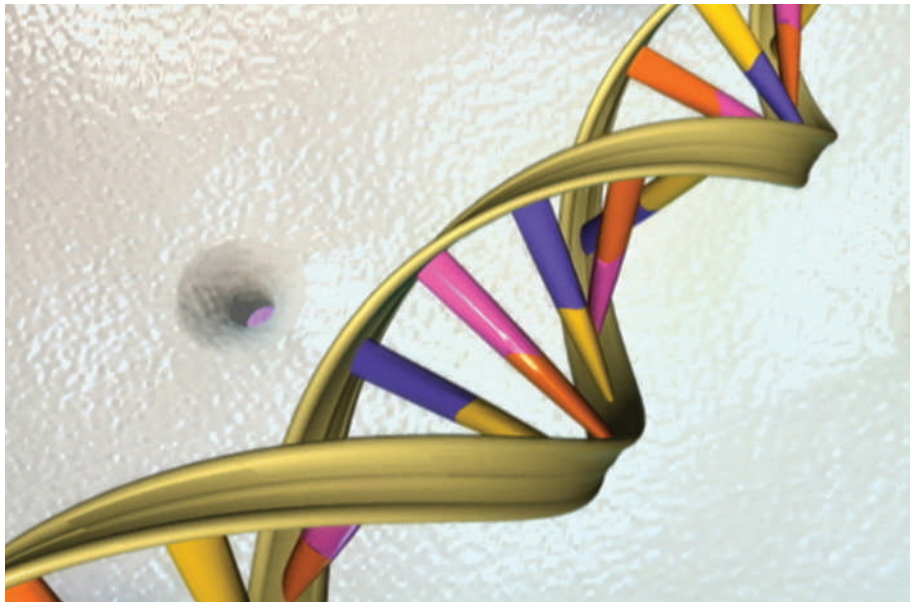


NEWS 2008: THE YEAR IN WHICH ...

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NATL HUMAN GENOMES. INST.



Personal genomics goes mainstream

In January, an international consortium announced the launch of the 1,000 Genomes Project, which aims to provide a catalogue of human genetic variation. In October, the Personal Genome Project, which hopes to sequence and publish the genomes of as many people as possible, released initial data for ten participants. Meanwhile, as researchers wondered what they could glean

from the results coming from personal-genomics companies, the prices of such services dropped. The firm 23andMe, based in Mountain View, California, for instance, now offers personalized genetic information for \$399. And finally, two more human genomes — one of an anonymous African, the other an Asian — were decoded, bringing the world's total of published human genomes to four.

The US election offers science a rejig

The election of Barack Obama as the next US president suggests that science in the United States will change in many ways. Researchers are watching to see whether Obama fulfils campaign promises to lift federal restrictions on human embryonic stem-cell research and to institute a cap-and-trade system to regulate greenhouse gases. Other promises, such as a \$15-billion-a-year investment in clean-energy technologies and research, lie more at the whims of Congress, which allocates funding. And scientists who have complained about the lack of science input into decisions made by some federal agencies under George W. Bush are waiting to see how research will be treated in an Obama administration.

The first synthetic genome is made

By stitching together more than 500,000 base pairs of DNA, scientists created the first synthetic genome from scratch. The team at the J. Craig Venter Institute in Rockville, Maryland, had already managed to transplant DNA from one bacterial species into another, transforming the second into the species of the first. The genome synthesis is the next step towards booting-up the world's first artificial organism — a breakthrough that could come as early as 2009.

The LHC starts up, then stops

Near Geneva, Switzerland, physicists switched on the world's largest particle accelerator, the Large Hadron Collider (LHC). Nine days later the US\$5-billion machine broke down (see page 862). An electrical failure caused almost 6 tonnes of ultracold liquid helium to leak into the LHC tunnels; nearly 40 of the magnets used to guide its proton beam need to be rebuilt before it can start operating again — not expected before summer 2009.

Phoenix lands on Mars

NASA made it to the Martian arctic. The Phoenix Mars Lander touched down in late May and began digging around with its robotic arm. But problems with sticky soil stifled early efforts to sniff the Martian soil for traces of water and organic materials. Scientists finally got a taste of ice in August and later detected a compound called perchlorate. In late October, communications with Phoenix became patchy, and they ceased for good on 2 November.

Biodiversity gets catalogued online

An ambitious project to publish an expert-created web page for each of Earth's 1.8 million named species produced its first 30,000 chapters in February. With support from many of the world's leading natural-history institutions, the 'Encyclopedia of Life' aims to provide video, sound, images, graphics and text covering the planet's entire biodiversity, including the pygmy hippopotamus *Hexaprotodon liberiensis* (right). Since 2007, the project has added more than US\$6 million in donations and grants to its funding pool of \$2.5 million from the Sloan Foundation and \$50 million promised by the MacArthur Foundation — putting it on track to have 90–95% of all known species catalogued by 2017.



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The US anthrax case is declared closed

Bruce Ivins, a biodefence researcher at a US Army research complex in Maryland, committed suicide in July as the Federal Bureau of Investigation was preparing to indict him in relation to the 2001 anthrax attacks. FBI agents said that Ivins had access to the bacterial spores sent to several members of Congress and the media; Ivins's lawyer maintains his innocence. The agency's scientific evidence has not yet been released in full; the US National Academy of Sciences has convened an independent panel to review the information.

Asia's space race heats up

The Indian Space Research Organisation added the nation's flag to the lunar surface when its first lunar orbiter, Chandrayaan-1, dropped a probe into Shackleton crater on 14 November. India joins China and Japan in having spacecraft currently orbiting the Moon. In an even more spectacular feat in September, China became the third nation — after the United States and Russia — to have its astronauts perform a spacewalk.



NASA/GSFC

All eyes turn to Arctic sea ice

Mid-September brought the annual low for the layer of sea ice that covers the Arctic Ocean. This year's 4.52 million square kilometres was still 9.4% more ice cover

compared with 2007, which holds the record for the least amount of sea ice recorded in the satellite era. Fewer warm days in 2008 and changes in wind patterns may account for the difference between the years.



H. STRAND/CORBIS

Polar bear makes endangered list

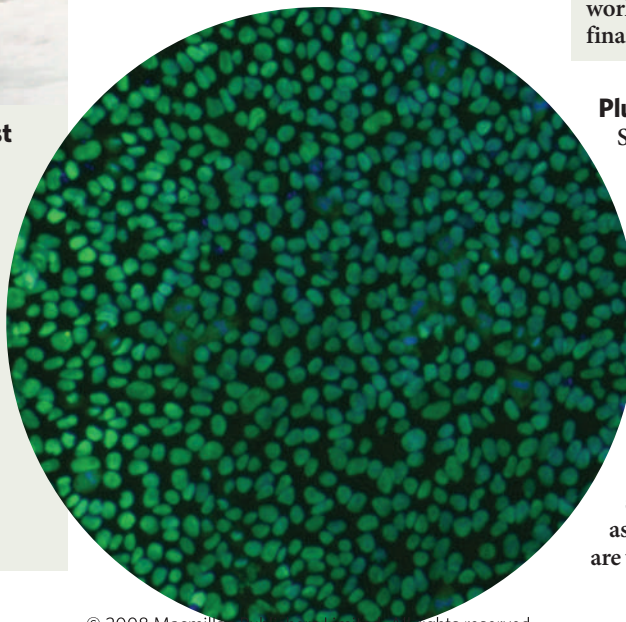
In May, the US government moved to protect polar bears under the Endangered Species Act (ESA) — the first time it had based a species listing on the threat of climate change. But the listing triggered internal spats at the Department of the Interior, and by year's end the administration of George W. Bush had changed the rules for ESA listings so that the agency is no longer required to consult independent scientists before making a decision as to whether to list a species.

Beijing Olympics highlights air pollution

Tackling Beijing's poor air quality became an obsession for the Chinese government in preparation for what it hoped would be a 'green' Olympics. In large part, the effort paid off: Beijing's Air Pollution Index was markedly lower — below 100 on its 500-point scale — throughout August. Compared with the summer of 2007, concentrations of larger particulates dropped by about 50% and smaller particulate levels by 25%.

The financial crisis affects research

The effect of the financial crisis, and the global economic downturn that helped to precipitate it, is still playing out in the research realm. Charities such as the Wellcome Trust in London and Cold Spring Harbor Laboratory in New York reported the first drop in their endowments for years. Harvard University, among other institutions, is no longer hiring new staff for non-critical positions. Biotech firms and industry research and development arms are working to get a footing in the changed financial landscape (see page 852).



NATURE BIOTECHNOLOGY

Pluripotent stem cells are created

Shinya Yamanaka's 2007 discovery of induced pluripotent stem (iPS) cells (left) sparked a new flurry of stem-cell research across the globe. This year, US-based scientists showed that they could make iPS cells from the skin of octogenarians with a chronic neurodegenerative disease. Another US team showed that it could make the cells using an adenovirus, which stays out of a cell's own DNA, rather than a normal virus that does not. The technique should prevent serious side effects such as cancer from occurring when the cells are used in clinical treatment.