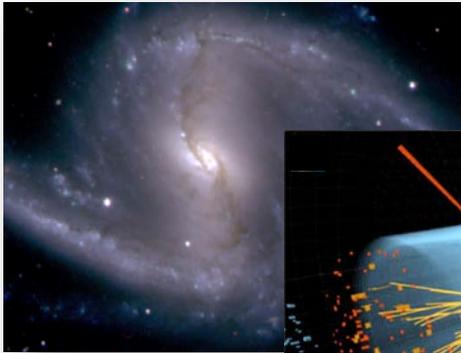
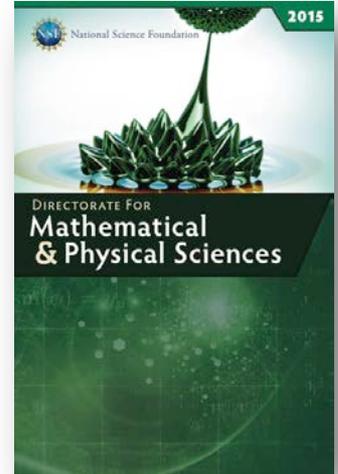




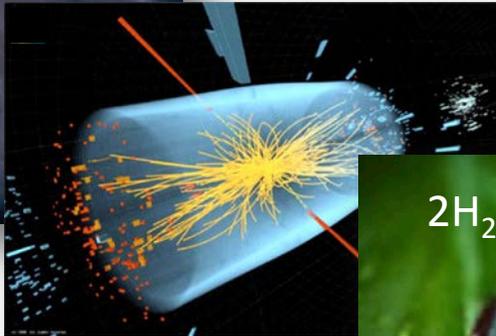
High Energy Physics Advisory Panel (HEPAP)

F. Fleming Crim
Assistant Director
National Science Foundation
Directorate for Mathematical and Physical Sciences
April 6, 2015

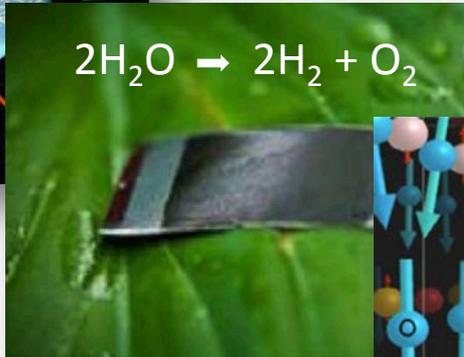




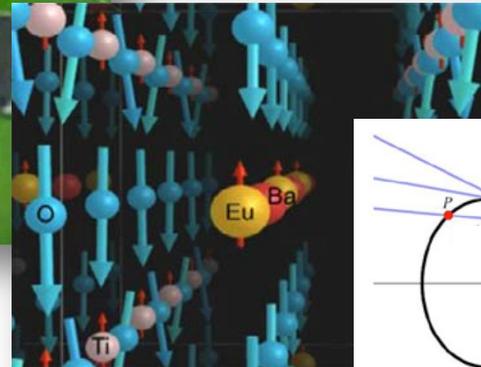
Astronomy



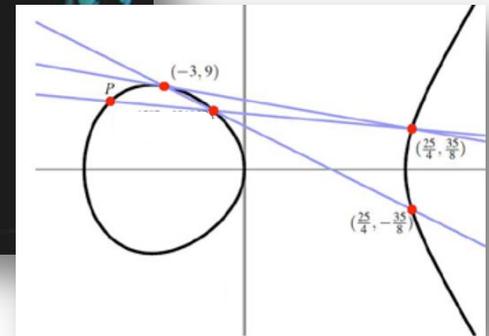
Physics



Chemistry



Materials



Mathematics

MPS Characteristics

2015 Budget

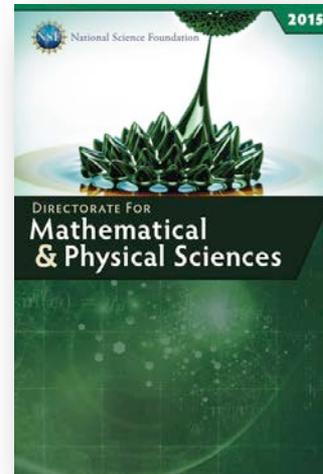
2016 Budget Request

MREFC Comments

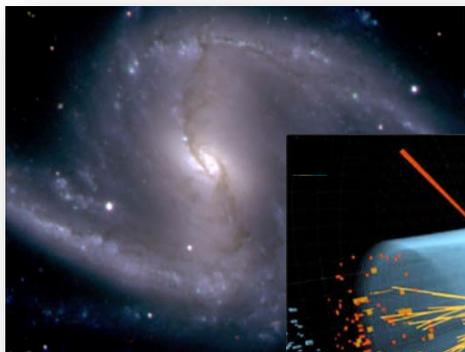
Mathematical and Physical Sciences



FY 2014
7800 Research Proposals
1875 Awards - 24% Funding Rate
\$ 1300 M

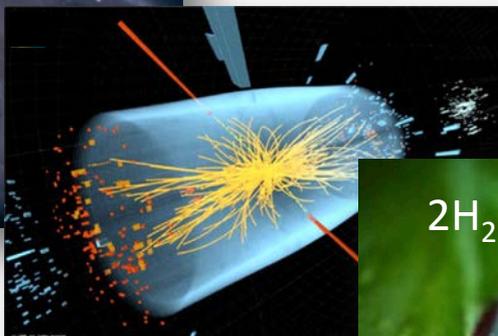


\$ 238 M



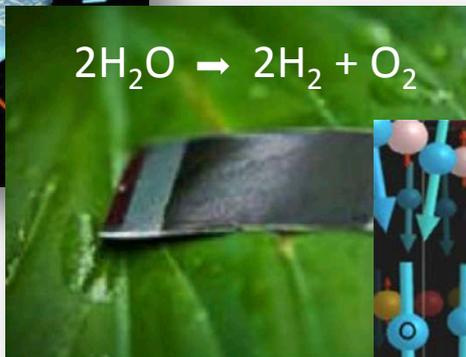
Astronomy
19%

\$ 267 M



Physics
29%

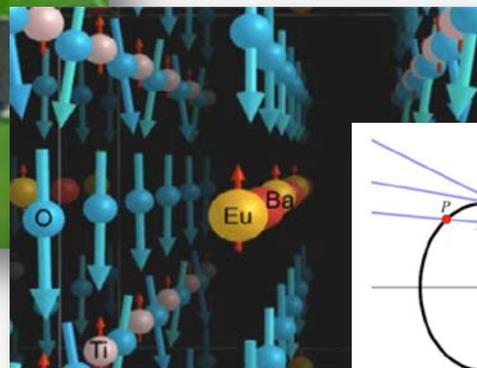
\$ 235 M



Chemistry
25%

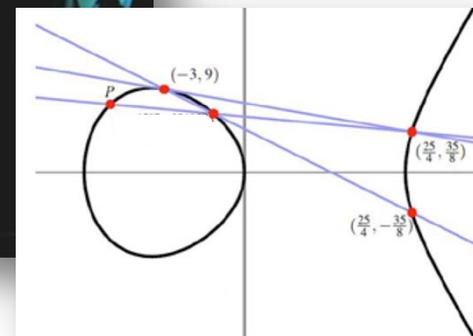


\$ 298 M



Materials
21%

\$ 225 M



Mathematics
26%



People Do Science

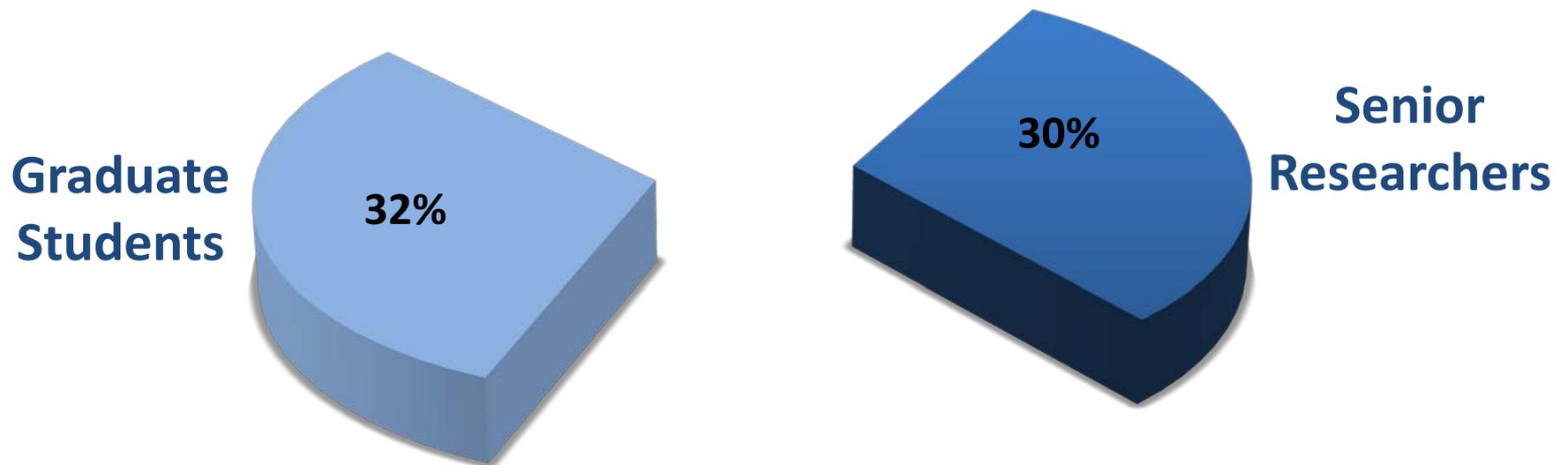
28,400 People in MPS Activities*

***Estimated for FY 2016**



People Do Science

28,400 People in MPS Activities*

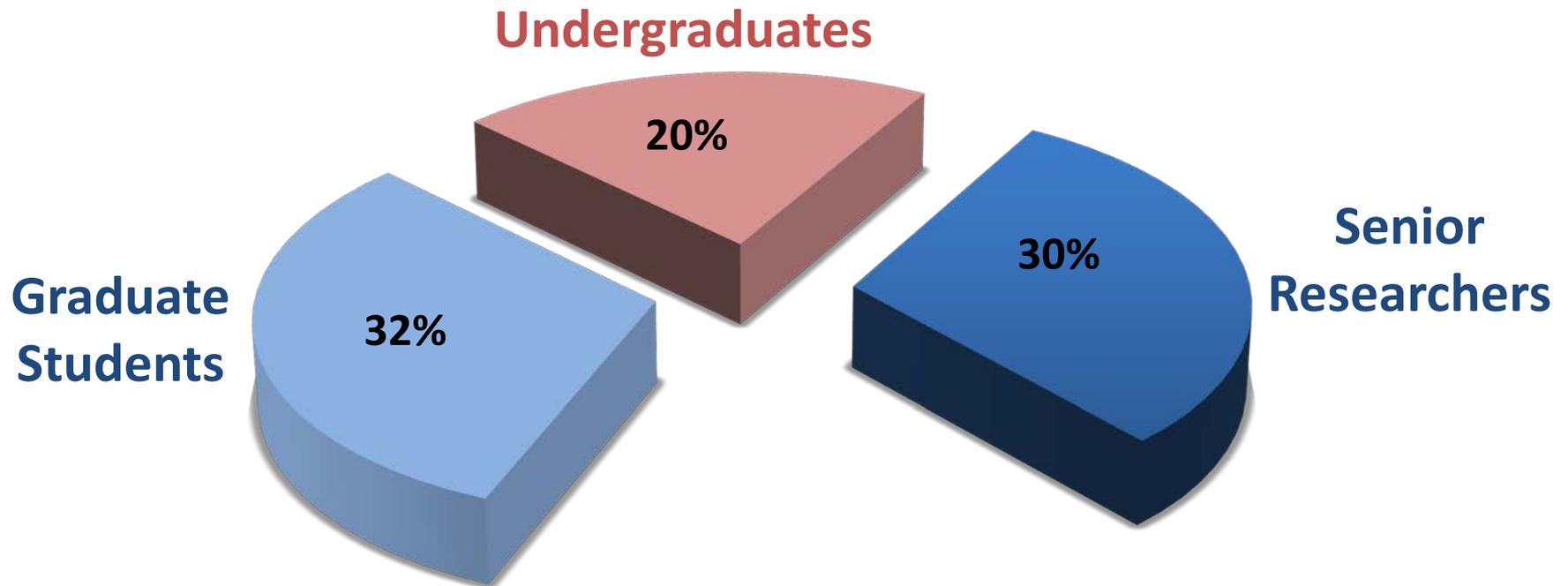


*Estimated for FY 2016



People Do Science

28,400 People in MPS Activities*

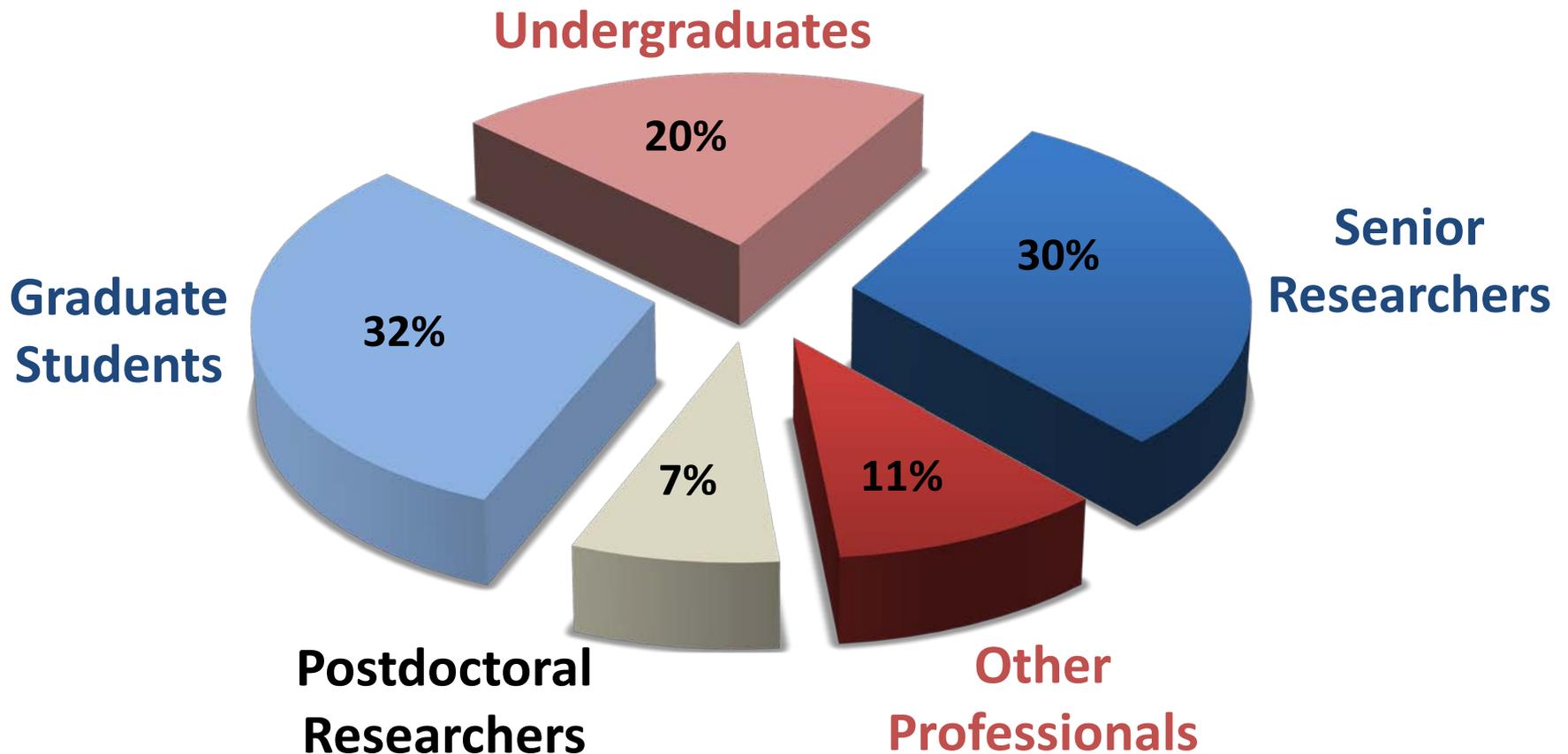


*Estimated for FY 2016



People Do Science

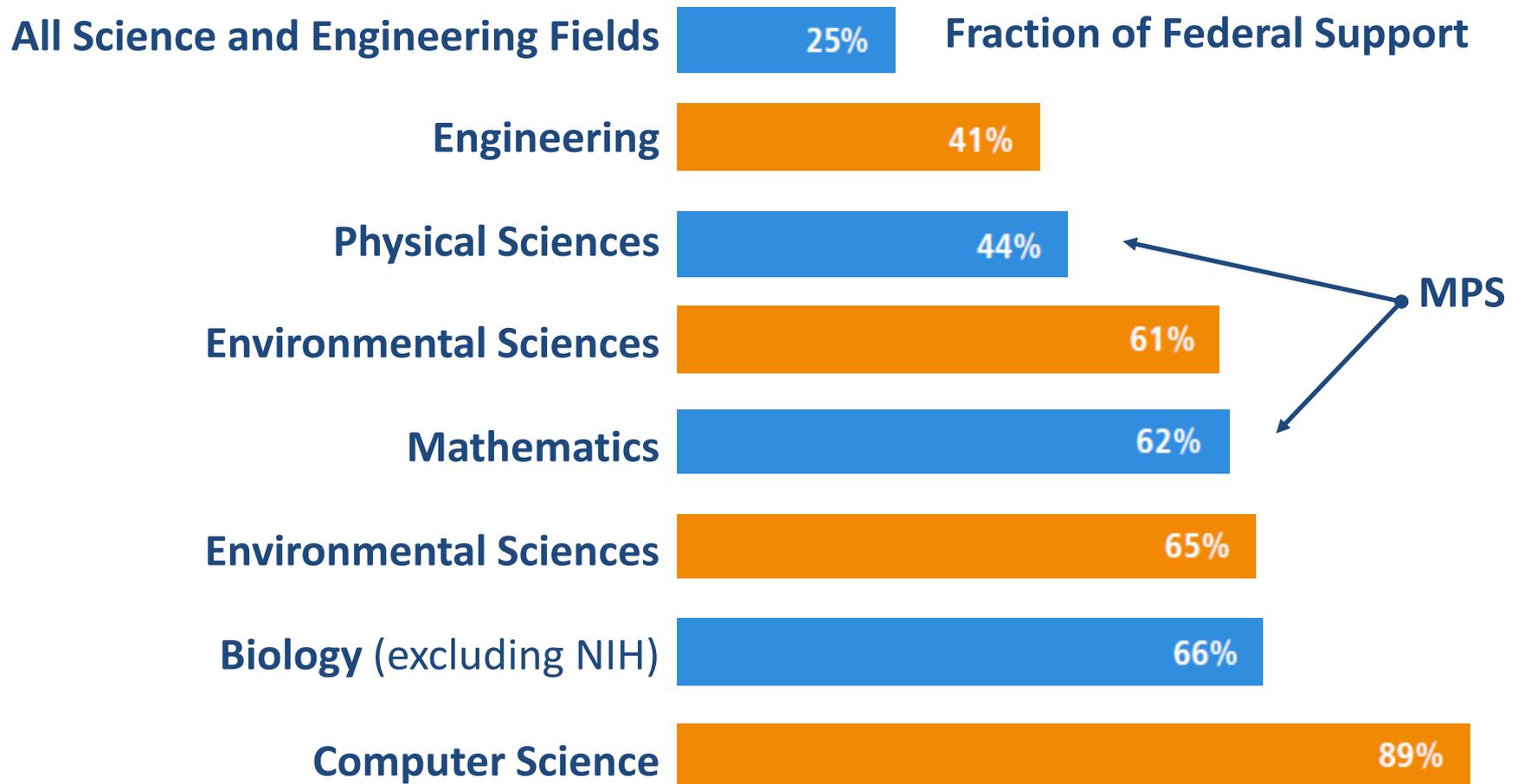
28,400 People in MPS Activities*



*Estimated for FY 2016



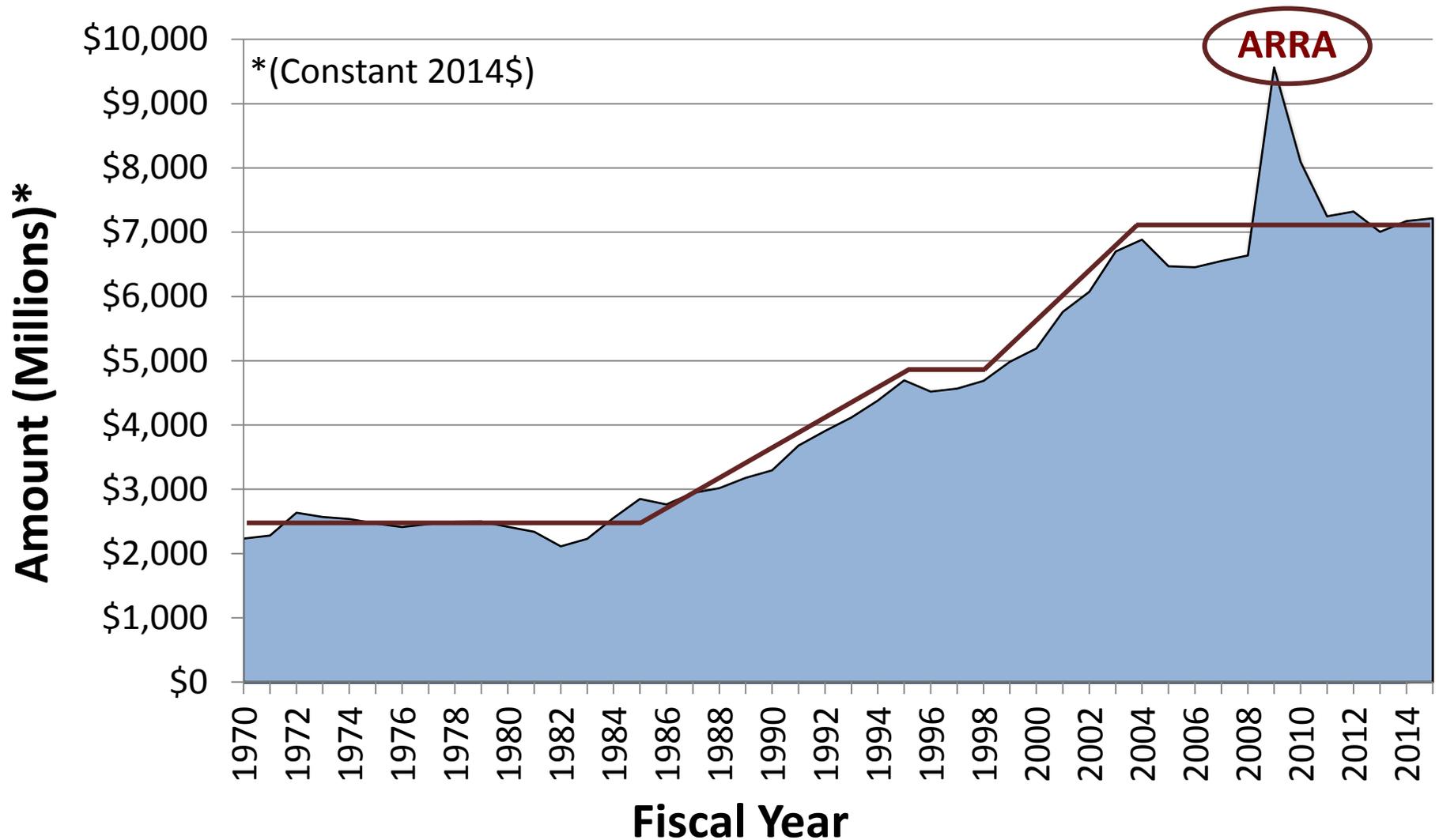
NSF Supports Academic Basic Research



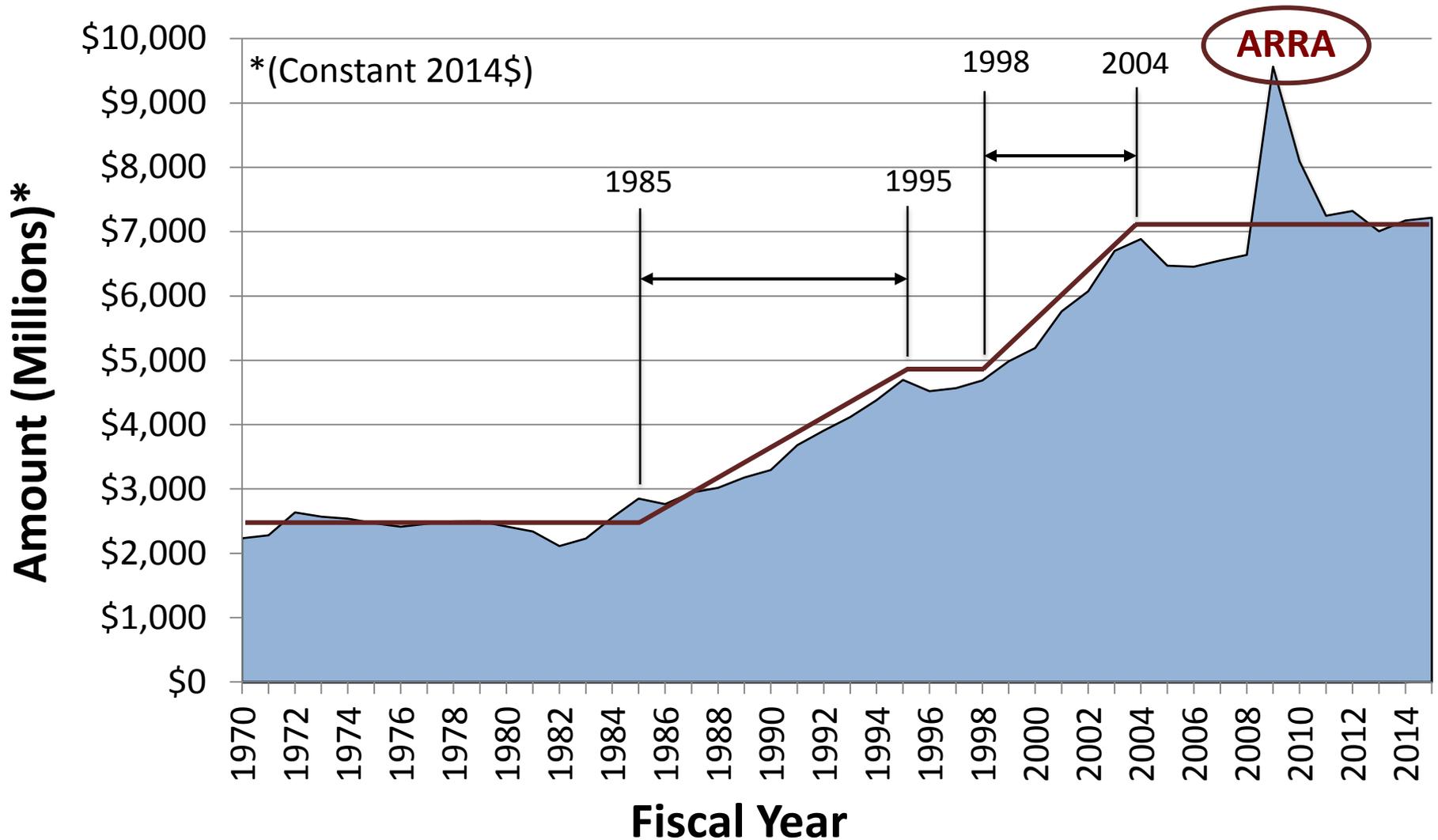
Source: NSF/ Center for National Science and Engineering Statistics, FY 2013



NSF Funding History



NSF Funding History



UNITED STATES
National Science Foundation

	FY 2014	FY 2015 (request)	
NSF	\$ 7172 M	\$ 7255 M	1.2%
R&RA	\$ 5808 M	\$ 5807 M	--

FY 2015

BUDGET REQUEST TO CONGRESS

UNITED STATES
National Science Foundation



FY 2015

BUDGET REQUEST TO CONGRESS

MISSION: To promote the progress of science; to advance the national health, prosperity, and welfare; and to secure the national defense.

—From the National Science Foundation (NSF) Act of 1950

VISION: A Nation that creates and exploits new concepts in science and engineering and provides global leadership in research and education.

—From Investing in Science, Engineering, and Education for the Nation's Future: NSF Strategic Plan for 2014-2018



Mathematical and Physical Sciences



UNITED STATES
National Science Foundation

	FY 2014	FY 2015 (request)	
NSF	\$ 7172 M	\$ 7255 M	1.2%
R&RA	\$ 5808 M	\$ 5807 M	--

UNITED STATES
National Science Foundation

FY 2015 (CROmnibus)

	\$ 7344 M	2.4%
	\$ 5934 M	2.2%

FY 2015

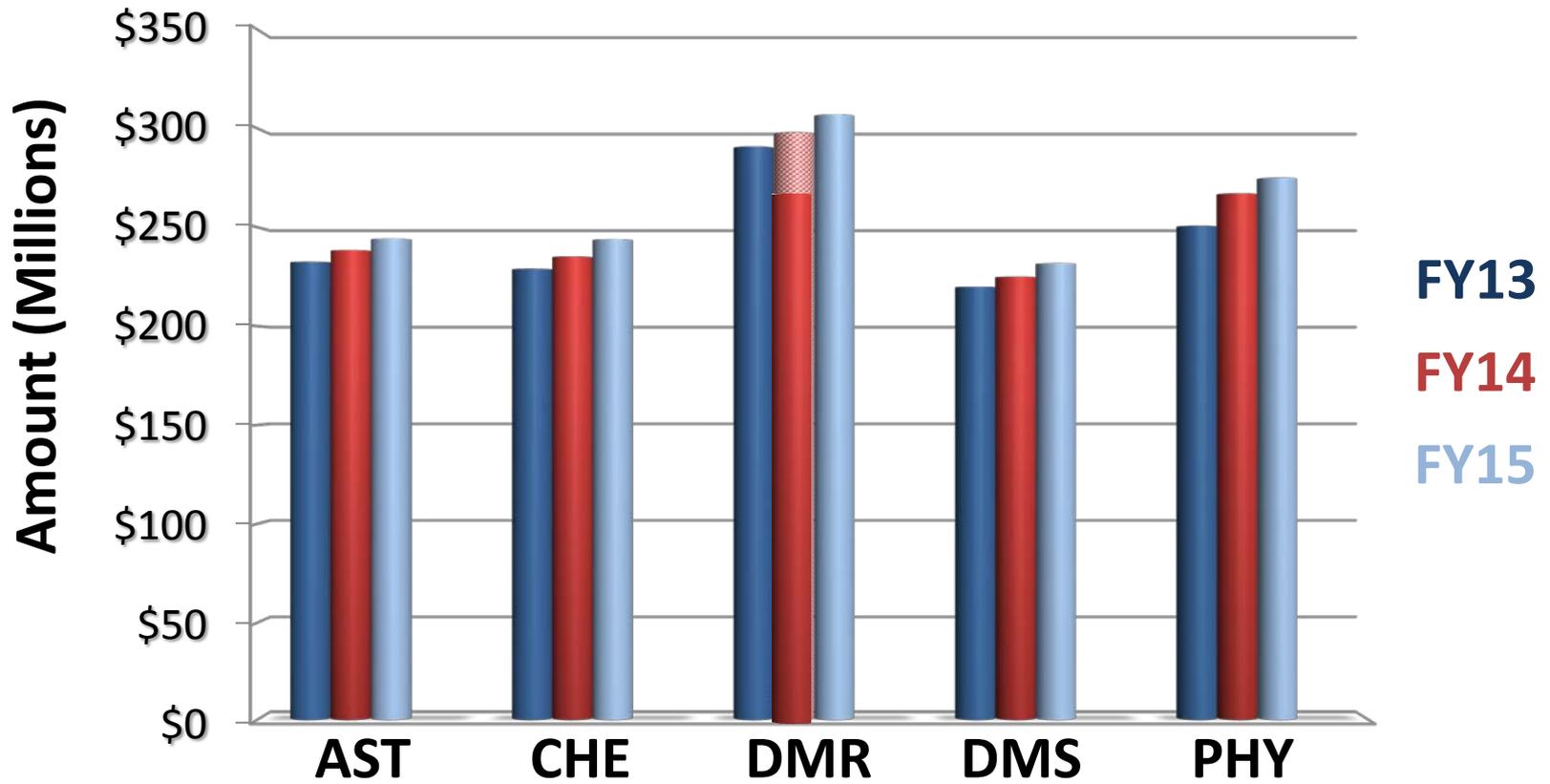
BUDGET REQUEST TO CONGRESS





MPS Budgets

FY 2013 \$ 1250 M $+4.0\%$ → FY 2014 \$ 1300 M $+2.8\%$ → FY 2015 \$ 1337 M (current)



UNITED STATES
National Science Foundation

	FY 2015	FY 2016 (request)	
NSF	\$ 7344M	\$ 7724 M	5.2%
R&RA	\$ 5934 M	\$ 6186 M	4.2%

FY 2016

BUDGET REQUEST TO CONGRESS

UNITED STATES
National Science Foundation

FY 2016

BUDGET REQUEST TO CONGRESS

MISSION: To promote the progress of science; to advance the national health, prosperity, and welfare; and to secure the national defense.

—From the National Science Foundation (NSF) Act of 1950 (PL. 81-507)

VISION: A Nation that creates and exploits new concepts in science and engineering and provides global leadership in research and education.

—From "Investing in Science, Engineering, and Education for the Nation's Future" NSF Strategic Plan for 2014-2018

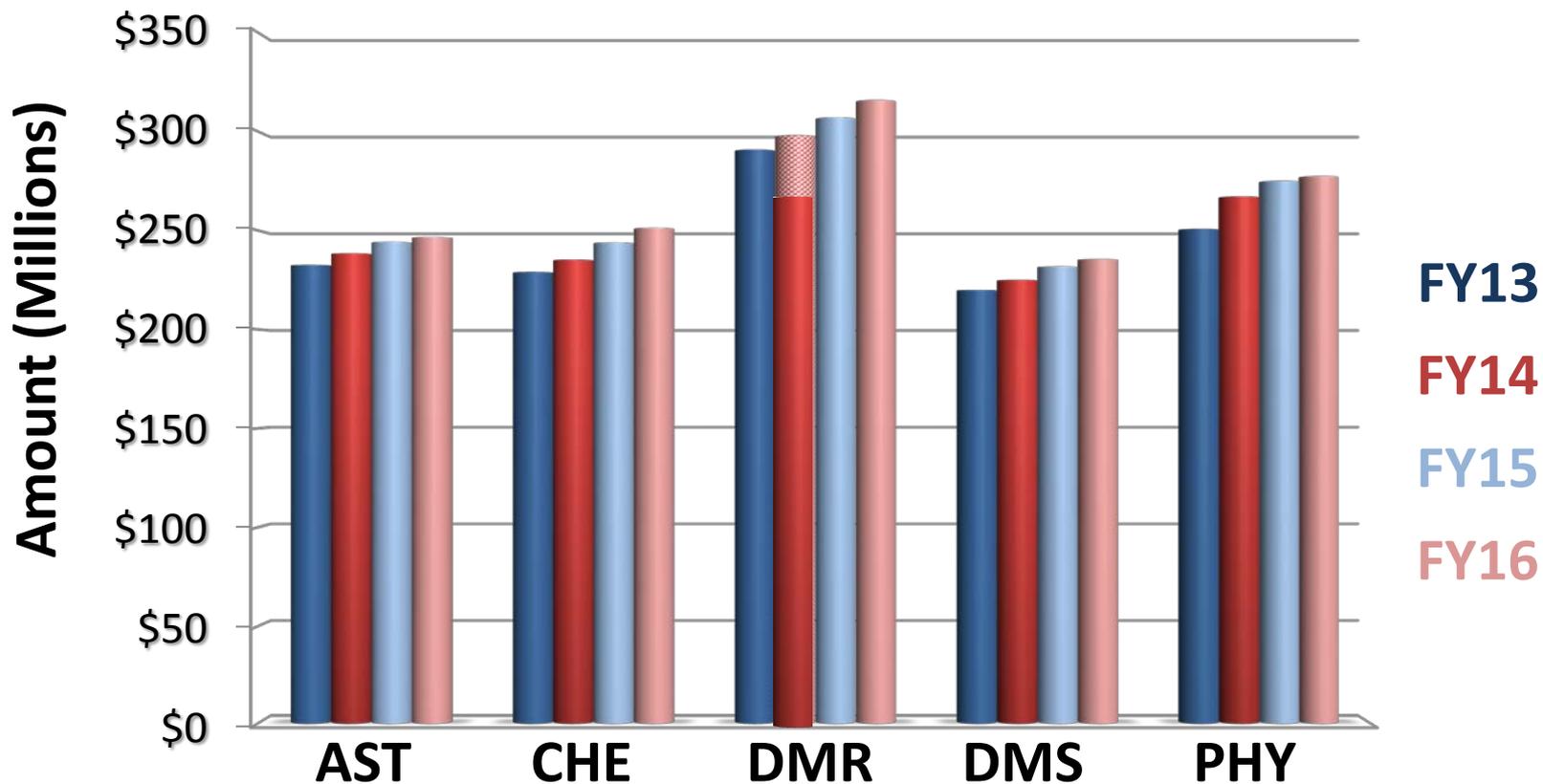


Mathematical and Physical Sciences



MPS Budgets

FY 2013 \$ 1250 M $\xrightarrow{+4.0\%}$ FY 2014 \$ 1300 M $\xrightarrow{+2.8\%}$ FY 2015 \$ 1337 M (current) $\xrightarrow{+2.2\%}$ FY 2016 \$ 1366 M (request)





MPS Budgets

FY 2013
\$ 1250 M

+ 4.0%



FY 2014
\$ 1300 M

+2.8%

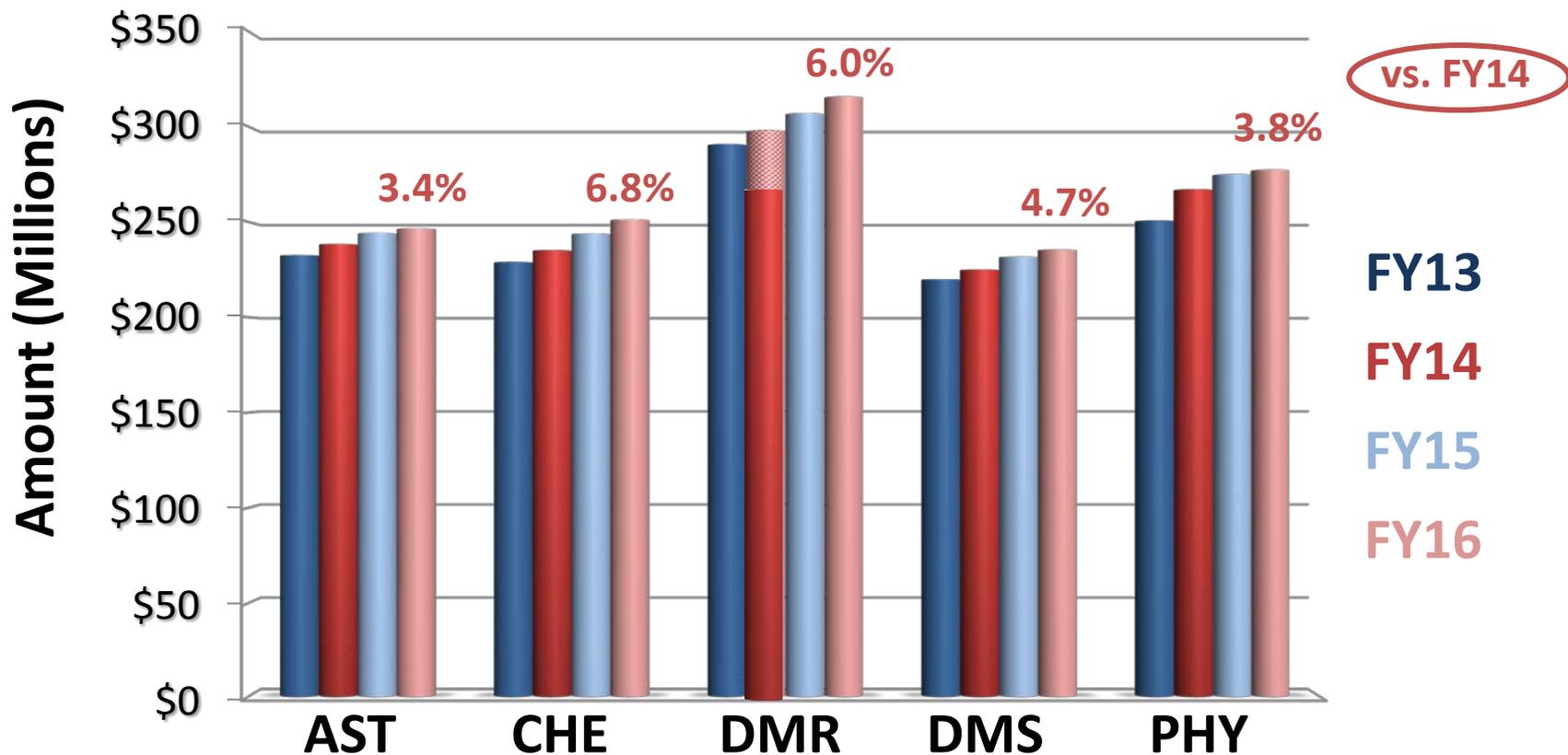


FY 2015
\$ 1337 M
(current)

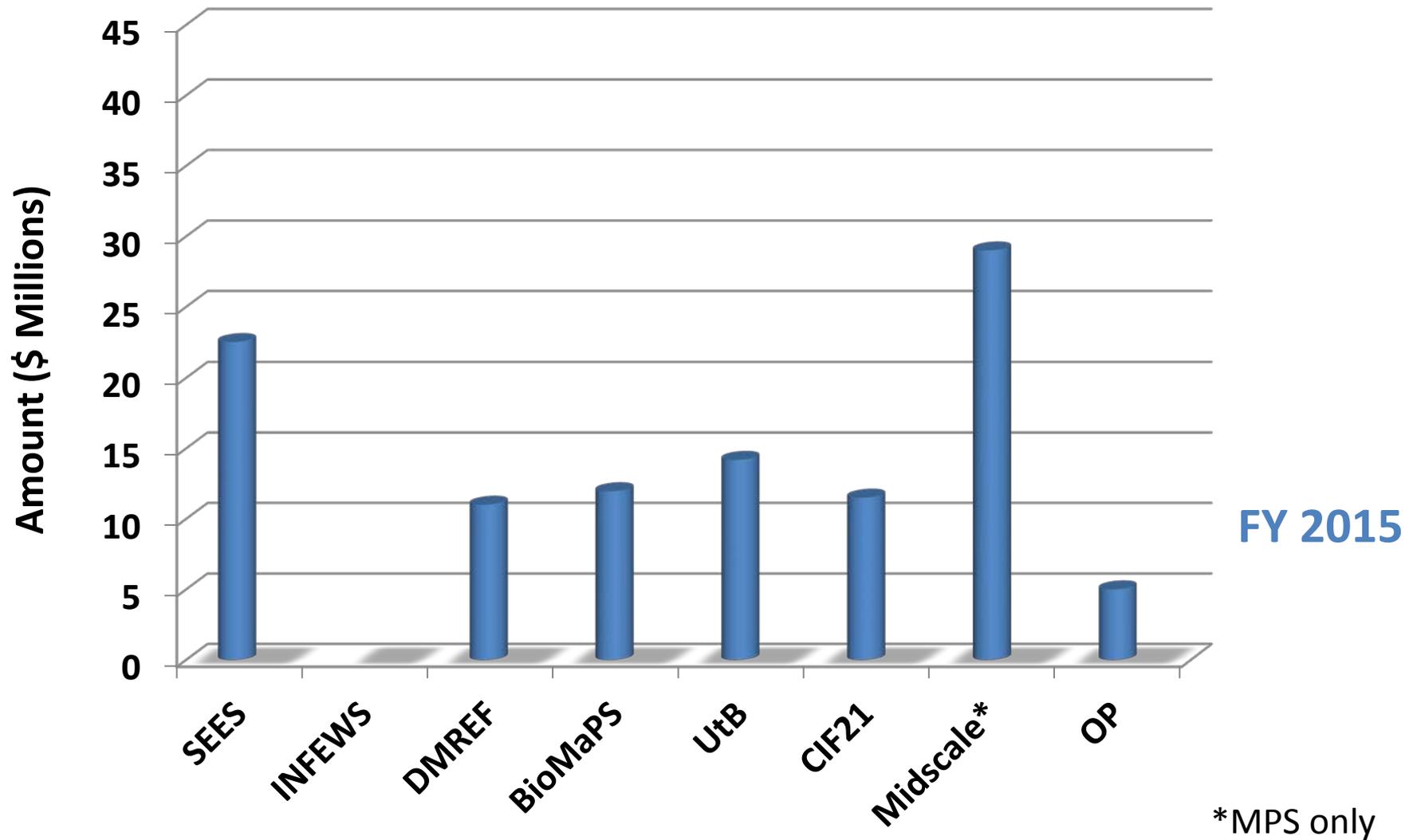
+2.2%



FY 2016
\$ 1366 M
(request)



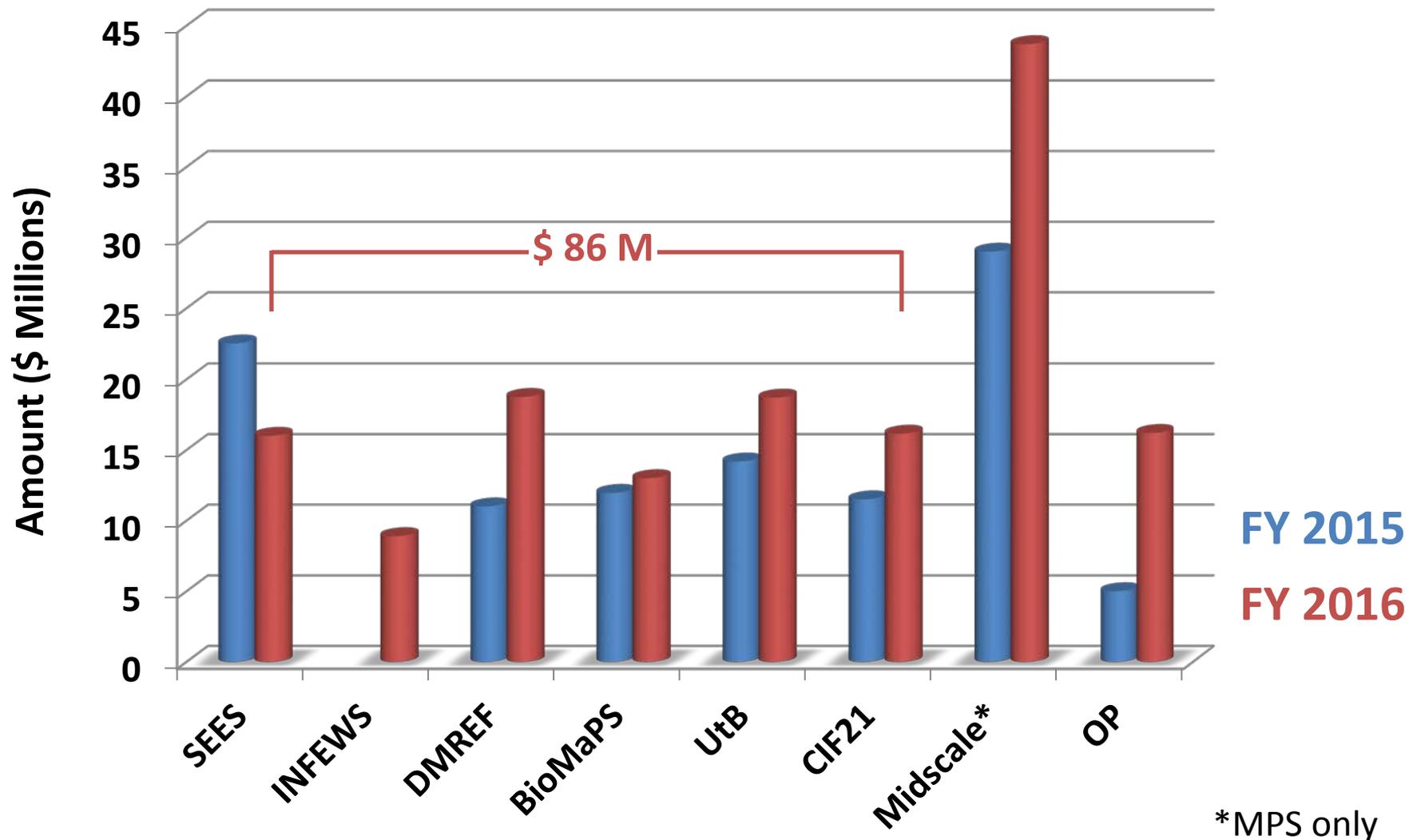
Selected MPS Major Investments



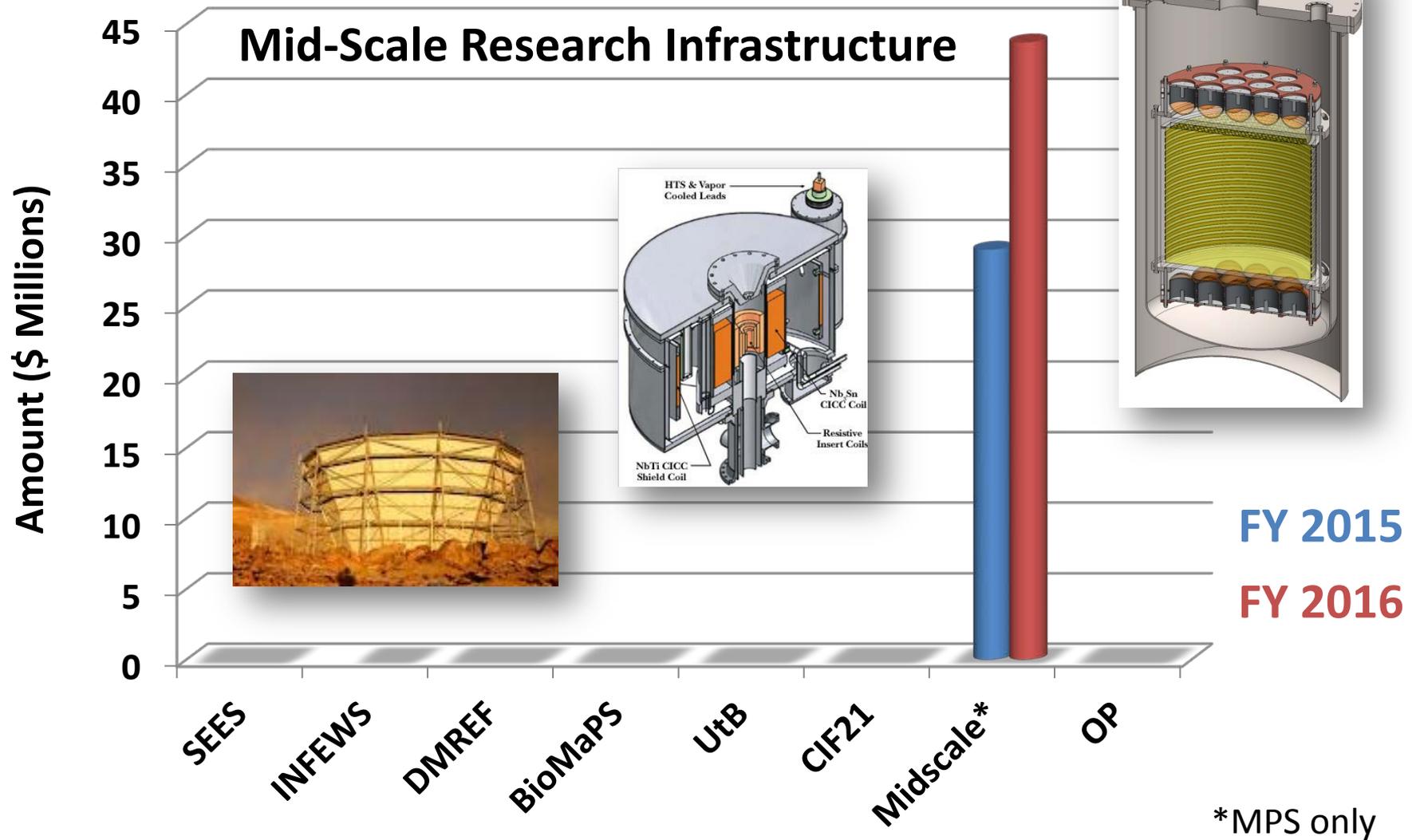
*MPS only



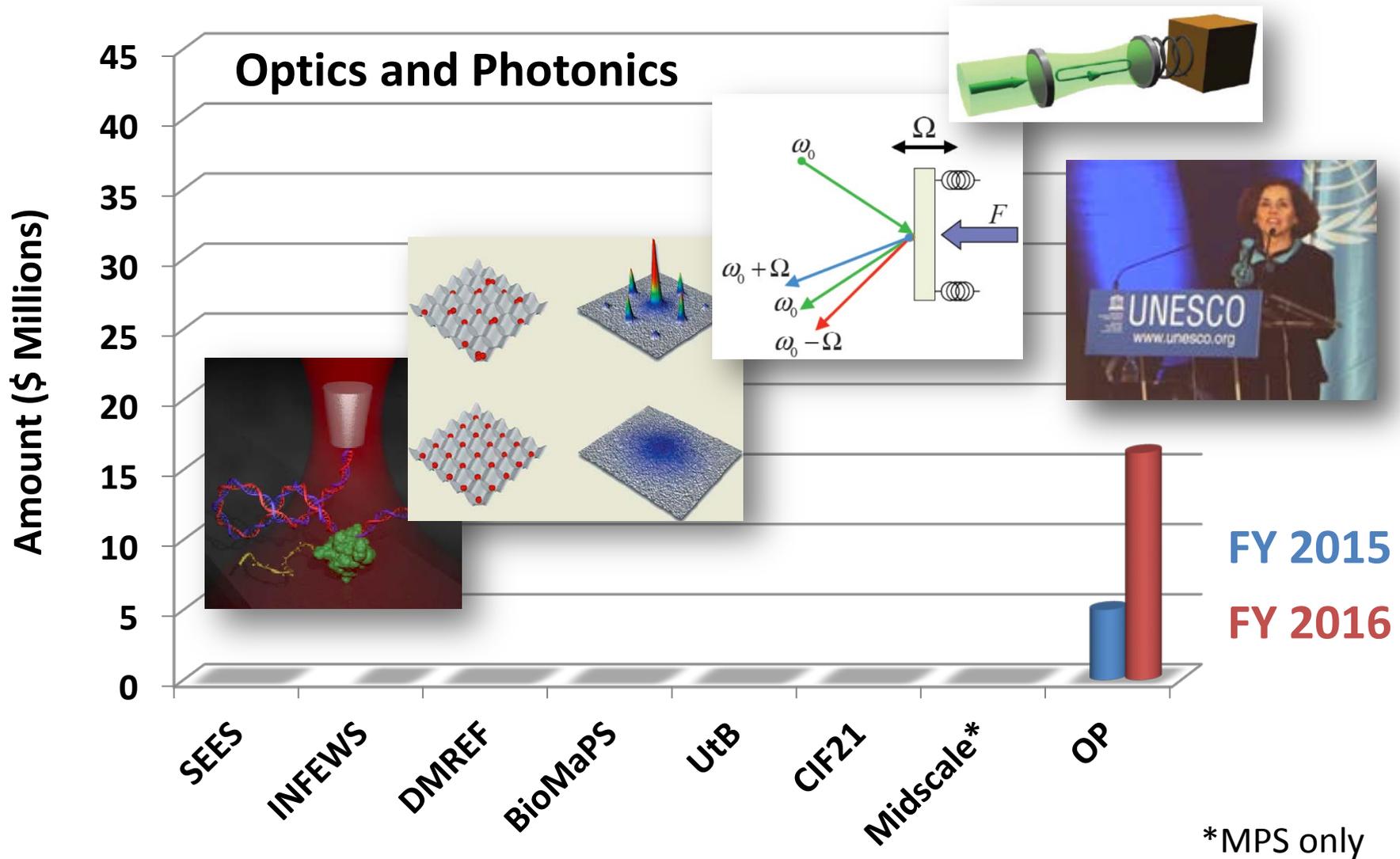
Selected MPS Major Investments



Selected MPS Major Investments



Selected MPS Major Investments



MPS Participation in NSF-Wide Initiatives

- **Cyber-Enabled Materials, Manufacturing, and Smart Systems**
 - **Cyberinfrastructure Framework for the 21st Century**
 - **Innovation Corps**
 - **INCLUDES**
- **Innovation at the Nexus of Food, Energy, Water Systems**
 - **Science, Engineering, and Education for Sustainability**
 - **Secure and Trustworthy Cyberspace**
 - **Understanding the Brain**

**CEMMSS, CIF21, I-Corps, INCLUDES,
INFEWS, SEES, SaTC, UtB**

\$87.3M



6.4% of MPS Budget





AST



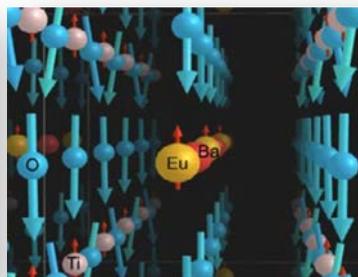
\$ 244M

CHE



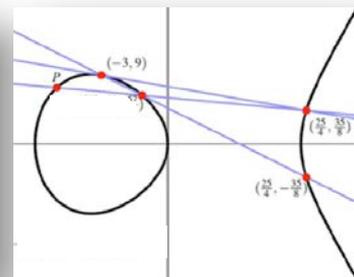
\$ 244M

DMR



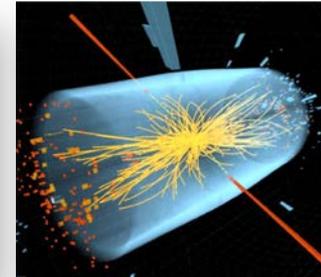
\$ 307M

DMS

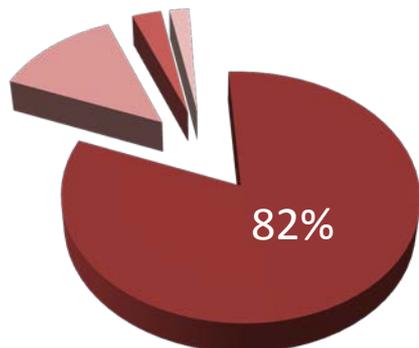


\$ 232M

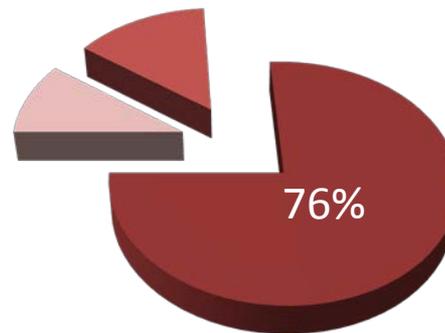
PHY



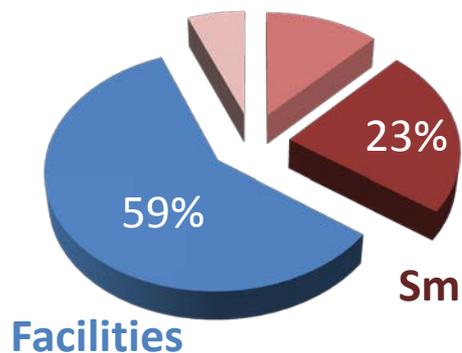
\$ 275M



IIA, Small Teams

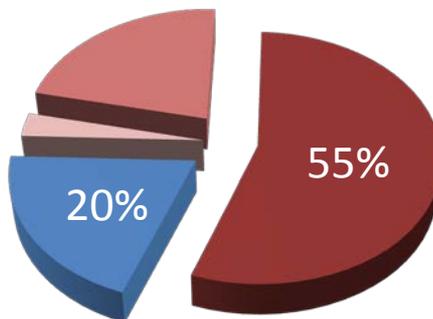


IIA, Small Teams



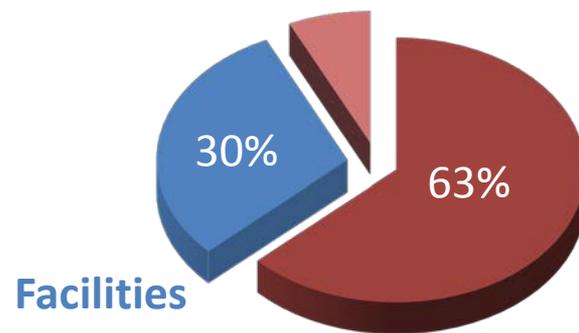
Facilities

IIA, Small Teams



Facilities

IIA, Small Teams



Facilities

IIA, Small Teams

FY 2015 Estimate: \$ 1337M

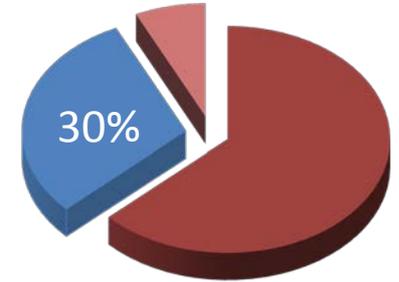
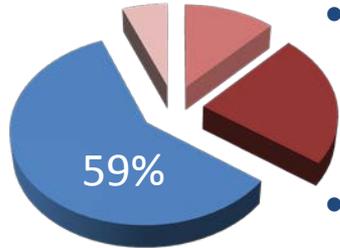


Mathematical and Physical Sciences



Astronomy (AST)

- Arecibo Observatory
- Atacama Large Millimeter Array (ALMA)
- Daniel K. Inouye Solar Telescope (DKIST (ATST))
- Gemini Observatory
- Large Synoptic Survey Telescope (LSST)
- National Optical Astronomy Observatory (NOAO)
- National Radio Astronomy Observatory (NRAO)
- National Solar Observatory (NSO)

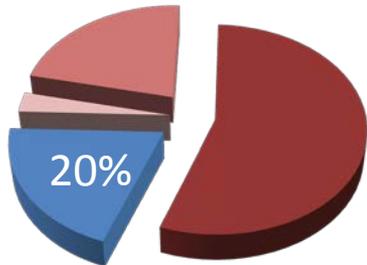


Physics (PHY)

- Ice Cube Neutrino Observatory
- Large Hadron Collider (LHC)
- Laser Interferometer Gravitational Wave Observatory (LIGO)
- National Superconducting Cyclotron Laboratory (NSCL)

Materials Research (DMR)

- Cornell High Energy Synchrotron Source (CHESS)
- National High Magnetic Field Laboratory (NHMFL)
- Center for High Resolution Neutron Scattering (CHRNS)



Examples of MPS-Supported Multi-user Facilities



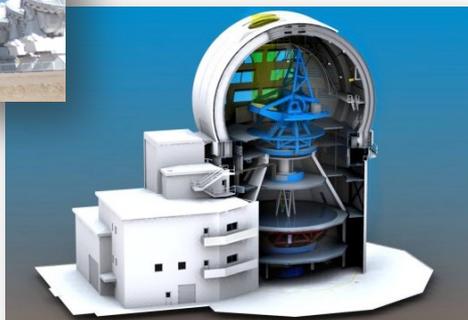
ALMA



Gemini



NOAO



DKIST

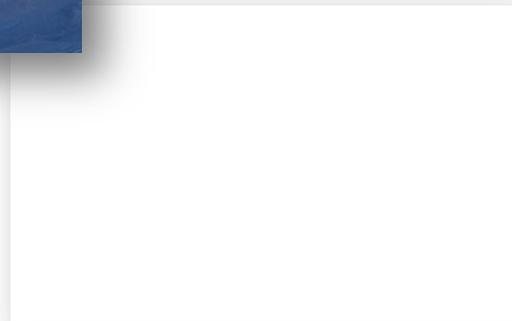


IceCube



NHMFL

LIGO



Two Different Budget Lines for Facilities

NSF FY 2016 Request (\$ in millions)	FY 2016 Request
Research & Related Activities	\$ 6186
Education & Human Resources	963
Major Research Equipment & Facilities Construction	200
Agency Operations & Award Management	355
National Science Board	4
Office of Inspector General	15
Total NSF	\$ 7,724

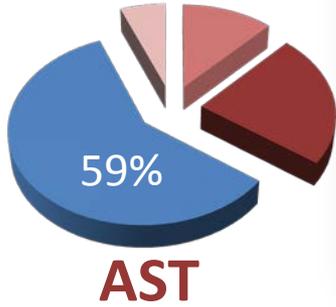


Two Different Budget Lines for Facilities

NSF FY 2016 Request (\$ in millions)	FY 2016 Request
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National Science Board	4
Office of Inspector General	15
Total NSF	\$ 7,724



Two Different Budget Lines for Facilities



AST

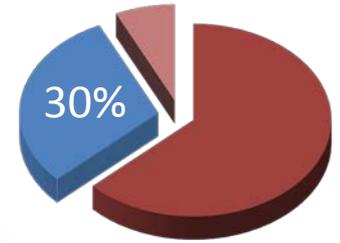


ALMA

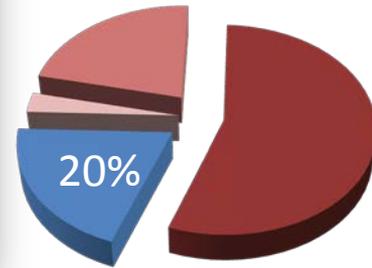
Operations (R&RA)



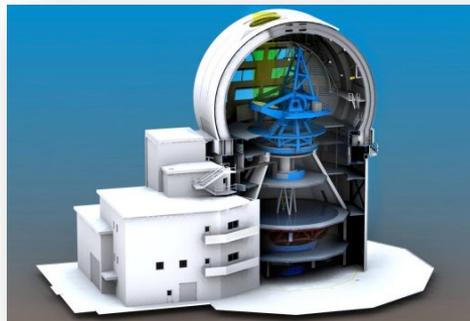
IceCube



PHY

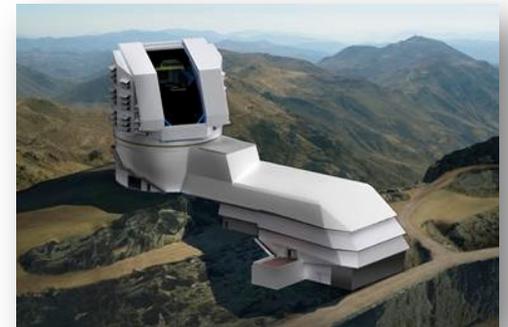


DMR



DKIST

Major Research Equipment and Facilities Construction (MREFC)



LSST



A Few Events



Wikipedia Commons Jordanagoodman

High Altitude Water Cherenkov Observatory (HAWC)

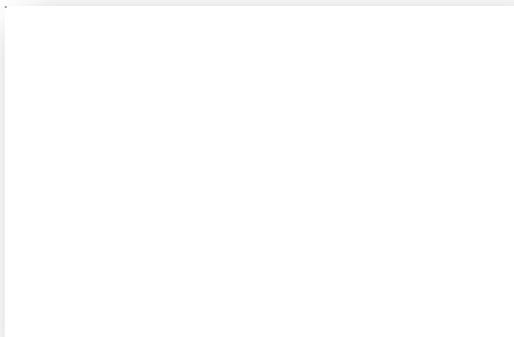
Dedication - March 20, 2015



Large Synoptic Survey Telescope (LSST) Laying the First Stone - April 13, 2015



Laser Interferometer Gravitational-Wave Observatory (LIGO) Advanced LIGO Completion - May 19, 2015



Fundamental Research in the Mathematical and Physical Sciences

Advancing Discovery

Building Blocks for Innovation

Forefront Facilities

Inspiring the Next Generation

