2013

Biomedical research in 2013 saw some dramatic developments, with unprecedented government action in the US ranging from the budget sequester in the spring to a dramatic government shutdown in autumn. But throughout the year, bright spots in science around the globe continued to dazzle, including multimillion-dollar partnerships to advance drug discovery and the go-ahead for highly anticipated trials of regenerative medicine.

Timeline of events: A brief history of what made news this year

Stop and go: Influenza researchers ended a yearlong self-imposed moratorium on experiments that enabled transmission of the H5N1 bird flu virus between mammals on **23 January**. The stoppage was originally designed to give officials time to review lab-safety requirements following a global controversy over the publication of two scientific papers last year describing gain-of-function mutations that allowed the virus to spread among ferrets via airborne droplets. Many people feared that the accidental or intentional release of a modified virus might trigger a human pandemic. Researchers located in or funded by the US waited several more weeks to resume their work until the country's National Institutes of Health (NIH) gave them the thumbs up to proceed.

Science sequestered: The US sequester forced the NIH to clip $1.5 billion from its $30.6 billion budget for 2013, cutting across all programs, projects and activities equally and affecting every area of medical research in the country. The sequester, which went into effect on **1 March**, slowed work on drugs, vaccines and diseases, capped stipends for researchers in training and forced the NIH Clinical Center to admit fewer patients.

Creating debate: The US Supreme Court ruled unanimously on **13 June** that human genes cannot be patented. The outcome of the case was a blow to Utah-based Myriad Genetics, which held patents on the *BRCA* genes linked to increased risks of hereditary breast and ovarian cancers. Myriad did "not create anything," Justice Clarence Thomas wrote. The US decision was at odds with that of the Federal Court of Australia, which upheld Myriad's Australian patent claims. That decision is now under appeal.

Seeing the future: On **19 July**, the Japanese government approved the world's first clinical study that would use reprogrammed skin cells to treat age-related macular degeneration (AMD). Ophthalmologist Masayo Takahashi of the RIKEN Center for Developmental Biology in Kobe plans to convert the cells into induced pluripotent stem cells, further transform them into retinal cells and then inject them into the damaged retinas of six patients. The researchers hope to show the cells are safe and don't trigger an immune reaction or form tumors.

On the map: Weeks after scientists from 135 research institutions kicked off the Human Brain Project in Lausanne, Switzerland, the ten-year, €1.2 billion project made a sudden announcement on **29 October** that it would relocate to the outskirts of Geneva. Instead of building a new campus, the HBP will settle into the former headquarters of the pharmaceutical giant Merck Serono, furnishing researchers with lab space dozens of months ahead of schedule.

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Formidable factory: In an attempt to fill the pipelines of European pharmaceutical companies with promising new drug compounds, Europe's Innovative Medicine Initiative announced on **7 February** the creation of the European Lead Factory. The nearly €200 million ($271 million) program knits together the academic community with industry, making more than 300,000 compounds available to researchers in universities and small businesses to test the chemicals' potential at two former Merck research sites in Scotland and the Netherlands.

Bird flu fears: On **24 April**, during a visit to China to probe an outbreak of H7N9 bird flu in humans, the assistant director-general for health security and environment at the World Health Organization (WHO), Keiji Fukuda, called the virus "unusually dangerous," referring to the 22 deaths out of 108 cases confirmed at the time. That same month, China launched an investigation to determine whether the virus could spread from person to person. They were unable to rule that possibility out in all cases, but the spread of the virus seemed to slow in subsequent months.

Multiple identities: After seven months of bandying about at least four different names for a newly identified coronavirus that causes severe respiratory illness, on **15 May** the Coronavirus Study Group formally recommended calling the pathogen Middle East Respiratory Syndrome Coronavirus, or MERS-CoV, putting an end to the confusion. Earlier monikers had included references to the Dutch lab that characterized the virus, which irked Saudi health officials, and the rather bland "novel coronavirus" offered by the WHO.

Roche retreats: Swiss drugmaker Roche confirmed on **16 August** that it had opted out of pursuing a patent on its breast cancer drug Herceptin (trastuzumab) in India, making way for cheaper versions of the drug to reach the market. Earlier in the year, an Indian health ministry panel had pushed for a "compulsory license" that would have forced Roche to let a local generic company make a low-cost copy.

Italian rejection: A panel of experts announced on **12 September** that they rejected the stem cell therapy claims made by the Italian nonprofit Stamina. The organization's president said the treatment used a person's bone marrow cells, which were manipulated *in vitro* and reintroduced into the patient to treat neurological diseases. The Italian Ministry of Health later elaborated on its decision to deny human clinical trials, saying the approach wasn't adequately explained, lacked quality controls and put patients at risk for HIV.

Texas thaw: Reforms to the Cancer Prevention and Research Institute of Texas announced a new scientific review council on **1 November**, just days after officials lifted a ten-month moratorium on the institute's grant-giving activities. The $3 billion agency had been saddled with charges of bias and bad management and was marred by the resignation of many of its grant reviewers in the previous year.