

DIVISION OF CHEMISTRY (CHE)

\$221,050,000
-\$25,470,000 / -10.3%

CHE Funding
(Dollars in Millions)

	FY 2016 Actual	FY 2017 (TBD)	FY 2018 Request	Change Over	
				FY 2016 Actual Amount	Percent
Total	\$246.52	-	\$221.05	-\$25.47	-10.3%
Research	232.49	-	213.95	-18.54	-8.0%
CAREER	26.66	-	23.99	-2.67	-10.0%
Centers Funding (total)	28.35	-	21.60	-6.75	-23.8%
Centers for Chemical Innovation	28.10	-	21.60	-6.50	-23.1%
Nanoscale Science & Engineering Centers	0.25	-	-	-0.25	-100.0%
Education	6.47	-	2.40	-4.07	-62.9%
Infrastructure	7.56	-	4.70	-2.86	-37.8%
National High Magnetic Field Laboratory (NHMFL)	1.92	-	1.73	-0.19	-9.9%
National Nanotechnology Coordinated Infrastructure (NNCI)	0.30	-	-	-0.30	-100.0%
Research Resources	5.34	-	2.97	-2.37	-44.4%

CHE supports a large and vibrant research community engaged in fundamental discovery, invention, and innovation in the chemical sciences. CHE enables research in the theoretical, computational, and experimental design, synthesis, and characterization of new molecules, surfaces, and nanostructures often leading to commercial products which benefit society. The division provides new tools for chemical discovery, including those in data discovery science where increasing volumes and varieties of data are harnessed to advance discovery and innovation. CHE solves gaps in our knowledge of the fundamental rules of life in terms of determining structure-function relationships in biological systems. CHE researchers contribute to the production of next generation technologies for sensing, computing, modeling, and communicating at the quantum level by observing, manipulating, and controlling the behavior of particles and energy in nanometer dimensions. The division is also involved in the development of new tools to examine and solve complex chemical problems including the synergistic combination of multiple types of measurements (including remote access and cyber-enabled tools) and the development of de novo instruments. CHE supports curiosity-driven research that leads to increased understanding of molecules and their chemical transformations, that are often manifest in the chemical, agricultural, and pharmaceutical industries. The division also supports the development of new instrumentation to study and detect molecules important for sensing, monitoring, understanding, and improving the sustainability of chemical reactions at both the lab bench and commercial scales.

In general, 61 percent of the CHE portfolio is available for new research grants and 39 percent is available for continuing grants.

FY 2018 Summary

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

Research

- CAREER grants (-\$2.67 million to a total of \$23.99 million) are funded at a rate equal to general unsolicited research grants. This is consistent with the CHE objectives of encouraging broadening participation and education while focusing on the frontiers of the field. This will fund about 90 awards.
- Disciplinary and Interdisciplinary Research (-\$9.04 million to a total of \$163.79 million): Support for

fundamental research is the core mission of CHE. Funding changes include:

- Research at the Interface of the Biological, Mathematical and Physical Sciences (BioMaPS) (-\$5.70 million to a total of \$1.90 million) was widely embraced by the CHE community and will be mainstreamed into core programs. CHE will only support remaining continuing grant increments (CGIs) in FY 2018. CHE continues to support efforts at the chemistry-biology interface in activities such as the Brain Research through Advancing Innovative Neurotechnologies (BRAIN) Initiative (level at a total of \$5.76 million) as well as an examination of the rules of life, which focus on structure-function relationships related to biological systems.
- Some programs are scheduled to sunset as activity moves from special investments to core research programs. Continuing grant increments at FY 2018 Request for SEES include Sustainable Chemistry, Engineering and Materials (SusChEM, -\$31.28 million to a total of \$10.42 million).
- Designing Materials to Revolutionize and Engineer our Future (DMREF) program (-\$3.0 million to zero) will not issue a solicitation in FY 2018. Instead, CHE will focus on engaging the community in data-driven discovery science which seeks to emphasize the effective sharing, mining, and repurposing of rapidly-growing chemical datasets and to apply state-of-the-art data analytics tools to expand chemical understanding.
- The Centers for Chemical Innovation (CCI) program (-\$6.50 million to a total of \$21.60 million) makes two levels of awards: Phase I for center development, and Phase II for full centers. Phase I awards are considered part of CHE's D&IR investments. In FY 2018, CHE will support six Phase II Centers (two have sunset since FY 2016) at a reduced level relative to the standard center award. The CCI program continues the exploration of major, long-term research challenges, producing transformative research that leads to innovation and attracts broad scientific and public interest.
- Nanoscale Science and Engineering Centers (-\$250,000 to zero): This program will sunset as planned in FY 2017.

Education

- CHE contributes to a number of education and diversity activities: Research Experiences for Undergraduates (REU) support totals \$2.35 million (-\$3.28 million); success rates for REU Sites is projected to be similar to proposals submitted to core research programs. Support is level at \$50,000 in total for Research Experiences for Teachers (RET) and Career Life Balance (CLB) and level at \$330,000 for Alliances for Graduate Education and the Professoriate (AGEP).

Infrastructure

- NHMFL, specifically the Ion Cyclotron Resonance (ICR) facility (-\$190,000 to a total of \$1.73 million): The decrease is consistent with the decrease in chemistry-focused research at the facility.
- NNCI (-\$300,000 to zero): Nanochemistry investments are well supported within our core programs as demonstrated by the National Nanotechnology Initiative (NNI, level at \$47.94 million).
- Research Resources (-\$2.37 million to a total of \$2.97 million): Support includes the Chemistry and Materials Consortium for Advanced Radiation Sources (ChemMatCRS) at Argonne National Laboratory (level at \$970,000) and adds support for highly meritorious Materials Research Instrumentation (MRI) proposals (-\$2.37 million to a total of \$2.0 million).