

“It’s effectively a new machine, poised to set us on the path to new discoveries.”

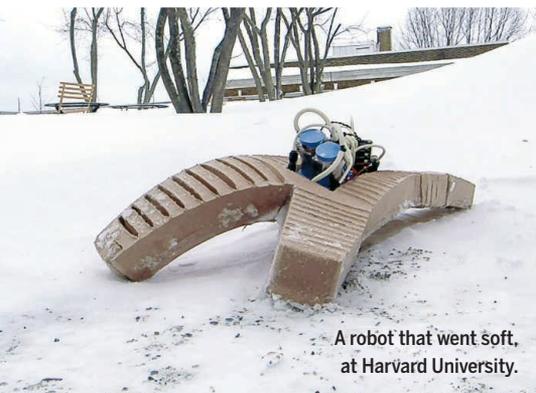
CERN Director-General Rolf Heuer on the Large Hadron Collider, which goes back online in early 2015 after 2 years of upgrades and maintenance.

IN BRIEF

2015: A LOOK AHEAD

What’s hot | What’s not

British chemist Humphry Davy once said that “nothing is so fatal to the progress of the human mind as to suppose that our views of science are ultimate ... that there are no new worlds to conquer.” In that spirit, *Science* takes a look at trends and ideas that preoccupied the scientific community last year—and makes some guesses at what new themes are likely to take hold in 2015. Our—subjective!—list, in no particular order, for your consideration:



A robot that went soft, at Harvard University.

Soft robots | Stiff robots

Sorry, R2-D2: Inspired by animals and armed with better materials and compact hardware, squishy robots take center stage.

Polio in Pakistan | Polio in Nigeria

As the disease disappears from its African stronghold, cases are soaring in Pakistan.

Senator Lamar Alexander (R-TN) Representative Lamar Smith (R-TX)

Reforming federal oversight of U.S. higher education may eclipse last year’s brawl over National Science Foundation peer review.

Europa or bust | Asteroid capture

Congress lights a fire under NASA to visit Jupiter’s moon.

European Political Strategy Centre E.U. science adviser

Anne Glover’s stint in Brussels ends; a new entity will give the European Commission scientific advice.

Next Generation Science Standards | Common Core

Science advocates hope to avoid missteps that have plagued math and reading standards.

iPS cell clinical trials | STAP cells

A simple recipe for stem cells was too good to be true, but reprogrammed adult cells move ahead.

ISRO, CNSA | NASA

NASA’s mission drifts while the ambitions of India’s and China’s space programs grow.

Chikungunya | MERS

Worries about the respiratory virus in the Arabian Peninsula ease, but a mosquito-borne agent is exploding in the Americas.

Paris climate talks

Lima climate talks

The debate moves away from whether developing nations should cut carbon emissions ... to by how much.

Exoplanet atmospheres

Exoplanet orbits

We know where extrasolar planets are—now the more penetrating questions begin.

“I’m not a scientist.”

Direct attacks on science

U.S. politicians reframe their rhetorical assaults on climate change and evolution.

Reproducibility | Glamour journals

As retractions mount in high-profile journals such as *Science*, *Nature*, and *Cell*, the community pushes for reproducible experiments.

Ebola drug and vaccine trials

U.S. Ebola panic

Efficacy trials in West Africa will likely determine whether an Ebola vaccine works—and can help end this epidemic.

Evolutionary trees with dozens of genomes | Trees with dozen of genes

More DNA means better family trees; recent bird and insect phylogenies built from dozens of genomes set the bar for 2015.



Genomes pinned down insect relationships.

0.64 Predicted global mean temperature increase, in °C, for 2015 over the 1961 to 1990 average—which would make 2015 the warmest year on record, according to the U.K.-based Met Office.

50% Proportion of people with HIV who will be over 50 in 2015, a first. The shift presents physicians with new challenges.



The New Horizons probe will visit Pluto and its moon Charon next July.

Precision medicine

National Children's Study

After killing an ambitious health study, the National Institutes of Health (NIH) ponders a big investment in personalized treatments.

Drones doing science

Science making better drones

Hurdles remain (battery life, airspace regulations), but drones now collect data from poles to sea floor to clouds.

Carbon sinks | Carbon balances

Space measurements of fluorescence from photosynthesis offer a way to directly monitor carbon uptake and better calculate net atmospheric exchanges.

Standard three-neutrino model

Sterile neutrinos

The Planck spacecraft dealt a blow to the theorized fourth, "sterile" neutrino—by confirming predictions of the standard theory of cosmology.

Alaskan earthquakes

Induced earthquakes

Earthquakes due to wastewater injection may drop with the price of oil. But a major deployment of sensors will help monitor Alaska, the United States' most seismic state.

Dwarf planets | Comets

After one spacecraft landed on a comet, others head for Pluto and Ceres.

Twitter data grants

Facebook experiments

Facebook's "emotional contagion" study angered users, while Twitter gives a few select institutions access to its data.

Helpful microbes | Poop therapy

Fecal transplants can restore the gut's ecosystem—but future therapies cut out the middleman, delivering just the isolated beneficial bacteria.

South African fossils

Homo heidelbergensis

The supposed European ancestor of modern humans and Neandertals falls out of favor, while high-profile South African digs may yield new finds.

Representative Andy Harris (R-MD)

Senator Tom Harkin (D-IA)

NIH loses longtime champion, gets tea party member who wants more funding for young scientists.

Seal flu | Bird flu

Influenza's latest surprise is a massive die-off of European harbor seals from a subtype called H10N7.



A potential flu victim.

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Science

This week's section

Science **347** (6217), 8-9.
DOI: 10.1126/science.347.6217.8

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