

FUNDING

US biomedicine nets budget win

Late spending bill gives the NIH healthy increases.

BY SARA REARDON, CHRIS CESARE & HEIDI LEDFORD

Biomedical research advocates are revelling in holiday cheer as a budget bill passed by Congress and signed into law by President Obama on 18 December gives the US National Institutes of Health (NIH) its biggest funding increase since 2003. Several other science-related agencies also benefit substantially from the budget.

“Best Christmas present ever,” says Jennifer Zeitzer, director of legislative relations at the Federation of American Societies for Experimental Biology in Bethesda, Maryland. The budget allocates just over US\$32.1 billion to the agency: a 6.6% rise over 2015. Accounting for inflation, the agency’s funding had fallen 20% compared with 2003; the new budget, Zeitzer says, almost returns the NIH to its real 2003 level.

Several other research agencies have found similarly generous gifts in the budget, which was approved 11 weeks after the 1 October beginning of the 2016 fiscal year. NASA gets a bump of almost \$1.3 billion over its 2015 funding, to \$19.3 billion. That sum includes \$175 million for a mission that will orbit and land on Jupiter’s icy moon Europa and search for signs of life.

The budget allocates \$7.5 billion to the National Science Foundation (NSF), a small 1.6% increase over 2015 levels. The document does little to specify how the NSF spends its money — a contentious issue that arose in June when the Republican-controlled House of Representatives proposed requiring the foundation to spend 70% of its research funds on biology, computer science, engineering, mathematics and physical sciences. The provision would have effectively cut the funds available to social science and geoscience by about 15%. In the end, the spending bill specifies only that social-sciences spending remain flat.

Although the healthy funding increases come as good news to many researchers, says Michael Lubell, the director of public affairs at the American Physical Society in Washington DC, there is bad news on the horizon. He points out that a deal struck in October by legislators and Obama provides almost no room for further boosts in 2017. “One should not say all of this is ushering in a new era,” Lubell says. “It is not.” ■



The idea that our Universe is part of a multiverse poses a challenge to philosophers of science.

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COSMOLOGY

Feuding physicists turn to philosophy

String theory is at the heart of a debate over the integrity of the scientific method itself.

BY DAVIDE CASTELVECCHI

Is string theory science? Physicists and cosmologists have been debating the question for the past decade. Now the community is looking to philosophy for help.

Earlier this month, some of the feuding physicists met with philosophers of science at an unusual workshop aimed at addressing the accusation that branches of theoretical physics have become detached from the realities of experimental science. At stake is the integrity of the scientific method, as well as the reputation of science among the general public, say the workshop’s organizers.

Held at the Ludwig Maximilian University of Munich in Germany on 7–9 December, the workshop came about as a result of an article in *Nature* a year ago, in which cosmologist George Ellis, of the University of Cape Town in South Africa, and astronomer Joseph Silk, of Johns Hopkins University in Baltimore, Maryland, lamented a “worrying turn” in theoretical physics (G. Ellis and J. Silk *Nature* 516, 321–323; 2014).

“Faced with difficulties in applying fundamental theories to the observed Universe,” they wrote, some scientists argue that “if a theory is sufficiently elegant and explanatory,

it need not be tested experimentally”.

First among the topics discussed was testability. For a scientific theory to be considered valid, scientists often require that there be an experiment that could, in principle, rule the theory out — or ‘falsify’ it, as the philosopher of science Karl Popper put it in the 1930s. In their article, Ellis and Silk pointed out that in certain areas, some theoretical physicists had strayed from this guiding principle — even arguing for it to be relaxed.

The duo cited string theory as the principal example. The theory replaces elementary particles with infinitesimally thin strings to reconcile the apparently incompatible theories that describe gravity and the quantum world. The strings are too tiny to detect using today’s technology — but some argue that string theory is worth pursuing whether or not experiments will ever be able to measure its effects, simply because it seems to be the ‘right’ solution to many quandaries.

Silk and Ellis also called out another theory that seems to have abandoned ‘Popperism’: the concept of a multiverse, in which the Big Bang spawned many universes — most of which would be radically different from our own.

But in the opening talk at the workshop, David Gross, a theoretical physicist at the