Beyond making appropriations to fund federal research programs, Congress is responsible for authorizing the activities and funding levels for federal agencies such as the National Science Foundation (NSF). Last renewed by the America COMPETES Act reauthorization of 2010, the agency’s authorization is set to expire in 2015. In anticipation, Congress has started work on NSF reauthorization legislation.

Amid a sluggish national economy and concomitant contentious political debate about federal budget priorities, some in Congress have questioned in recent years what types of research the government should fund and, periodically, specific research projects. Therefore, as Congress considers the future of the NSF, the science policy community has prepared for potential battles.

Senator Jay Rockefeller IV (D–WV), chairman of the Senate Committee on Commerce, Science, and Transportation, opened a November 2013 hearing on the reauthorization of the America COMPETES Act noting that the panel would discuss ‘one of the government’s most visionary functions, the funding of basic scientific research... The federal government funds nearly one-third of all research and development in the United States.”

International competitors know that research is worth the investment, warned Rockefeller. “While we constrain ourselves, they are spending more and catching up. That’s why, instead of retreating in the face of competition, we passed the America COMPETES Act... with the direction to double the funding for the [NSF].”

Kelvin Droegemeier, vice chairman of the National Science Board and vice president for research at the University of Oklahoma, testified before Rockefeller’s panel in November 2013. “Basic research, which represents structured inquiry motivated by the innate human desire to understand the fundamental behavior of the world in which we live, is the DNA from which new innovations and technologies arise to fuel our nation’s economy.”

That DNA, advised Droegemeier, represents thousands of discoveries across all disciplines and can be assembled, refined, and set aside until other advances call on it.

The NSF’s role is unique, because it is the only agency that funds basic research and education across all disciplines. “Private industry relies on the new knowledge created by basic research to develop new and innovative products and services,” Droegemeier testified. Because the returns on investments in basic research are unpredictable and take time to materialize, the private sector invests relatively little money in fundamental research.

Referencing his home state, Droegemeier described how a 1989 NSF investment led to new computer-based predictions of thunderstorms. This advance led to the creation of a new weather technology company employing 80 people.

Budget sequestration and stagnant investments are having real impacts on science, according to Rockefeller, who warned last November that, in the past fiscal year, the NSF suffered a $356 million cut.

Concern about funding, not surprisingly, is one of the issues worrying science policy advocates. In December 2013, a coalition of more than 80 scientific societies and universities wrote to Representative Lamar Smith (R–TX), chairman of the House Committee on Science, Space, and Technology, to express a concern that reauthorization legislation being drafted by the committee did not include funding levels.

Smith’s panel had been drafting the Frontiers in Research, Science, and Technology Act, or the FIRST Act, which would replace America COMPETES.

The letter to Smith also urged reconsideration of confusing and burdensome certification requirements for grants, warning:

We are concerned that the language... will not significantly increase public accountability and transparency beyond policies already being developed by the NSF. First, each member of Congress might, in fact, have their own view on how to define what is “in the national interest” and what is “worthy of Federal funding.” Second, scientific progress is made by pursuing questions about the fundamental nature of things, and we are concerned that applying specific criteria at the level of the individual award will stifle the creativity that has led to some of this country’s most significant innovations.

Of concern to scientists working on long-term research, the draft FIRST Act included a directive that the NSF promulgate procedures to ensure that investigators who have received more than 5 years of NSF funding are awarded additional grants only if they contribute “substantial original research.” “Terminology such as substantial and original places a greater emphasis on the potential outcome of a research proposal and does not recognize the incremental contribution” that specific research results may make to a field of science,” warned the letter writers.

Although the chairmen of the committees of jurisdiction have expressed a desire to pass legislation this year, it remains to be seen whether a contentious Congress can pass legislation before it adjourns this year.

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