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Volume 650 Issue 8101, 12 February 2026

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Down to earth

The use of synthetic pesticides is widespread, and their potentially harmful effects on wildlife — from bees to fish— and human health are well documented. Somewhat less clear are their effects on soil biodiversity. In this week's issue, Marcel van der Heijden and colleagues address this issue with a report on how pesticide residues affect soils across Europe. The researchers assessed 63 pesticides across 373 sites in 26 European countries. Pesticide residues were present at 70% of the sites and showed the second biggest effect on soil biodiversity patterns — show all

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African countries must take control of health policy

Massive cuts to global health-care funding have had a huge impact on the continent, but a more resilient system can be built from within.

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Support people and their livelihoods rather than fossil-fuel industries

Geopolitical trends might be heading in the wrong direction, but economic forces are aligning around a future economy centred on clean electricity.

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How to rescue the aid industry: focus on conflict prevention, not just relief

In an era of escalating conflict, a development-only approach to aid will yield fleeting results.

Rabah Arezki

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Not just a chip off the old block: nanoparticles reveal odd traits

Melting point of nanoscale sodium particles differs from that of bulk sodium.

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Super-sniffer aeroplane finds oil fields' hidden emissions

Airborne sensor shows that methane emissions from oil- and gas-producing areas can be five times higher than reported.

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Beetle is locked in to an eternal dance — with an ant

Evolution has trapped a species of beetle in an inescapable symbiosis with the aggressive velvety tree ant.

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Jupiter gets downsized – and squashed

The gas giant's shape and size, previously known only from data collected more than 45 years ago, have been updated at last.

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News in Focus

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Is UK science in jeopardy? Huge funding reforms spark chaos and anxiety

Major reforms to the United Kingdom's national research funding agency are aimed at boosting the nation's economy.

David Adam

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NIH rolls back red tape on some experiments – spurring excitement and concern

Some human research will no longer be classified as a clinical trial, easing the paperwork burden, but not everyone agrees with the approach.

Heidi Ledford

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Guinea-Bissau suspends US-funded vaccine trial as African scientists question its motives

Officials at the US Department of Health and Human Services, which awarded funding for the controversial study, say it will proceed as planned.

Abdullahi Tsanni

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First 'practical PhDs' awarded in China – for products rather than papers

The programme is designed to train more elite engineers who can help to boost the country's innovation.

Xiaoying You

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More than one-third of cancer cases are preventable, massive study finds

Many cancers are linked to two modifiable habits: tobacco smoking and alcohol consumption.

Gemma Conroy

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The 'bible for psychiatry' is getting a rewrite: your guide to the next *DSM*

Could the next version of the *DSM* be a 'living' document that has more focus on the causes of mental illness?

David Adam

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Longevity is in the genes: half of lifespan is heritable

Understanding the genetic controls of ageing could lead to more therapies that forestall it.

Max Kozlov

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48 hours without lungs: artificial organ kept man alive until transplant

The external, artificial-lung system could be used to treat other people who are critically unwell and awaiting transplants.

Rachel Fieldhouse

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What drugs are safe during pregnancy? There's a shocking lack of data

Drug trials have typically excluded pregnant people for safety reasons. But that's now starting to change.

Giorgia Guglielmi

Partner Content
Seeing beyond RGB limits
A high-sensitivity, high-definition, hyperspectral camera enhanced by AI image processing could improve industrial quality control, food standards, and safety.

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The dark side of green technology: what do electric vehicles really cost?

A powerful book reveals the corrupt deals and human exploitation behind the global scramble for strategic metals.

Chris Stokel-Walker

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How to deal with the survey-taking AI agents that threaten to upend social science

Researchers need new bot-detection strategies that exploit the limits of human reasoning rather than AI weaknesses.

Folco Panizza, Yara Kyrychenko & Jon Roozenbeek

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China's biotech boom: why the nation must collaborate to stay ahead

Increased geopolitical tensions are prompting some in China to argue that the country should go it alone in biotechnology. That would be a backwards step — for China and the rest of the world.

Lizzi C. Lee & Jing Qian

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Internet blackout: Iran's academic shutdown

Encieh Erfani

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Publishing less won't save the research system

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Preserving water under megacities is crucial – and urgent

Yaqiang Wei & Hui Li

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Marine protection in the Azores: a triumph for conservation and sustainability

Enric Sala

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My mission to make life more user friendly for the disability community

Inventor Josh Miele says that accelerating change requires uprooting social attitudes about blindness and other disabilities.

Laurie Udesky

Technology Feature

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Lab morale got you down? Try a handbook

Documents that lay out a research group's ethos and practical guidelines are becoming increasingly popular in the academic community.

Amanda Heidt

Collection: NatureTech

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Pesticide cocktails negatively affect soil biodiversity

A much-needed assessment of the scale of the effects of pesticides on soil biodiversity in Europe will support regulation and conservation efforts.

Brajesh K. Singh & Alexandre Pedrinho

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Ten years since the first reported observation of gravitational waves

In 2016, the first direct observation of gravitational waves was reported. The measurements by the LIGO detectors gave astronomers a new way to observe the Universe.

Gudrun Wanner

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Dogma-defying signalling through G proteins could lead to better pain relief

Unexpected behaviours in G proteins could be exploited to design next-generation opioid drugs that provide stronger, longer-lasting pain relief.

Andrew B. Tobin

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Untapped catalytic ability of aluminium has been unlocked

Could the discovery of a catalyst in which aluminium shifts easily between oxidation states be the beginning of the end for costly transition-metal catalysts?

Stuart Burnett & Catherine Weetman

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A variety of early hominin species shared the Afar region of Ethiopia

Fossils reveal that at least four types of hominin, including *Paranthropus*, were present in northern Ethiopia between 3 million and 2.4 million years ago.

Carol V. Ward

News & Views
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Charge-neutral electrons are odd – except when they're even

Electrons can seem electrically neutral in some devices. Neutral states can be distinguished in real time by a measure of their electron pairing called odd or even parity.

Andrew P. Higginbotham

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Disentangling multiple gas kinematic drivers in the Perseus galaxy cluster

Kinematic measurements of the Perseus galaxy cluster reveal two drivers of gas motions: a small-scale driver in the inner core associated with black-hole feedback and a large-scale driver in the outer core powered by mergers.

Marc Audard, Hisamitsu Awaki ... Elena Bellomi

Article
28 Jan 2026

Constraints on axion dark matter by distributed intercity quantum sensors

Amplification and optimal noise filtering in hyperpolarized noble-gas spins of observations from distributed intercity quantum sensors monitoring for unexpected transient rotations of polarized spins set parameter range constraints in the search for axion dark matter.

Yuanhong Wang, Ying Huang ... Jiangfeng Du

Article
28 Jan 2026

A cavity-array microscope for parallel single-atom interfacing

A cavity-array microscope is realized using intra-cavity lenses to create a two-dimensional array of over 40 modes, each coupled to a single atom in free-space.

Adam L. Shaw, Anna Soper ... Jonathan Simon

Article
Open Access
28 Jan 2026

Multimodal learning with next-token prediction for large multimodal models

Emu3 enables large-scale text, image and video learning based solely on next-token prediction, matching the generation and perception performance of task-specific methods, with implications for the development of scalable and unified multimodal intelligence systems.

Xinlong Wang, Yufeng Cui ... Tiejun Huang

Article
11 Feb 2026

Single-shot parity readout of a minimal Kitaev chain

A measurement strategy is described that is able to read out the parity of minimal two-site Kitaev chains in real time, by coupling two Majoranas and resolving their quantum capacitance.

Nick van Loo, Francesco Zatelli ... Leo P. Kouwenhoven

Article
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28 Jan 2026

Ferromagnet-like binary switching of a Stoner–Wohlfarth antiferromagnet

$CrPS_4$, a 2D van der Waals A-type antiferromagnet, is shown to exhibit ideal characteristics of Stoner–Wohlfarth antiferromagnets, such as ferromagnet-like binary switching rather than layer-by-layer flipping as in other 2D A-type antiferromagnets.

Zhanshan Wang, Yining Xiang ... Shiwei Wu

Article
28 Jan 2026

Radiation-tolerant atomic-layer-scale RF system for spaceborne communication

Using a wafer-scale monolayer 2D MoS_2 process instead of conventional silicon-based devices to manufacture components of spaceborne communication systems demonstrates radiation tolerance, low bit error rate and long-term stability, even under much harsher radiation environments.

Liyuan Zhu, Yang Yang ... Peng Zhou

Article
11 Feb 2026

Aluminium redox catalysis enables cyclotrimerization of alkynes

Aluminium redox catalysis is achieved with a low-valent aluminium species, carbazolylaluminylene, enabling cyclotrimerization of alkynes and producing diverse benzene derivatives.

Xin Zhang & Liu Leo Liu

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21 Jan 2026

The potential for bridgmanite megacrysts to drive magma ocean segregation

Large-scale molecular dynamics simulations show that the crystal–melt interfacial energies of $MgSiO_3$ bridgmanite increase substantially with pressure, potentially forming unusually large bridgmanite crystals and suggesting a new physical mechanism driving magma ocean segregation.

Jie Deng, Junwei Hu ... Lars Stixrude

Article
28 Jan 2026

Pesticide residues alter taxonomic and functional biodiversity in soils

A wide survey of pesticide effects on soil biodiversity across 373 sites in Europe reveals that pesticide residues occur in 70% of sites and have major effects on soil biodiversity and functional ecology.

J. Köninger, M. Labouyrie ... M. G. A. van der Heijden

Article
Open Access
13 Aug 2025

New discoveries of *Australopithecus* and *Homo* from Ledi-Geraru, Ethiopia

Hominin fossils from the Ledi-Geraru Research Project area, Ethiopia, suggest that early *Homo* and *Australopithecus* species co-existed in the region more than 2.5 million years ago.

Brian Villmoare, Lucas K. Delezene ... Kaye E. Reed

Article
21 Jan 2026

Afar fossil shows broad distribution and versatility of *Paranthropus*

With its attribution to *Paranthropus*, a 2.6-million-year-old partial mandible expands the range of the genus into the Afar region of Ethiopia and adds to our understanding of hominin evolution in eastern Africa.

Zeresenay Alemseged, Fred Spoor ... Jonathan G. Wynn

Article
Open Access
07 Jan 2026

An ancient DNA perspective on the Russian conquest of Yakutia

Yakut communities, with Trans-Baikal admixture during the Mongol expansion, preserved genomic diversity and oral microbiomes despite the Russian conquest, which introduced cereals, pathogens and Christianity, whereas marital practices preserved low consanguinity except in one late case of traditional shamanism.

Éric Crubézy, Perle Guarino-Vignon ... Ludovic Orlando

Article
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10 Dec 2025

Causal modelling of gene effects from regulators to programs to traits

Approaches combining genetic association and Perturb-seq data that link genetic variants to functional programs to traits are described.

Mineto Ota, Jeffrey P. Spence ... Jonathan K. Pritchard

Article
03 Dec 2025

Video-call glitches trigger uncanniness and harm consequential life outcomes

Glitches in video calls can have a negative effect on the judgement of the people involved and correspond to worse outcomes in major areas of life such as job interviews and parole hearings.

Melanie S. Brucks, Jacqueline R. Rifkin & Jeff S. Johnson

Article
03 Dec 2025

TSC tunes progenitor balance and upper-layer neuron generation in neocortex

The balance between radial progenitors and intermediate precursors to generate upper-layer neurons during the development and evolution of the cerebral cortex is mediated by members of the tuberous sclerosis complex.

Cristine R. Casingal, Naoki Nakagawa ... E. S. Anton

Article
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17 Dec 2025

Spatiotemporal cellular map of the developing human reproductive tract

A detailed spatiotemporal roadmap of the human female and male reproductive tracts during key periods of sexual differentiation provides new cellular and molecular insights into how early axial gradients lead to specific cell lineages and tissue structures.

Valentina Lorenzi, Cecilia Icoresi-Mazzeo ... Roser Vento-Tormo

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17 Dec 2025

Human assembloids recapitulate periportal liver tissue in vitro

Hepatocyte organoids derived directly from human tissue enable long-term hepatocyte expansion and can be combined with portal mesenchyme and cholangiocyte organoids to form a donor-specific periportal liver assembloid system.

Lei Yuan, Sagarika Dawka ... Meritxell Huch

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10 Dec 2025

Gut micro-organisms associated with health, nutrition and dietary interventions

Comprehensive large-scale studies of multi-national populations identified microbiome species consistently associated with favourable and unfavourable health markers, informing future studies of the human gut microbiome and its association with diet and cardiometabolic conditions.

Francesco Asnicar, Paolo Manghi ... Nicola Segata

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12 Nov 2025

Potent neutralization of Marburg virus by a vaccine-elicited antibody

A newly developed monoclonal antibody, MARV16, broadly neutralizes all Marburg virus isolates and provides effective protection in guinea pigs with Marburg virus disease.

Amin Addetia, Lisa Perruzza ... David Veesler

Article
10 Dec 2025

Erythropoietin receptor on cDC1s dictates immune tolerance

The tolerogenic activity of type 1 conventional dendritic cells (cDC1s) is determined by EPOR, which is preferentially expressed in cDC1s and induces antigen-specific FOXP3-expressing regulatory T cells.

Xiangyue Zhang, Christopher S. McGinnis ... Edgar G. Engleman

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17 Dec 2025

Transient hepatic reconstitution of trophic factors enhances aged immunity

Using lipid nanoparticle delivery of mRNAs to the liver in aged mice, T cell function and declining immune cues can be restored.

Mirco J. Friedrich, Julie Pham ... Feng Zhang

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21 Jan 2026

Temporal tissue dynamics from a spatial snapshot

One-shot tissue dynamics reconstruction can infer changes in tissue composition over time, from single-time-point spatial proteomics of human cancers.

Jonathan Somer, Shie Mannor & Uri Alon

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GTP release-selective agonists prolong opioid analgesic efficacy

Mu opioid receptor agonists with a preference for the non-GTP-bound state of the G protein promote GTP release, thereby potentiating antinociceptive effects of drugs such as morphine and fentanyl without also increasing their respiratory or cardiac effects.

Edward L. Stahl, Matthew A. Swanson ... Laura M. Bohn

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Amendments & Corrections

Author Correction
27 Jan 2026

Author Correction: Nutrient-sensing nuclear receptors coordinate autophagy

Jae Man Lee, Martin Wagner ... David D. Moore

Author Correction
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27 Jan 2026

Author Correction: Relatively warm deep-water formation persisted in the Last Glacial Maximum

Jack H. Wharton, Emilia Kozikowska ... David J. R. Thornalley

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