DIVISION OF MATHEMATICAL SCIENCES (DMS) $209,780,000
-$24,170,000 / -10.3%

DMS Funding
(Dollars in Millions)

	FY 2016 Actual	FY 2017 (TBD)	FY 2018 Request	Change Over FY 2016 Actual Amount	Change Over FY 2016 Actual Percent
Total	**$233.95**	**-**	**$209.78**	**-$24.17**	**-10.3%**
Research	**222.09**	**-**	**199.28**	**-22.81**	**-10.3%**
CAREER	14.07	-	12.00	-2.07	-14.7%
Centers Funding (total)	0.20	-	-		-
Centers for Analysis & Synthesis	0.20	-	-	-0.20	-100.0%
Education	**11.86**	**-**	**10.50**	**-1.36**	**-11.5%**

The influence of mathematical sciences on daily life is fundamental and pervasive. For example, every secure commercial transaction on the internet is an application of research in number theory and algebraic geometry, and similarly many of the modern smart materials used in advanced manufacturing are the result of mathematical analysis and simulation. Modern communication, transportation, medicine, manufacturing, security, and finance all depend on developments in the mathematical sciences. DMS investments catalyze research at the frontiers of fundamental, applied, and computational mathematics and statistics and enable discovery and innovation in other fields of science and engineering linked to key national priorities. In turn, advances in science and engineering inspire development of ever more sophisticated mathematical and statistical methodologies, theories, and tools. DMS investments underpin these developments as well as the training of future researchers in the mathematical sciences.

In addition to supporting a vibrant research community through core research programs in mathematics and statistics, DMS supports a range of other investments that advance research, increase the impact of the mathematical sciences, respond to national needs, and expand the U.S. talent base engaged in mathematical and statistical research. These include mathematical sciences research institutes, multi-agency programs such as joint activities in biosciences with the National Institutes of Health, joint activities in threat detection/data science with the National Geospatial-Intelligence Agency, a program for the development of small collaborative institutes on Transdisciplinary Research in Principles of Data Science with CISE/CCF as well as an initiative to support research centers on the Mathematics of Complex Biological Systems with BIO.

In general, 47 percent of the DMS portfolio is available for new research grants and 53 percent is available for continuing grants.

FY 2018 Summary

All funding decreases/increases represent changes over the FY 2016 Actual.

Research

- CAREER (-$2.07 million to a total of $12.0 million): Support for early-career researchers is a division priority. This level supports about 170 awards.
- Centers for Analysis and Synthesis (-$200,000 to zero): DMS contribution to the National Institute for Mathematical and Biological Synthesis (NIMBioS) ends as planned in FY 2017.
- Disciplinary and Interdisciplinary Research (-$20.80 million to a total of $182.39 million): Support for fundamental research is the core mission of DMS. Funding changes include:

- Critical Techniques, Technologies and Methodologies for Advancing Foundations and Applications of Big Data Sciences and Engineering (BIGDATA) (-$2.0 million to zero): DMS will realign its investment amid new DMS activities in data science.
- Research at the Interface of the Biological, Mathematical and Physical Sciences, and Engineering (BioMaPS) (-$3.26 million to zero): DMS will realign its investment into new DMS activities in life sciences.
- DMREF (-$1.50 million to zero): DMS will continue to support fundamental discoveries in materials science and Advanced Manufacturing by investing in new capabilities for mathematical modeling, computational simulation, numerical algorithms, and data analysis and management through disciplinary programs.
- Mathematical Sciences Innovation Incubator (MSII) (-$2.0 million to zero): DMS will put this new program on hold.
- Mathematical Sciences Research Institutes (-$3.10 million to a total of $25.80 million): Six DMS-supported institutes will continue to catalyze frontier research through an array of scientific programs. DMS will maintain the level of support for the development of small collaborative institutes on Transdisciplinary Research in Principles of Data Science. DMS will start supporting research centers on the Mathematics of Complex Biological Systems jointly with the Directorate for Biological Sciences.
- Optics and Photonics (-$1.50 million to zero): Fundamental research in optics and photonics will be supported by DMS disciplinary programs.
- Secure and Trustworthy Cyberspace (SaTC) (-$1.0 million to a total of $1.0 million): Funding reflects continued national need for fundamental cybersecurity research, which investigates questions surrounding securing information networks against hostile intrusion and ensuring individual privacy in anonymized data sets.
- Understanding the Brain (UtB) (-$1.54 million to a total of $3.0 million): DMS will support investments into scientific understanding of the full complexity of the brain cross-disciplinary investments.
- Workforce Program in the Mathematical Sciences (-$4.0 million to a total of $18.0 million): DMS will put on hold the relatively new Enriched Doctoral Training in the Mathematical Sciences program.

Education

- Research Experiences for Undergraduates (REU) (-$1.36 million to $4.50 million): DMS maintains a commitment to REU Sites and REU Supplements activities.
- Mathematical Sciences Postdoctoral Research Fellowships (MSPRF) (level at $6.0 million). Investments continue in a number of education and diversity activities through the program.