**
- **National Ecological Observatory Network (NEON)**





Foundations for the Bio-economy: Biological inspirations for future industries and economic prosperity

Invention, development, production, and use of biological products to boost productivity of agriculture and industrial processes, as well as enhance environmental sustainability and other applications

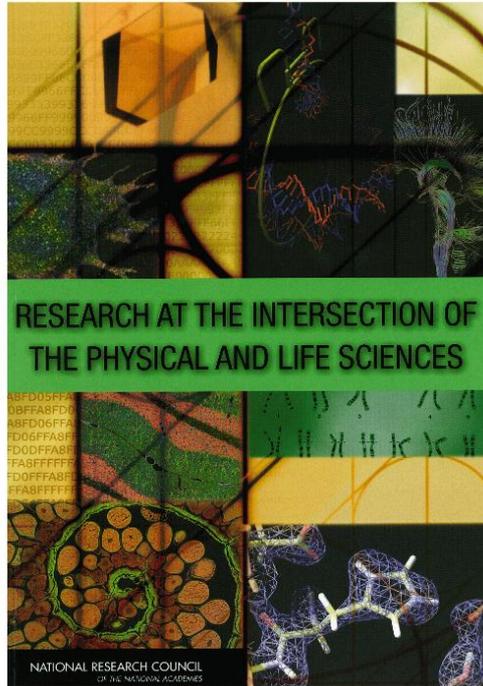
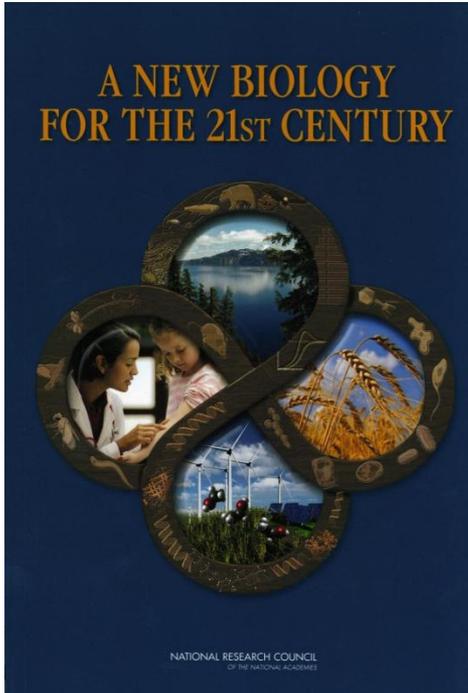
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Intersection of Life & Physical Sciences

BIO will work in partnership with the Directorate for Mathematical and Physical Sciences (MPS) to identify and support potentially transformative research projects that explore the interdisciplinary interface of the biological and physical sciences





Science, Engineering, and Education for Sustainability (SEES)

- Integration of climate & energy science
- Building on FY 2010 Climate Research activities:
 - Water Sustainability and Climate
 - Ocean Acidification
 - Earth System Modeling
 - Dimensions of Biodiversity
- Enhanced support for Coupled Natural and Human Systems program and new environmental synthesis center

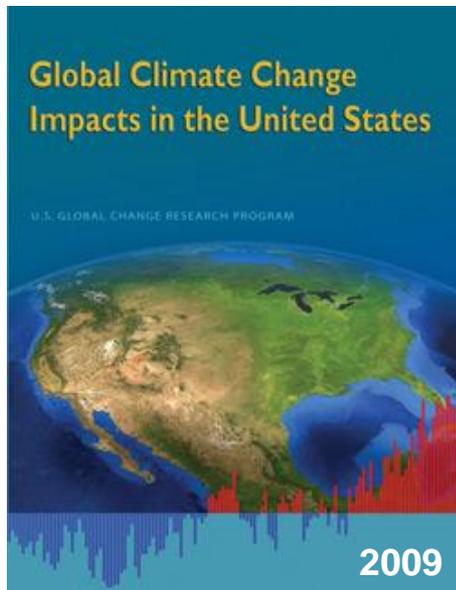
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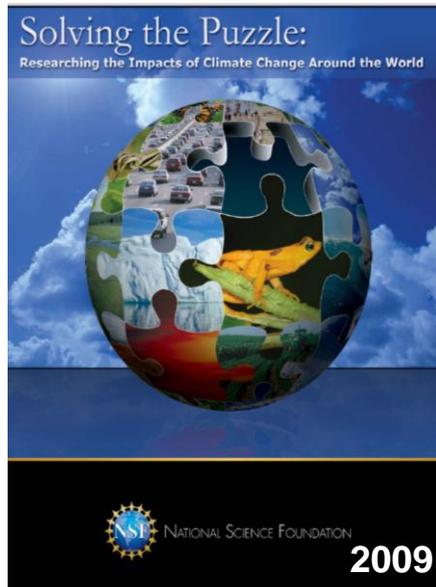


U.S. Global Change Research Program

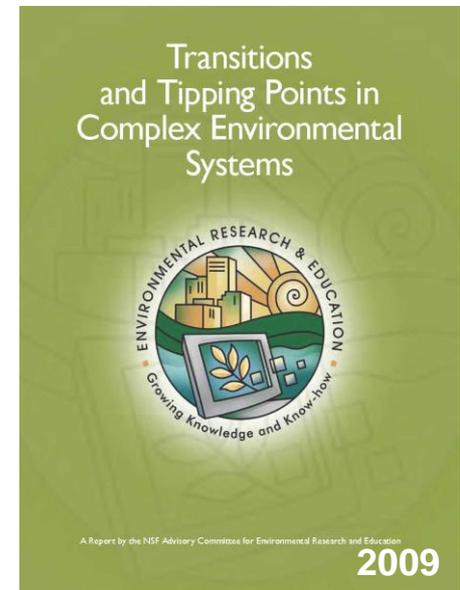
Increase support for core research to ensure a broad portfolio related to climate change and the biological drivers of change



US Global Climate Change Research Program



National Science Foundation



NSF Advisory Committee for Environmental Research and Education





Experiments in Innovation: Exploring Novel Processes for Problem Solving

- **Ideas Lab:** novel/high risk research project development coupled with real-time peer review
- **Crowd sourcing:** posting a problem or challenge on the internet and inviting the community to respond with their best ideas/solutions
- **Clean slate:** evaluating an existing problem or project independent of past performance or results; i.e., as if designing an approach or program from the beginning
- **International activities:** e.g., Basic Research to Enable Agricultural Development (BREAD)
- **Synthesis Centers**





Transforming Undergraduate Biology Education



Vision & Change

A VIEW FOR THE 21st CENTURY

in Undergraduate Biology Education

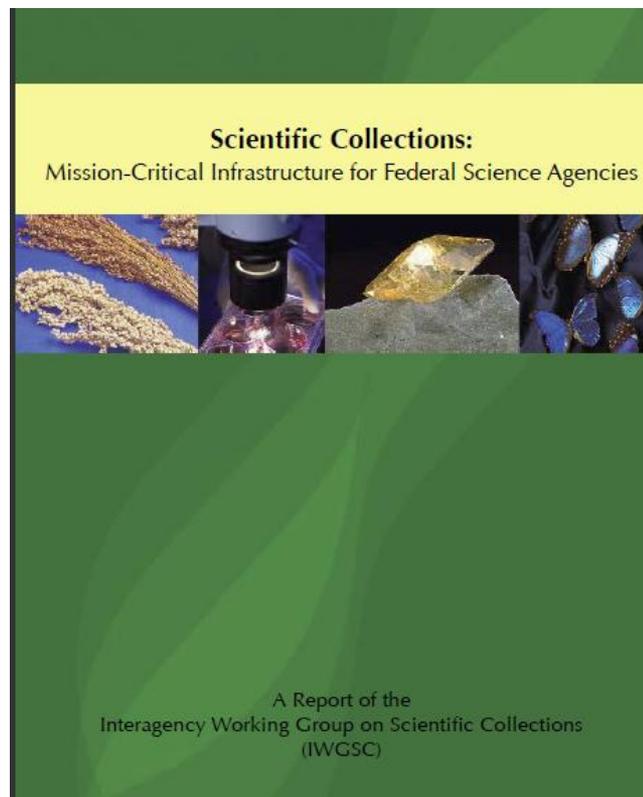
- Partnership with the Education and Human Resources (EHR) Directorate to build on 2009 Vision & Change Conference
- Augment existing BIO and EHR programs
- Possible new programs in FY 2011
 - Online digital resource access
 - Year of Undergraduate Research
 - Fellowships and supplements
- Integration of metrics and assessment





Digitization of Collections

- Support the development of a strategic plan for the digitization of the U.S. natural history collections
- Support research projects designed to develop technologies needed to enhance digitization capabilities
- Support initial digitization projects of high priority collections

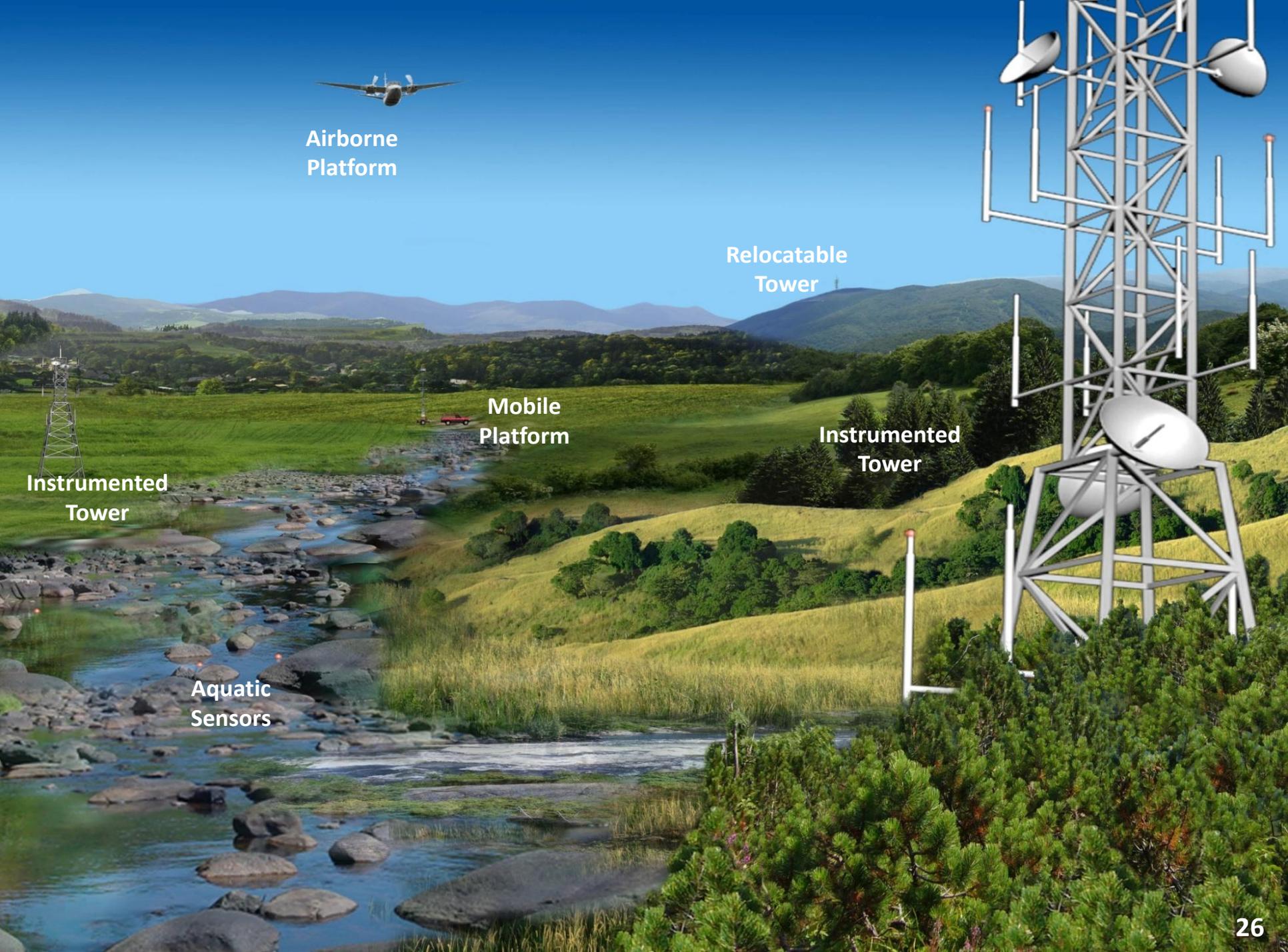




National Ecological Observatory Network (NEON)

- New horizons for large-scale biology
- FY 2011 MREFC Budget Request
 - \$20 million to start construction
 - \$433.72 Total Project Cost over 6 years
- Macrosystems Biology





Airborne
Platform

Relocatable
Tower

Mobile
Platform

Instrumented
Tower

Instrumented
Tower

Aquatic
Sensors



Where discoveries begin

