

► funding science research and education, and who lack “the general science and technology savvy” to make informed decisions.

The Tea Party’s conservative message could also affect how science is treated in Congress. Last week’s convention in Richmond featured appearances by politicians including former Pennsylvania senator Rick Santorum, who once tried to amend an education bill to promote the teaching of intelligent design, and Virginia attorney general Ken Cuccinelli, who recently renewed his efforts to investigate and discredit climate scientist Michael Mann, formerly at the University of Virginia in Charlottesville.

But the Tea Party’s biggest influence stems from its small-government, cost-cutting agenda. This has been taken on board by the Republicans, who are currently leading in the polls and look set to win the House from their Democratic rivals. The Republicans’ 45-page policy document, unveiled on 23 September, is telling in both its emphasis and its omissions. Although the words “tax”, “taxes” and “taxpayer” appear 56 times in the document, the words “science”, “research” and “education” do not figure once.

In the current Democrat-controlled Congress, science was given plenty of attention in spite of the economic crisis. The National Science Foundation and the National Institutes of Health received influxes of cash as part of President Barack Obama’s economic stimulus package. Legislation such as the health-care reform bill and a bill to deal with oil spills (not yet passed by the Senate) also include provisions for funding research and development. Disputes between the parties on science spending have tended to be “differences of opinion on how much to invest in basic research, not on whether or not it was important”, says Joanne Carney, director of the Center for Science, Technology and Congress at the American Association for the Advancement of Science in Washington DC.

In his inaugural address, Obama promised to “restore science to its rightful place”, and he appointed prominent researchers and science-policy experts to key government roles. But as the stories on the following pages detail, science faces plenty of challenges for the post-midterm Congress to address.

And given the changing political climate, the new Congress looks likely to be even more polarized than the last. If Republicans are running the House, the Obama administration will be dealing with an adversary rather than an ally as it tries to push through changes in areas such as energy and education. As concerns about the deficit combine with an enthusiasm for scaling back government, science funding could see heavy reductions. ■ SEE EDITORIAL P.75I

US MIDTERM ELECTIONS

Deficit poses threat to science

Research programmes in the United States seem to be heading for a cliff, no matter who wins in Congress.

BY EUGENIE SAMUEL REICH

Unlike their counterparts elsewhere, US scientists have been sitting pretty in the wake of the global economic downturn. The 2009 American Recovery and Reinvestment Act, or stimulus bill, pumped an extra US\$31 billion into science, and President Barack Obama’s budget request for fiscal year 2011 included generous increases for several science-funding agencies.

But going into the midterm elections, a different narrative is emerging. Republicans are running on a platform to reduce the \$1.4-trillion US deficit, which seems likely to entail freezes or effective cuts for at least some science programmes. If the Democrats retain control of Congress by a thin margin, policy experts say that they are likely to interpret the loss of seats as a call to rein in spending too. “Science is pretty well supported by both sides, but it’s a matter of balancing investment with the deficit,” says Patrick Clemins, director of the research and development budget and policy programme at the American Association for the Advancement of Science in Washington DC.

A Republican win would probably spell problems for America COMPETES, a 2007 act of Congress that set the National Science Foundation (NSF), the National Institute of Standards and Technology and the Department of Energy’s Office of Science on a path to double their funding over ten years. America COMPETES originally passed with bipartisan support, and stimulus funding provided



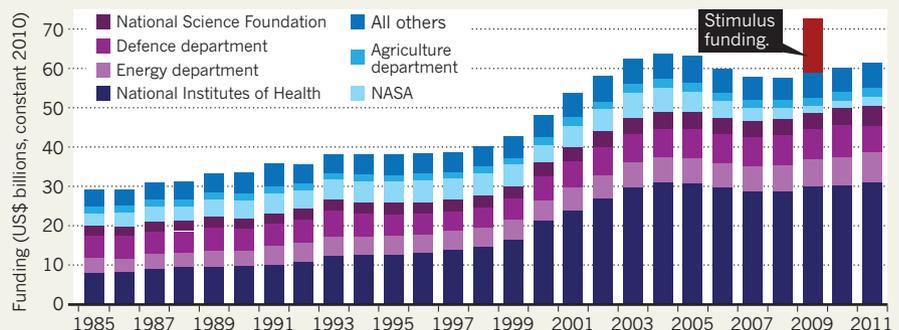
STATE WATCH: DELAWARE

Having defeated high-profile moderate Republican Michael Castle in her state’s primary campaign, Tea Party-endorsed Delaware Senate candidate Christine O’Donnell (pictured) now faces scrutiny over some of her public statements, including a 2007 assertion that “American scientific companies are cross-breeding humans and animals and coming up with mice with fully functioning human brains”. She has also called evolution a myth and opposes stem-cell science. O’Donnell’s election race against Democrat Christopher Coons may serve as a barometer for how far US voters will tolerate views unfriendly to science from the resurgent right.

a further boost for research in 2009. But COMPETES expired at the end of September 2010 because Republicans objected to its high funding levels and slowed the passage of its reauthorization. Even if COMPETES passes

FEDERAL FUNDS FOR RESEARCH

US science spending has changed only gradually over the past 25 years, regardless of the party in power.



B. CLARK/ROLL CALL VIA GETTY

SOURCE: AAAS

US MIDTERM ELECTIONS

in the weeks after the November elections and before new members take their seats in January, it may not receive the funding it requires in what is expected to be a tighter federal budget for fiscal year 2012.

The looming budget shortfall has led to concern about a 'cliff effect', in which projects funded by the stimulus bill find themselves without support when its funds run out, which could occur even if Democrats retain control. Paradoxically, a resounding Republican win might be better for science funding than a small Democratic majority, says Christopher Hill, a science-policy expert at George Mason University in Arlington, Virginia. Republicans are bigger spenders than their rhetoric suggests, he says.

In the past, both parties have consistently supported science funding (see 'Federal funds for research'). A doubling of the National Institutes of Health budget from 1999 to 2003 was initiated during Democratic president Bill Clinton's tenure with the approval of a Republican Congress. From 2001 to 2007, the House Committee on Science and Technology, which drafts legislation authorizing science budgets, was headed by Sherwood Boehlert, a moderate New York Republican and a strong supporter of funding the NSF and the energy department. The next chair was Tennessee Democrat Bart Gordon, who secured bipartisan support for COMPETES but plans to retire after this Congress. If control changes, Ralph Hall, a Texan Republican, is in line to take over. Last spring, Hall pushed for a three-year budget freeze for the agencies targeted for increases by COMPETES.

The potential arrival of Tea Party-backed candidates in Congress with a focus on reduced government and unfavourable attitudes towards science (see 'State watch: Delaware') is likely to be significant. Under a Republican Congress, Hill says that some symbolic projects such as FutureGen — a carbon capture and storage initiative in Meredosia, Illinois — may be axed. But others, such as the Advanced Research Projects Agency-Energy are better protected against major cuts, he says.

Barry Toiv, vice-president for public affairs at the Association of American Universities in Washington DC, is pragmatic about the prospects of working with a Republican Congress. "If the House and/or Senate does turn over, we will need to make a renewed effort to ensure the new leadership understands the value of research investments." ■



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NIH prepares for loss of political champions

Supporters call for Congress to pass stem-cell bill and NIH budget boost during post-election session.

BY MEREDITH WADMAN

The last time a bill supporting human embryonic stem-cell research was introduced to the US House of Representatives, it was co-authored by a seasoned Republican congressman from Delaware. Announcing the bill in March, Mike Castle hailed President Barack Obama's executive order that lifted restrictions on federal funding for the controversial research, and declared that "Congress must act to ensure that an overarching ethical framework is signed into law."

Castle, who gave up his House seat to run for the Senate, lost his party's nomination to Tea Party-backed opponent Christine O'Donnell. O'Donnell is against stem-cell science, which some equate to abortion — a deeply divisive issue in US politics. This is reflected by a state ballot that would grant human rights to embryos from the moment of their creation (see 'State watch: Colorado').

Even more worrying for researchers is a lawsuit that seeks to suspend federal funding for the research. The case could overturn guidelines implementing Obama's order as early as next month. That possibility has advocates calling for Congress to pass the Castle bill, co-sponsored by Diana DeGette (Democrat, Colorado), during its post-election session, before the new congress is seated.

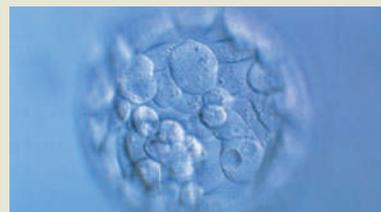
"Should there be an adverse ruling blocking stem-cell research, certainly there would be much more pressure on Congress to act," says Tony Mazzaschi, the senior director of scientific affairs at the Association of American Medical Colleges (AAMC) in Washington DC. Earlier this month, the AAMC asked its members to contact their representatives, urging them to use the session to enact the bill.

But with a long list of priorities demanding time during the dying days of the current Congress, lawmakers may not manage to deal with the stem-cell bill. And should the House or Senate swing to the right in the election, stem-cell legislation may falter in the next Congress — despite having passed twice in the past, only to be vetoed by then-president George W. Bush.

Castle's is not the only departure that will be keenly felt by the National Institutes of Health (NIH), by far the largest funder of US biomedical research. David Obey (Democrat, Wisconsin), chairman of the powerful House Committee on

Appropriations that allots money for the NIH, is retiring. In the Senate, Arlen Specter (Democrat, Pennsylvania), who last year won an additional \$10.4-billion allocation for the NIH in return for supporting Obama's stimulus bill and later switched parties to join the Democrats, lost his new party's nomination.

Even with Specter and Obey still in place, the current Democrat-controlled Congress is struggling to deliver the 3.2% boost to the agency in 2011 that Obama requested last winter. A Senate committee passed the \$1-billion increase in July, but the bill has not come to a vote in either the House or the full Senate. When lawmakers reconvene after the elections, NIH advocates may not be able to withstand relentless pressure to curb non-mandatory spending. "We are going to have to work hard to make the case that NIH deserves an increase while other things are being cut," says Jennifer Zeitzer, a lobbyist for the Federation of American Societies for Experimental Biology in Bethesda, Maryland. ■



STATE WATCH: COLORADO

In Colorado, voters must decide whether to support a constitutional amendment that would extend human rights and equal protection under the law to "every human being from the beginning of ... biological development". Such a vote would open human embryonic stem-cell research in the state to legal challenge, along with abortion. Although not expected to pass (a similar amendment was defeated by nearly 3 to 1 in Colorado in 2008), the vote is a reminder that a key question at the heart of the human embryonic stem-cell debate — when life begins — remains unresolved in US politics. The issue could affect US stem-cell science for another generation.

P. GOETGHELUCK/SPL