

ENERGY

EU clean energy

The European Commission on 30 November proposed a sweeping set of measures to improve overall energy efficiency in the European Union by 30% by 2030. The Clean Energy for All Europeans package includes new standards for energy-friendly building and energy labelling of consumer goods. The commission hopes that the proposed policies and incentives will mobilize up to €177 billion (US\$188 billion) in public and private investment in energy-efficient construction, transport and manufacturing. The package updates a binding 2012 EU directive that commits the bloc to a 20% improvement in energy efficiency by 2020.

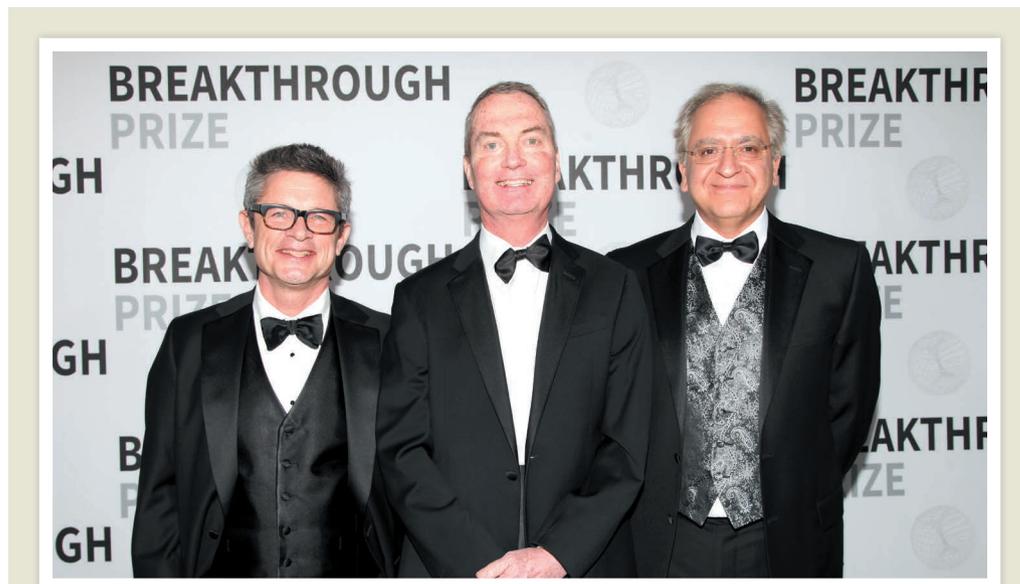
POLICY

Gag clause dropped

The UK government has abandoned restrictions on government funding that critics said would have amounted to a 'gagging clause' on academics. Proposals to prevent government money from being used for broadly defined lobbying activities were unveiled in February. But they were put on hold after scientists protested that activities such as giving expert evidence to parliament would be included. On 2 December, the government finalized its grant standards and confirmed that scientific advice and publicizing research results would not be restricted. Science advocates have welcomed the news.

UK fertility step

The United Kingdom is closer to becoming the first country to explicitly permit the birth of children from embryos that contain three



KELLY SULLIVAN/GETTY FOR BREAKTHROUGH PRIZE

Black-hole puzzle nets \$3-million prize

The discovery of a physics puzzle known as the black-hole firewall paradox has bagged three string theorists — Andrew Strominger, Joseph Polchinski and Cumrun Vafa (pictured, left to right) — one of the US\$3-million Breakthrough Prizes, the most lucrative awards in science. The annual prizes, together worth \$25 million, honour achievements in fundamental physics, life sciences and mathematics. US molecular biologist Harry Noller won one of five life-sciences prizes, for revealing the centrality of

ribosomal RNA to protein synthesis. The maths award went to US-based Jean Bourgain for work on the geometry of multidimensional spaces and on solving partial differential equations. A special prize was awarded to the 1,015 people working on the LIGO project, which last year made the first detection of gravitational waves. A glitzy awards ceremony took place at NASA's Ames Research Center in Mountain View, California, on 4 December. See go.nature.com/2gxims3 for more.

people's DNA. Scientists advising the UK Human Fertilisation and Embryology Authority (HFEA) said on 30 November that mitochondrial-replacement therapy — which aims to erase diseases transmitted by the DNA found in cellular structures called mitochondria — is ready for limited clinical testing. Britain legalized such therapy in 2015, but the HFEA had asked for more research before allowing clinical trials. If it gives the go-ahead when it meets on 15 December, the first procedures, approved on a patient-by-patient basis, could occur early next year.

PUBLISHING

arXiv upgrade

The popular open-access physics repository arXiv is beginning the first phase of a three-year overhaul. With the help of a US\$445,000 grant from the Alfred P. Sloan Foundation in New York City, announced on 29 November, the repository's owners will start planning a 'next-generation arXiv', to be known as arXiv-NG — a more flexible service that can accommodate new features. In June, the site's leaders revealed the results of a massive user survey, which it is using to guide its modernization. Most users

called for no major changes but suggested a few tweaks, such as to the site's search functions.

EVENTS

LIGO goes again

LIGO, the Laser Interferometer Gravitational-wave Observatory has resumed its search for gravitational waves, starting its second science run on 30 November after upgrades to make the system more sensitive. In September 2015, LIGO made the first direct detection of gravitational waves, from a collision between distant black holes. The upgrades should make detections of the phenomenon



more frequent. LIGO has twin detectors in Hanford, Washington, and Livingston, Louisiana (pictured).

New element names

Four new element names — nihonium (element 113), moscovium (115), tennessine (117) and oganesson (118) — were confirmed by the International Union of Pure and Applied Chemistry (IUPAC) on 28 November. The names, outlined in June by IUPAC, were proposed by the labs credited with discovering the elements — in Russia, the United States and Japan. Yuri Oganessian becomes only the second living person to have an element named after them.

Dear Mr Trump

More than 2,300 scientists, including 22 Nobel laureates, from all 50 US states published an open letter on 30 November to the incoming government

of US president-elect Donald Trump. They urge the administration to create a strong culture of science and recognize that diversity makes science stronger; to ensure that environmental laws retain a strong scientific foundation; and to provide adequate resources for scientists to do their jobs. The scientific community stands ready “to hold accountable any who might seek to undermine” the role of science in policymaking, says the letter.

AWARDS

Mentoring prize

This year's *Nature* Awards for Mentoring in Science have been given to two mentors from the US west coast. Julie Overbaugh, an HIV researcher at the Fred Hutchinson Cancer Research Center in Seattle, Washington, was awarded the lifetime-achievement

prize, and biologist Susan Forsburg at the University of Southern California, Los Angeles, received the prize for mid-career achievement. Each receives US\$10,000. The awards honour outstanding scientific mentors in a different country or region each year. See page 305 for more.

PEOPLE

Prize cash donated

A Kenya-based malaria researcher who won a US\$1-million development prize will donate the money to African science. Kevin Marsh at the University of Oxford, UK, won the inaugural Kuwait-sponsored Al-Sumait Prize for individuals or institutions who advance economic, social and human-resources development in Africa on 22 November. He is a senior adviser to the African Academy of Sciences and led the renowned Kenya Medical Research Institute in Nairobi from 1989 to 2014. Marsh will donate \$400,000 to the academy to create a fund to support young scientists, and the remaining \$600,000 to Oxford's African science programmes.

FUNDING

Europe to Mars

Europe is set to land its first rover on Mars in 2021, after the European Space Agency

COMING UP

12–16 DECEMBER
The American Geophysical Union's Fall Meeting, the largest Earth and space-science meeting in the world, takes place in San Francisco, California. fallmeeting.agu.org

16 DECEMBER
SpaceX's Falcon 9 rocket returns to flight after a failure in September, to launch satellites for communications company Iridium from California. go.nature.com/2gl2tey

secured the €436 million (US\$464 million) it needs for the mission at a meeting in Switzerland on 2 December. European government ministers agreed to provide the cash despite rising costs and the failure of the agency's Mars lander Schiaparelli in October. ExoMars 2020 will be a joint mission with Russia. See page 177 for more.

EU defence fund

The European Commission plans to launch a fund dedicated to defence research, it announced on 30 November. The research programme will cover technologies such as electronics, encrypted software and robotics and will be run under a broader European Defence Fund. It will have an expected budget of €90 million (US\$97 million) over three years from 2017 and will be separate from the European Union's Horizon 2020 research programme. Classified calls will be open only to European Union member states and Norway. If the scheme is successful, the Commission hopes to increase the programme's budget to around €500 million a year from 2021.

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TREND WATCH

Nearly 1 in 7 people with HIV in Europe do not know they have it, estimates a report from the European Centre for Disease Prevention and Control. Delayed diagnoses mean that some may not benefit from treatment and may spread the virus. The data suggest that people contracting HIV through injecting drugs or heterosexual sex are likely to be diagnosed later than those who acquire it through sex between men (see chart). The average time from infection to diagnosis is almost four years.

LATE HIV DIAGNOSES PREVALENT IN EUROPE

Nearly half (47%) of HIV-positive people in the European Union and European Economic Area are diagnosed late. The infection rate in 2015 was 6.3 per 100,000, similar to recent years.

