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Volume 651 Issue 8104, 5 March 2026

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Caught in time

Bony fish account for some 98% of all vertebrate species, but the early stages of their evolution are not well understood. The core issue is the fragmented fossil record for specimens that date back earlier than the start of the Devonian Period some 419 million years ago. Across two papers in this week's issue, Min Zhu and colleagues help to plug that gap. In the first paper, the researchers reveal the near-complete skeleton of a small bony fish dating to the early Silurian (around 436 million years ago), making it the oldest known bony fish. Named *Eosteus chongqingensis* — show all

Cover image: NICE PaleoVislab, IVPP

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Funding from individual donors: lessons from the Epstein case

Universities need to establish and empower compliance teams to ensure adherence to ethical funding policies.

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Going 'beyond GDP' should not mean sidelining the SDGs

The UN Sustainable Development Goals represent a carefully-crafted road map for future human and planetary prosperity.

World View

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Climate change and geopolitics threaten water supplies – but disaster is not inevitable

The Indus Waters Treaty withstood several armed conflicts and a huge loss of glaciers. It should serve as a blueprint for others.

Ali Tauqeer Sheikh

World View
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US climate actions must continue, despite setbacks

The United States has slammed the brakes on legal routes to limit greenhouse gases. But cities, states and businesses can keep pushing for a cleaner environment.

David Widawsky

Research Highlights

Research Highlight
24 Feb 2026

Sewage systems waft more pollution into the air than reported

Wastewater treatment facilites and other infrastructure emit larger amounts of greenhouse gases than many nations report.

Research Highlight
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The squeal of peeling tape, explained

Weak shock waves triggered by micro-cracks in the adhesive layer of tape cause it to screech when being unspooled from its roll.

Research Highlight
25 Feb 2026

How an exercise-activated enzyme helps to keep the brain young

A protein reinforces the blood–brain barrier, which becomes leaky with age.

Research Highlight
24 Feb 2026

This ant species is composed of only queens – no workers or males

Temnothorax kinomurai queens survive by invading the nests of a related ant species and co-opting its workers.

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News in Focus

News

News
23 Feb 2026

First-of-a-kind stem-cell therapies set for approval in Japan

Regenerative medicines are headed for people with Parkinson's disease or severe heart failure — but researchers are concerned about minimal clinical-trial data.

Asher Mullard

News
19 Feb 2026

Biotech investor set to lead US National Science Foundation

If confirmed, Jim O'Neill would be the first non-scientist or non-engineer to lead the agency, which is a big funder of US basic research.

Dan Garisto & Max Kozlov

News
23 Feb 2026

This AI can improve your peer review – and make it more polite

A system of five models helps peer reviewers to write more constructive comments, but it is not yet known whether this strengthens the papers that are being reviewed.

Nicola Jones

News Explainer
20 Feb 2026

Are obesity drugs causing a severe complication? What the science says

The United Kingdom and Brazil have issued warnings about a possible link between GLP-1 weight-loss drugs and pancreatic inflammation, but the connection is murky.

Mariana Lenharo

News
25 Feb 2026

Stem cells provide a potent treatment for frailty

Elderly people with frailty, which affects up to one-quarter of over-50s, increased their endurance after a single dose of stem cells.

Edward Chen

News
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'An AlphaFold 4' – scientists marvel at DeepMind drug spin-off's exclusive new AI

Isomorphic Lab's proprietary drug-discovery model is a major advance, but scientists developing open-source tools are left guessing how to achieve similar results.

Ewen Callaway

News
20 Feb 2026

AI is threatening science jobs. Which ones are most at risk?

Data-analysis and modelling positions are already becoming obsolete, but hands-on experimentalists can breathe easy for now.

Edward Chen

News
25 Feb 2026

Brains of 'super agers' are strong producers of new neurons

Older people with exceptional memory have a surprisingly high number of young neurons, study finds.

Mariana Lenharo

Features

News Feature
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Cancer blood tests are everywhere. Do they really work?

Their makers claim they can detect dozens of cancer types — but some scientists say they could be missing many cancers or delivering the wrong diagnosis.

Nic Fleming

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Why 'quantum proteins' could be the next big thing in biology

Fluorescent proteins with a quantum upgrade could offer unprecedented views inside cells.

Nicola Jones

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Books & Arts

Book Review

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How infighting led the Maya civilization to catastrophic collapse

Fresh archaeological evidence hints at what caused the disappearance of this thriving ancient Mesoamerican culture.

Andrew Robinson

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The hidden lives behind China's great Internet firewall

The country's tightly controlled digital ecosystem is replete with human stories and acts of subtle resistance.

Chris Stokel-Walker

Book Review
27 Feb 2026

Brain mysteries and Bronze Age diplomacy: Books in brief

Andrew Robinson reviews five of the best science picks.

Andrew Robinson

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Opinion

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AI agents are 'aeroplanes for the mind': five ways to ensure that scientists are responsible pilots

As artificial-intelligence systems take on more of the scientific workflow, the central goal should not be complete automation, but designing platforms that preserve creativity, responsibility and surprise.

Dashun Wang

Correspondence

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03 Mar 2026

South Korea's AI framework act focuses on rights and safety

WooJung Jon

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Releasing open-weight AI in steps would alleviate risks

S. M. Nuruzzaman Nobel & Maxine Tan

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Climate research is global – risks and responsibilities should also be distributed

Zhenhua Rui, Lu Lin ... Y. Frank Cheng

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Work

Feature

Career Feature
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'No one quite like her': meet the female colleagues who inspire these award-winning women in science

To mark International Women's Day, *Nature* asked winners of its awards programmes to nominate a colleague who brings out the best in them.

Amanda Heidt

Collection: International Women's Day

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Magnetic fluid offers better seal in heart-plugging medical procedure

An injectable fluid has been used to close off part of the heart in animals — a potentially improved take on a procedure that prevents stroke in people with irregular heartbeats.

Yu Shrike Zhang

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Immune cells from the gut drive development of Parkinson's disease in the brain

In 'body-first' Parkinson's disease, misfolded proteins propagate from the gut's nervous system to the brain. Immune-cell activity seems to play a key part in this spread.

Veerle Baekelandt

News & Views
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Do wet or dry soils trigger thunderstorms? It depends on how the wind blows

Satellite data show that wind conditions affect the connection between soil moisture and thunderstorms, which could be used to inform forecasting.

Craig R. Ferguson

News & Views
11 Feb 2026

Squirrels could be a reservoir for the virus that causes mpox

The species in which monkeypox virus naturally circulates is uncertain, but wildlife surveillance data suggest that the fire-footed rope squirrel is a likely candidate.

Edyth Parker & Christian Happi

News & Views
04 Feb 2026

Evolutionary insights into a skin fold

The formation of a skin fold named a rete ridge reveals how simple architectural changes reshape tissue mechanics and signalling routes to make a different type of skin structure.

Cheng Ming Chuong & Mingxing Lei

Articles

Article
11 Feb 2026

Parity-doublet coherence times in optically trapped polyatomic molecules

Optically trapped CaOH molecules in parity-doublet states achieve coherence times exceeding vibrational lifetimes, which are a defining milestone for the use of polyatomic molecules in quantum science.

Paige Robichaud, Christian Hallas ... John M. Doyle

Article
04 Feb 2026

Signatures of fractional charges via anyon–trions in twisted $MoTe_2$

Fractionally charged excitations at zero magnetic field in twisted $MoTe_2$ bilayers, a recently discovered fractional quantum anomalous Hall system, are observed via anyon-trions, excitonic complexes formed by binding a trion to a fractional charge.

Weijie Li, Christiano Wang Beach ... Xiaodong Xu

Article
Open Access
25 Feb 2026

Uncovering origins of heterogeneous superconductivity in $La_3Ni_2O_7$

Wide-field quantum sensing shows μm-scale inhomogeneous superconductivity in high-pressure $La_3Ni_2O_7$, linking local diamagnetic response to stress and stoichiometry and clarifying mechanisms that suppress or enhance superconductivity.

S. V. Mandyam, E. Wang ... N. Y. Yao

Article
11 Feb 2026

Giant magnetocaloric effect and spin supersolid in a metallic dipolar magnet

$EuCo_2Al_9$ is identified as a metallic spin supersolid with high thermal conductivity, exhibiting coexisting spin orders, strong quantum fluctuations and a giant magnetocaloric effect enabling efficient sub-Kelvin refrigeration.

Mingfang Shu, Xitong Xu ... Zhe Qu

Article
Open Access
11 Feb 2026

Large-scale quantum communication networks with integrated photonics

A lab-scale proof-of-principle demonstration of a quantum network comprising one server chip and 20 client photonic chips implementing twin-field quantum key distribution shows excellent scalability and reliability and yields a pathway towards future large-scale networks.

Yun Zheng, Hanyu Wang ... Jianwei Wang

Article
11 Feb 2026

Maximizing perovskite electroluminescence with ordered 3D/2D heterojunction

A strategy using simple one-step spin-coating to form 3D/2D vertically oriented perovskite heterojunctions is described, allowing the fabrication of perovskite light-emitting diodes with record-high green emission efficiencies of 42.9% (certified 42.3%).

Jingyu Peng, Xulan Xue ... Wenyu Ji

Article
18 Feb 2026

Cold-injection synthesis of highly emissive perovskite nanocrystals

A cold-injection method based on pseudo-emulsion enables scalable synthesis of stable, pure-green perovskite nanocrystals with near-unity photoluminescence quantum yield, achieved through defect-suppressing slow polybromide plumbate assembly at cold temperatures.

Sungjin Kim, Sun-Ah Kim ... Tae-Woo Lee

Article
04 Mar 2026

Long-term thrombus-free left atrial appendage occlusion via magnetofluids

In the presence of a sufficient magnetic field, magnetofluids can resist high-speed blood flow, offering a personalized and complete strategy for left atrial appendage occlusion.

Shu Wang, Wenhao Ju ... Tiantian Xu

Article
18 Feb 2026

Practical lithium–organic batteries enabled by an n-type conducting polymer

An n-type conducting polymer with excellent mixed ionic and electronic transport enables a practical lithium–organic battery that exhibits a wide operating temperature range and excellent safety.

Zhenfei Li, Haoran Tang ... Fei Huang

Article
19 Jan 2026

Collective intelligence for AI-assisted chemical synthesis

A tool based on the Llama-3.1-8B-Instruct architecture called MOSAIC (Multiple Optimized Specialists for AI-assisted Chemical Prediction) is described, allowing chemists to use the collective intelligence of millions of reaction protocols to realize new compounds.

Haote Li, Sumon Sarkar ... Victor S. Batista

Article
Open Access
04 Mar 2026

Wind shear enhances soil moisture influence on rapid thunderstorm growth

Analysis of millions of events over sub-Saharan Africa shows that wind shear amplifies the impact of soil moisture in triggering rapidly developing thunderstorms.

Christopher M. Taylor, Cornelia Klein ... Wolfgang Wagner

Article
04 Mar 2026

Largest Silurian fish illuminates the origin of osteichthyan characters

New findings from articulated head and trunk material of *Megamastax amblyodus* yield previously unseen morphological details of a Silurian stem osteichthyan.

Jing Lu, Brian Choo ... Min Zhu

Article
04 Mar 2026

The oldest articulated bony fish from the early Silurian period

A tiny, articulated, near-complete osteichthyan from the early Silurian Chongqing Lagerstätte, represents the oldest osteichthyan occurrence including microfossils, and the earliest articulated remains of any bony fish in the fossil record.

You-An Zhu, Yang Chen ... Min Zhu

Article
Open Access
04 Feb 2026

Rete ridges form via evolutionarily distinct mechanisms in mammalian skin

A spatial and single-cell transcriptomics study across multiple mammalian species identifies epidermal BMP signalling as a functional requirement for rete ridge formation, providing insight into mechanisms underlying hair density loss and wound healing.

Sean M. Thompson, Violet S. Yaple ... Ryan R. Driskell

Article
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21 Jan 2026

Common variation in meiosis genes shapes human recombination and aneuploidy

Analysis of data from pre-implantation genetic testing sheds light on the genetic basis of meiotic-origin aneuploidy, the leading cause of human pregnancy loss, identifying common genetic variants associated with maternal meiotic errors.

Sara A. Carioscia, Arjun Biddanda ... Rajiv C. McCoy

Article
Open Access
21 Jan 2026

Predatory aggression evolved through adaptations to noradrenergic circuits

Noradrenergic circuits support and balance aggressive behavioural states in predatory nematodes, distinguish predatory from non-predatory nematode species and are associated with the evolution of complex behavioural traits.

Güniz Göze Eren, Leonard Böger ... James W. Lightfoot

Article
07 Jan 2026

Prefrontal neural geometry of learned cues guides motivated behaviours

The dorsomedial prefrontal cortex encodes the value, salience and valence of learned stimuli along distinct neural dimensions, and the geometry of these representations shapes motivated behaviours in mice.

Nanci Winke, Andreas Lüthi ... Daniel Jercog

Article
Open Access
28 Jan 2026

Intestinal macrophages modulate synucleinopathy along the gut–brain axis

Muscularis macrophages, housekeepers of enteric nervous system integrity and intestinal homeostasis, modulate α-synuclein pathology and neurodegeneration in models of Parkinson's disease, and understanding the accompanying mechanisms could pave the way for early-stage biomarkers.

Sebastiaan De Schepper, Viktoras Konstantellos ... Tim Bartels

Article
Open Access
11 Feb 2026

Transmission of MPXV from fire-footed rope squirrels to sooty mangabeys

An outbreak of MPXV in sooty mangabeys in Côte d'Ivoire was linked to MPXV-infected fire-footed rope squirrels, providing direct evidence of interspecies transmission and indicating risk for zoonotic transmission of MPXV from both hosts.

Carme Riutord-Fe, Jasmin Schlotterbeck ... Fabian H. Leendertz

Article
Open Access
21 Jan 2026

Baby-to-baby strain transmission shapes the developing gut microbiome

A metagenomic survey of babies attending the first year of nursery detected extensive baby-to-baby microbial strain transmission, pointing to social interactions in infancy as crucial drivers of infant microbiome development.

Liviana Ricci, Vitor Heidrich ... Nicola Segata

Article
Open Access
14 Jan 2026

Microbiota-induced T cell plasticity enables immune-mediated tumour control

Molecular mimicry between a gut commensal and a tumour antigen forms part of an important mechanistic framework that can boost the efficacy of immune checkpoint blockade therapy and restrain tumour growth.

Tariq A. Najar, Yuan Hao ... Dan R. Littman

Article
Open Access
14 Jan 2026

Language model-guided anticipation and discovery of mammalian metabolites

Chemical language models trained on known metabolites can identify previously unknown metabolites from mass spectrometry-based metabolomics data with high accuracy.

Hantao Qiang, Fei Wang ... Michael A. Skinnider

Article
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18 Feb 2026

Ancestry and somatic profile indicate acral melanoma origin and prognosis

Analysis of the somatic and transcriptomic profile of 123 acral melanoma samples from Mexican patients helps understand tumour origins and prognosis, and highlights the importance of including samples from diverse ancestries in cancer genomics studies.

Patricia Basurto-Lozada, Martha Estefania Vázquez-Cruz ... Carla Daniela Robles-Espinoza

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Article
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Critical role for a high-plasticity cell state in lung cancer

The high-plasticity cell state (HPCS) is a critical hub that enables reciprocal transitions between cancer cell states, and targeting the HPCS may suppress cancer progression and eradicate treatment resistance.

Jason E. Chan, Chun-Hao Pan ... Tuomas Tammela

Article
16 Feb 2026

De novo design of GPCR exoframe modulators

De novo designed proteins that target the transmembrane domain of G-protein-coupled receptors, created using iterative structural predictions, are able to act as agonist-positive, negative or biased allosteric modulators of downstream activity.

Shizhuo Cheng, Jia Guo ... Yan Zhang

Article
28 Jan 2026

Structure and mechanism of the human bile acid transporter OSTα–OSTβ

Cryo-electron microscopy structures of the bile acid transporter OSTα–OSTβ, which has a key role in bile acid homeostasis, provide insight into its distinct architecture and mechanism of substrate translocation.

Ke Wang, Junping Fan ... Daohua Jiang

Article
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Structures of Ostα/β reveal a unique fold and bile acid transport mechanism

Cryogenic electron microscopy structures of human Ostα/β uncover a unique transport pathway featuring two substrate-binding sites connected by an amphipathic helix-gated conduit, and electrophysiological studies demonstrate voltage-sensitive, bidirectional transport, showing its efflux role in vivo.

Xuemei Yang, Nana Cui ... H. Eric Xu

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Amendments & Corrections

Author Correction
Open Access
11 Feb 2026

Author Correction: Inference and reconstruction of the heimdallarchaeial ancestry of eukaryotes

Laura Eme, Daniel Tamarit ... Thijs J. G. Ettema

Author Correction
16 Feb 2026

Author Correction: The genomic landscape of response to EGFR blockade in colorectal cancer

Andrea Bertotti, Eniko Papp ... Victor E. Velculescu

Author Correction
18 Feb 2026

Author Correction: *BCL6* enables Ph^{+} acute lymphoblastic leukaemia cells to survive *BCR–ABL1* kinase inhibition

Cihangir Duy, Christian Hurtz ... Markus Müschen

Publisher Correction
12 Feb 2026

Publisher Correction: Physiology and immunology of a pig-to-human decedent kidney xenotransplant

Robert A. Montgomery, Jeffrey M. Stern ... Megan Sykes

Publisher Correction
17 Feb 2026

Publisher Correction: Psychedelics elicit their effects by 5-HT2A receptor-mediated G$_i$ signalling

Zheng Xu, Hongshuang Wang ... Zhenhua Shao

Editorial Expression of Concern
16 Feb 2026

Editorial Expression of Concern: Deacetylation of p53 modulates its effect on cell growth and apoptosis

Jianyuan Luo, Fei Su ... Wei Gu

Editorial Expression of Concern
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Editorial Expression of Concern: Transcription-independent ARF regulation in oncogenic stress-mediated p53 responses

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