

## Defending the Faith

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# BioScience®

**A Forum for Integrating the Life Sciences**  
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## Defending the Faith

**F**or researchers of all stripes, the meat-cleaver approach to tackling the United States' unsustainable deficit that has been at the center of political wrangling in Washington, DC, represents an obvious threat. Unprecedented pressure to avert fallout from spending cuts, tax rises, and other measures that will result from awkward compromises forced by the so-called fiscal cliff means that research budgets will be pushed toward the chopping block despite President Obama's stated commitment to "doubling funding for key research agencies to support scientists and entrepreneurs." Critics argue, as presidential candidate Mitt Romney did last fall, that much innovation can be fostered at lower cost by forgoing increases in government support for research and instead removing barriers to investment by private industry, protecting intellectual property, removing regulatory burdens, and expanding job-training programs. Basic research does not translate directly into the desired economic growth, the skeptics note. And it is undeniably true that there are many more potent variables influencing economic growth in the short term. So those with a longer-term view about the importance of research ought to be ready with their arguments.

It is also true that the private sector accounts for the majority of research and development performed in the United States—71 percent in 2009, according to the National Science Board's *Research and Development, Innovation, and the Science and Engineering Workforce 2012* report. Yet, this is hardly a dependable or sufficient basis for supporting a national research agenda. For one thing, private sector investments in research and development (R&D) may decrease during times of economic distress. Indeed, the federal government increased its own R&D investments during the last two economic downturns and thus partially offset industry declines. And the private sector is unlikely to sufficiently support much basic research precisely because of the uncertainty about the economic potential of any one research project and because of the long lead time from research to innovation.

Consequently, the government has a key role in providing a knowledge base of transformative ideas. The Human Genome Project was a very visible exemplar of the power of a government-funded project, albeit with private sector competition, to spur the development of new technologies. Second-generation sequencing is now in turn transforming biology. Researchers should not miss opportunities to remind legislators and the public at large how their efforts underlie and encourage multiple ways of improving and protecting operations vital to the economy—the production of food, fuel, fiber, and medicines being just the most obvious ones. Yet, research will only be able to sustain its vital contributions if the institutions where it is practiced are allowed to thrive.

The National Science Board's report spells out how it is that public funding is essential to sustaining the excellence of public research institutions and how federally funded academic R&D is instrumental in creating and sustaining a world-class higher education system. The "knowledge-linking activities" fostered by universities cannot be individually and quickly switched on; they represent a developmental process that must be fostered over the long term. And, crucially, their importance is not adequately measured by economic returns alone. The verified knowledge that they can at their best assemble represents a long-term strategic benefit for humanity at large. The case for defending research even during hard times is therefore ethical as well as economic. Biologists would do well to summon all of the good reasons at their disposal to defend their vital contributions.

TIMOTHY M. BEARDSLEY  
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