

NEWS IN FOCUS

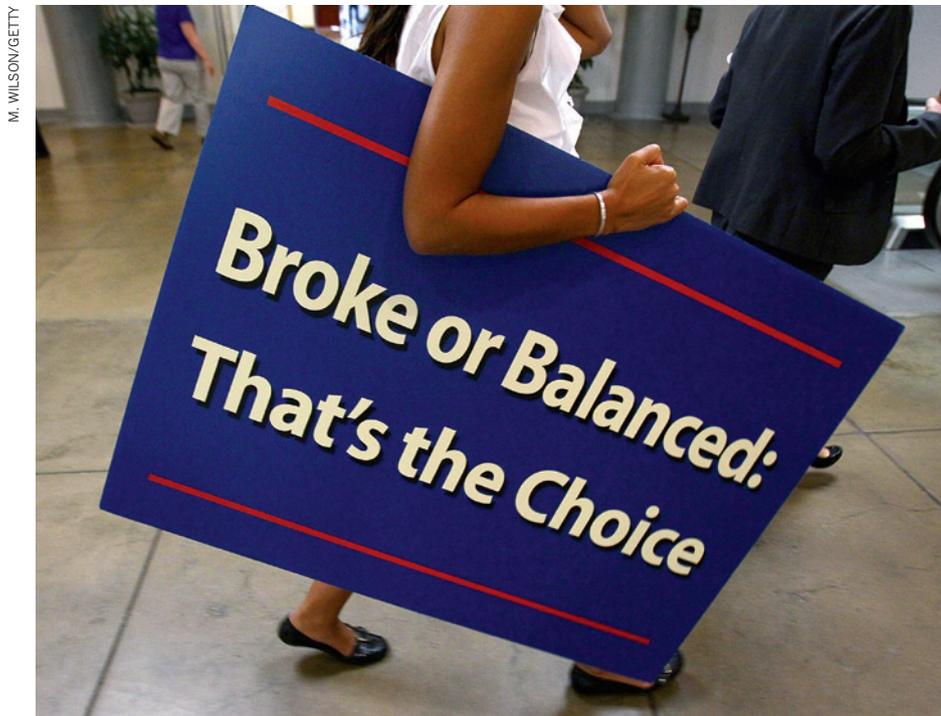
ANCIENT DNA Pinpointing the legacy of trysts with extinct relatives **p.136**

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Political pressure to balance the US federal budget will have an impact on research.

US BUDGET

Debt deal sets day of reckoning

US science agencies avoid immediate pain but could be devastated by automatic cuts in 2013.

BY ERIC HAND

Scalpel or guillotine? Those are the possible fates in store for US science funding after Congress and the White House reached a deal to cut federal spending and raise the nation's self-imposed debt limit before a 2 August deadline.

The product of tumultuous negotiations, the deal largely spares science in the short term but puts a day of reckoning on the horizon: 2 January 2013. If politicians cannot agree on

how to improve the government's fiscal outlook by then through targeted cuts and other means — the scalpel option — their failure will automatically trigger the guillotine: a deep cut applied across a range of expenditures, including research. In the worst case, the automatic cuts could mean shuttered laboratories and mass lay-offs at universities.

Whether or not that happens depends partly on a special Joint Select Committee on Deficit Reduction, the 'super-committee', to be set up as part of the deal. The super-committee,

which congressional leaders must appoint by 16 August, will be charged with finding ways of raising revenues or reducing the costs of entitlement programmes such as health care and social security, which the government is legally required to fund. If the super-committee fails, the automatic triggers would force discretionary spending to fall under the indiscriminate blade of across-the-board cuts.

"Then there will be extraordinary pain," says Michael Lubell, director of public affairs for the American Physical Society in Washington DC. "And it will get worse in 2014."

The two-stage structure of the debt deal explains both the short-term reprieve and the long-term worry. The first set of agreed cuts, totalling US\$917 billion, will be spread over 10 years, but two factors mitigate their effect. First, reductions to defence spending will account for a significant share of the cuts — meaning that other US agencies won't bear the entire burden. Second, the cuts are heavily loaded forward onto the 2014 fiscal year and beyond, in an apparent effort to shelter the current fragile economy. Only minimal cuts will be implemented in fiscal years 2012 and 2013.

In fact, the cap for overall discretionary spending that legislators will use in finishing the 2012 appropriations process is \$29 billion higher than the cap that House Republicans have used for their budget proposals so far (see 'Fiscal tug-of-war'). This means that the National Institutes of Health (NIH) might yet escape cuts to its funding that previously seemed likely. The higher cap also leaves wiggle room for Senate legislators to restore pet projects, such as NASA's James Webb Space Telescope, which the House last month voted to cancel.

The second set of cuts, totalling at least \$1.2 trillion, could inflict much deeper wounds. The task of selecting precisely how to make up that amount will fall to the super-committee, a group of six Democrats and six Republicans, who will have the power to look beyond discretionary funding to consider entitlement cuts and new revenue streams from taxes. The super-committee has until 23 November this year to formulate a plan,

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which will be put before Congress a month later.

If the super-committee can't reach agreement, or if Congress won't approve its plan, the ▶

FISCAL TUG-OF-WAR

Significant gaps between President Obama's 2012 budget request and amounts approved by the House appropriators have yet to be reconciled, and some key questions answered, but the 2012 budget is far less painful for US science than what may lie ahead.

Agency	2011 enacted (US\$ million)	2012 president's request (US\$ million)	2012 House spending bill (US\$ million)	Outstanding issues
National Institutes of Health	30,766	31,829	Not yet put forward	Will the proposed National Center for Advancing Translational Sciences be approved by 1 October 2012?
NASA	18,448	18,724	16,810	Will the US Senate restore funding to the over-budget James Webb Space Telescope?
National Science Foundation	6,807	7,768	6,860	How low will grant-acceptance rates go? A short-term increase from 2009 stimulus funding is coming to an end.
Department of Energy Office of Science	4,858	5,416	4,800	Does the Advanced Research Projects Agency – Energy programme have a future? It barely survived in the House, after a floor amendment was accepted by one vote.
National Oceanic and Atmospheric Administration	4,597	5,498	4,485	Will the administration get a National Climate Service, a proposed consolidation of various climate-research activities?
National Institute of Standards and Technology	750	1,004	701	Will the Technology Innovation Program survive? The House would eliminate the \$75-million industry partner programme, which didn't offer new grants in 2011.

SOURCE: HOUSE APPROPRIATIONS COMMITTEE

COUNTDOWN TO CUTS

House speaker John Boehner and President Barack Obama face 18 months of budget wrangling during an election campaign.

**16 AUGUST 2011**

Congressional 'super-committee' selected.

30 SEPTEMBER 2011

End of 2011 fiscal year and current budget. Stop-gap legislation is likely until a 2012 budget is passed.

23 NOVEMBER 2011

Super-committee proposes how to reduce budget by US\$1.2 trillion.

23 DECEMBER 2011

Congress votes on super-committee's proposal.

FEBRUARY 2012

President Obama tables 2013 budget request.

6 NOVEMBER 2012

Presidential and congressional elections.

2 JANUARY 2013

If super-committee proposals not accepted, across-the-board cuts to all federal agencies begin.

▶ across-the-board \$1.2-trillion cut will automatically kick in a year later (see 'Countdown to cuts').

Such an outcome would be catastrophic, says Lubell. According to his back-of-the-envelope calculation, the automatic cut would slash funding for science agencies by 11%, starting in 2013. For the Department of Energy's \$5-billion Office of Science, even shutting down a national laboratory — for example Fermilab, the particle-physics laboratory in Batavia, Illinois, with its \$300-million annual budget — would achieve only part of the mandated savings. Granting agencies such as the NIH and the National Science Foundation (NSF) would have to lower their grant-acceptance rates to single digits. The knock-on effect would be catastrophic for universities, which depend on grants to help cover post doctoral researchers and infrastructure costs. "Can universities make up that gap? Not a chance," says Barry Toiv, spokesman for the Association of American Universities, based in Washington DC, an advocate for the largest research universities.

The global cut would also wreak havoc with the 2013 appropriations process, which would begin with President Barack Obama's budget request in February 2012. In such a scenario, appropriators could play favourites among different science agencies, boosting some at the expense of others in anticipation of the looming cuts, says Lubell.

Science agencies pursuing basic research that both parties tend to support, such as the NIH, the NSF and the core programme of the National Institute of Standards and Technology — could fare well. Basic research at the Department of Defense might also survive, as it offers little in the way of potential savings, being such a small piece of the overall defence pie.

But 'mission' agencies, such as NASA, or the National Oceanic and Atmospheric Administration (NOAA), where science is a large but ultimately ancillary activity, could suffer. Worst off would be programmes supporting research

that is controversial in the current Congress, says Patrick Clemins, director of the research and development budget programme at the American Association for the Advancement of Science in Washington DC. This could spell trouble for climate-change research at NOAA and within NASA's Earth Science Division. The Department of Energy's applied energy and loan-guarantee programmes could also be vulnerable, as some members of Congress see them as picking winners in a part of the economy that should be governed by the free market.

This is why science advocates are hoping that the make-up of the super-committee will favour the kind of negotiation that would head off across-the-board cuts. Toiv would like to see members selected from the Bowles-Simpson commission, which was appointed by Obama to study options for reducing the national debt. It emphasized infrastructure, education and basic research as important to the nation's long-term economic health. But Lubell expects the super-committee to be entrenched along partisan lines: entitlement reform would be off-limits for the Democrats, whereas new taxes would be anathema for Republican members. Refusing to compromise would enable both parties to pander to their traditional constituencies in the November 2012 general elections.

April Burke, president of Lewis-Burke Associates in Washington DC, a science-lobbying firm, is more sanguine, saying that an impasse would not necessarily trigger doomsday cuts. Congress, a slippery beast, has devised ways to avoid automatic triggers before. And the 2 January 2013 implementation of the mandated cuts is a political lifetime away. By then, the 2012 election could have changed the political stage, along with its players. The economy could improve — or get worse. And new rules could be written.

"I don't think we're looking at the full menu of what might happen then," she says. "I think there might be yet another reality." ■

AP/P. MARTINEZ MONSIVAS