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# Volume 658 Issue 8136, 15 October 2026

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**Walk this way.**

Some of the fundamental differences between humans and other apes lie in their skeletons. Evolutionary changes that shaped the human skeleton opened the way to key adaptations, such as walking upright on two legs and larger craniums that could accommodate bigger brains. But the genetic changes that gave rise to the human form are largely unknown. In this week's issue, David Gokhman, Fumitaka Inoue and colleagues work to change that by mapping the gene-regulatory changes that helped drive the evolution of the human skeleton. Using cells found in cartilage — show all

Cover image: Maayan Harel

## Table of Contents

This Week
News in Focus
Books & Arts
Opinion
Work
Research
Amendments & Corrections
Nature Index

## This Week

### Editorial

**Editorial** 14 Oct 2026
**Protecting nature means valuing biodiversity**
Appeals for extra money are failing. Fundamental changes are needed to safeguard the planet for future generations.

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**Editorial** 13 Oct 2026
**Diversify Nobel-prize nominations before it's too late**
International scientific organizations are ready to help the committees that award the prizes to invite a wider range of nominators.

### World View

**World View** 08 Oct 2026
**Women are talking about menopause – health systems must listen**
In the Arab world, lack of training, research and discussion about menopause is hampering care. Three changes can help.
Hala Zahreddine Fahs

**World View** 13 Oct 2026
**Whistleblowing in universities is 'extraordinarily risky': stronger protections are needed**
Speaking out against misconduct is challenging without external adjudicators.
N. Wyn Evans

### Research Highlights

**Research Highlight** 09 Oct 2026
**Chimp and gorilla brains resist weight loss with age – unlike human brains**
The relatively short lifespans of non-human great apes might explain why their brain mass is maintained in later life

**Research Highlight** 09 Oct 2026
**Breaking down nerve-cell scaffold relieves chronic pain in mice**
Results could help researchers to develop painkillers that are safer and more effective than existing treatments.

**Research Highlight** 06 Oct 2026
**Unprecedented hole opened up in Antarctic winter sea ice**
'Rivers in the sky' helped to keep an expanse of water roughly as big as Portugal ice-free.

**Research Highlight** 06 Oct 2026
**The Solar System could die one billion times earlier than thought**
Modelling suggests that the planets' orbits will become destabilized inside one billion years once the Sun starts to shed mass.

Top of page

## News in Focus

### News

**News** 06 Oct 2026
**Flu season could kick off 'incredibly' early – what scientists are watching**
Cases in the Northern Hemisphere are cropping up weeks early, and they are dominated by a virus with a concerning mutation.
Mariana Lenharo

**News** 05 Oct 2026
**Medicine Nobel awarded for brain 'switch' that controls neurons with light**
Karl Deisseroth, Peter Hegemann and Georg Nagel win the 2026 Nobel Prize in Physiology or Medicine for their work on optogenetics, which has revolutionized neuroscience.
Miryam Naddaf & Ewen Callaway
Collection: Nobel Prize in Physiology or Medicine 2026

**News** 06 Oct 2026
**Nobel physics prize awarded for detection of cosmic neutrinos**
Francis Halzen wins this year's award for his work on a neutrino observatory at the South Pole that has helped to unlock mysteries of the Universe.
Elizabeth Gibney & Davide Castelvecchi
Collection: Nobel Prize in Physics 2026

**News** 07 Oct 2026
**Chemistry Nobel awarded for solving mystery of how 'handed' organic molecules can emerge**
Prize goes to two chemists who probed why life favours one mirror-image molecule over another.
Elizabeth Gibney, Miryam Naddaf ... Ewen Callaway
Collection: Nobel Prize in Chemistry 2026

**News** 07 Oct 2026
**Revealed: how this common gut microbe protects against heart disease**
Intestinal bacterium secretes a molecule that reduces cholesterol production, according to a mouse study.
Max Kozlov

**News** 05 Oct 2026
**The top cancer success stories of the past 50 years, by the numbers**
Outcomes have improved drastically in the United States for some forms of the disease, but those for others continue to lag.
Heidi Ledford

### Features

**News Feature** 14 Oct 2026
**China's extraordinary rise in science and how it will change the world**
The nation is on a trajectory to lead the world in science, a development that will reshape technological advancement, innovation and the balance of global power.
Xiaoying You

**News Feature** 14 Oct 2026
**China's AI research is booming: what it's like to be on the front line**
China trains more AI talent than any other country. *Nature* spoke to analysts and scientists about how AI research there compares to the United States.
Elizabeth Gibney

Partner Content
**From Zika to West Nile: refining the hunt for effective antivirals**
A novel screening method allows researchers to test compounds against flaviviruses without having to manage the risk of a live virus.

Top of page

## Books & Arts

### Book Review

**Book Review** 12 Oct 2026
**Does the decline of book reading mark the end of rational thinking?**
Smartphones and artificial intelligence are undermining our ability to follow a complex argument, with grave consequences.
David Adam

**Book Review** 25 Sept 2026
**Why science wouldn't exist without alchemy, curiosity and great writing: Books in brief**
Andrew Robinson reviews five of the best science picks.
Andrew Robinson

Top of page

## Opinion

### Comment

**Comment** 12 Oct 2026
**Keep medical doctors in academia – without them, health-care research will suffer**
Better career support and more funding stability is needed to retain this invaluable group of scientists.
Daniyal J. Jafree, Mingze Sun ... Reza Motallebzadeh

**Comment** 02 Oct 2026
**Nature has rights – it is time the world recognized them**
Existing legal frameworks have not halted planetary crises. Recognizing the rights of nature could offer a different path.
Juan Carlos Navarro & Callie Veelenturf

### Correspondence

**Correspondence** 13 Oct 2026
**Why not every global problem can be tackled by an IPCC-like organization**
Mike Hulme

**Correspondence** 13 Oct 2026
**Preserve research data for tomorrow's AI-enabled integrity checks**
Qingde Shi, Jinlei Nie & Zhaowei Kong

**Correspondence** 13 Oct 2026
**Decentralized AI needs more evidence on energy use**
Deepak Kushawaha

**Correspondence** 13 Oct 2026
**When microbes degrade plastic, where does it go?**
Yitong Han, Xilin She ... Weishi Zhang

Top of page

## Work

### Feature

**Career Feature** 13 Oct 2026
**What's the secret sauce for happy scientists at work? These eight countries offer some clues**
Meaningful work, flexibility and job security all matter more than salaries do, *Nature*'s job satisfaction survey shows.
Linda Nordling

### Technology Feature

**Technology Feature** 12 Oct 2026
**Private, offline and yours: how to search the literature with local AI systems**
Concerns about privacy, reproducibility and cost are prompting scientists to use models on their computers rather than in the cloud.
David Brzostowicki
Collection: NatureTech

Top of page

## Research

### News & Views

**News & Views** 14 Oct 2026
**Some Jurassic period birds were flightless**
The fossil discovery of an early avian ancestor in China reveals that flightless birds lived alongside the known flying species.
Fernando E. Novas

**News & Views** 13 Oct 2026
**A mysterious jelly seems to be left behind by toads**
A scientist puzzles over the origins of a curious gelatinous substance, and the complexities of measuring time, in our weekly dip into *Nature*'s archive.

**News & Views** 07 Oct 2026
**Semiconductors pushed into insulator territory**
A material that was previously assumed to be an electrical insulator has been shown to be a semiconductor, with potential uses in electronics and optics.
Hironori Okumura

**News & Views** 30 Sept 2026
**Sugar amplifies antibiotic disruption of gut microbes**
People who underwent stem-cell transplantation and ate sugar-rich food had disrupted communities of gut microorganisms during antibiotic treatment.
Mengxi Du & Andrew T. Chan

**News & Views** 12 Oct 2026
**Beyond the solvent fog: watching molecules dance in the crowd**
A technique called time-resolved X-ray liquidography has been used to shed precision light on the steps involved in a classic chemical reaction.
Kathryn Froese & Germán Sciaini

**News & Views** 23 Sept 2026
**The human skeleton's unique adaptations relied on gene regulatory changes**
Variants in genes involved in the production of extracellular matrix molecules could have enabled the skeletal adaptations that distinguish humans from other great apes.
Audrey M. Arner & Amanda J. Lea

### Articles

**Article** 14 Oct 2026
**Parity-dependent coupling of molecular spin chains to a superconductor**
Scanning tunnelling spectroscopy shows that the fractional spin-1/2 end states of molecular Haldane chains couple differently to a superconducting condensate depending on whether the chain contains an even or odd number of spin-1 triangulene units.
Katerina Vaxevani, Jon Ortuzar ... Jose Ignacio Pascual

**Article** 07 Oct 2026
**A 7-eV bandgap semiconductor based on silicon-doped α-$(Al_xGa_{1-x})_2O_3$**
Suboxide molecular-beam epitaxy is used to grow silicon-doped α-$(Al_xGa_{1-x})_2O_3$ films with bandgaps exceeding 7.0 eV, enabling the fabrication of a Schottky diode and a field-effect transistor with colossal-bandgap channels.
Jacob Steele, Debaditya Bhattacharya ... Darrell. G. Schlom

**Article** 14 Oct 2026
**Hidden reaction pathways inform additive engineering for perovskite LEDs**
Resolution and control of the hidden solution-phase chemistry of 5-aminovaleric acid added to perovskite precursor solutions is described for producing films with a near-unity mean peak photoluminescence quantum yield and near-infrared perovskite LEDs with enhanced external quantum efficiencies.
Sung-Doo Baek, Yu-Ting Yang ... Letian Dou

**Article** Open Access 14 Oct 2026
**Evidence for multi-$Li^+$ clustering in lithium-ion battery electrolytes**
Machine-learning-enabled atomistic simulations, spectroscopy, electrochemical data and quantum-chemical calculations reveal previously unstudied multi-lithium-ion complexes without bound anions, improving understanding of lithium-ion-battery functionality at the atomic level.
James M. Stevenson, Garvit Agarwal ... Richard A. Friesner

**Article** 14 Oct 2026
**Clasping folds enable superior elastic strength of graphene films**
Two-dimensional graphene films with unusual folded surfaces are synthesized through a modular assembly strategy and show enhanced strength, toughness and elastic strain owing to stress distribution between interlayer folds.
Lidan Wang, Yangchao Liao ... Chao Gao

**Article** Open Access 14 Oct 2026
**Intrinsic physicochemical activity at microplastic–water interfaces**
Commodity microplastics exhibit intrinsic physicochemical activity at water interfaces, manifested by spontaneous generation of reactive oxygen species, challenging the prevailing paradigm of plastic inertness, with implications for human health and the environment.
Naixin Qian, Ruoqi Zhao ... Wei Min

**Article** Open Access 30 Sept 2026
**X-ray liquidography decodes complex motions in azobenzene isomerization**
Time-resolved X-ray liquidography films the structural changes of azobenzene during *trans*-to-*cis* isomerization in solution with atomic-level precision.
Jungmin Kim, Hosung Ki ... Hyotcherl Ihee

**Article** Open Access 03 Sept 2026
**Ketone homologation via palladium-catalysed decarboxylative rearrangement**
A Pd(II)/Pd(IV)-catalysed concerted semi-pinacol rearrangement preserves stereochemistry, improves migratory selectivity and avoids hazardous diazo reagents, enabling efficient carbon-skeleton editing in natural-product synthesis.
Jing Gong, Qian Wang & Jieping Zhu

**Article** 14 Oct 2026
**Evaluating space-based methane detection through a one-year blind test**
A year-long single-blind study shows that multiple satellites can accurately detect and quantify methane point-source emissions.
Frances E. Reuland, Taylor Adams ... Adam R. Brandt

**Article** Open Access 26 Aug 2026
**Synergistic degradation of fucoidans in the ocean**
Efficient degradation of fucoidans depends on complementary bacterial guilds that cooperatively break backbone and side-chain sugars, revealing a conserved, globally relevant mechanism that shapes marine carbon cycling.
Andreas Sichert, Shaul Pollak ... Uwe Sauer

**Article** 14 Oct 2026
**Jurassic flightless bird reveals early ecological diversity of avialans**
A fossil bird from the Upper Jurassic Zhenghe Fauna of southeastern China contemporary with *Archaeopteryx* and that clearly could not fly sheds new light on the ecological diversification of early-diverging avialans.
Liming Xu, Min Wang ... Zhonghe Zhou

**Article** Open Access 23 Sept 2026
**The gene-regulatory evolution of the human skeleton**
Massively parallel reporter assays and human–ape hybrid skeletal cells are used to study the evolution of human *cis*-regulatory elements (CREs), revealing how differences in CREs have shaped the composition of human skeletal tissue.
Yizhi Yan, Nadav Mishol ... David Gokhman

**Article** Open Access 19 Aug 2026
**Family genetic designs in MoBa provide insights into health and functioning**
The Norwegian Mother, Father and Child Cohort Study demonstrates how family-based genomic data can disentangle direct genetic effects from confounding, improving studies of health and human development.
Elizabeth C. Corfield, Alexey A. Shadrin ... Alexandra Karoline Havdahl

**Article** Open Access 12 Aug 2026
**Temporal uncoupling of radial glia lineage progression in cortical organoids**
RGP lineage tracing in stem-cell-derived organoids shows highly plastic proliferation and reduced clonal neuronal diversity, indicating that missing non-cell-autonomous niche cues are essential for faithful temporal control of cortical lineage progression.
Melissa Stouffer, Osvaldo A. Miranda ... Simon Hippenmeyer

**Article** Open Access 26 Aug 2026
**Aberrant excitatory neuronal ERBB4 promotes Alzheimer's disease pathology**
Neuroinflammation alone may be dispensable for early synapse loss in Alzheimer's disease.
Se Young Lee, Eunseok Park ... Won-Suk Chung

**Article** Open Access 12 Aug 2026
**Procognitive restoration of PV neuron plasticity in neurodevelopmental disorders**
Expression of *Meis2* in hippocampal parvalbumin-expressing interneurons in an adult mouse model of neurodevelopmental disorders rescues experience-dependent plasticity, improves memory and network function and suppresses seizures.
Yu-Tzu Shih, Jason Bondoc Alipio ... Amar Sahay

**Article** Open Access 16 Sept 2026
**Scalable near-real-time Bayesian phylogenetics for outbreaks with Delphy**
Delphy makes near-real-time and scalable Bayesian phylogenetics possible for growing viral outbreaks, enabling public health bodies anywhere to analyse and react to their own data with state-of-the-art accuracy and minimal friction.
Patrick Varilly, Mark Schifferli ... Pardis C. Sabeti

**Article** Open Access 30 Sept 2026
**Sugar-rich foods exacerbate antibiotic-induced microbiome disruption**
Avoiding a diet rich in simple sugars during treatment with antibiotics may mitigate microbiota disruption.
Anqi Dai, Annamaria Ballweg ... Jonathan U. Peled

**Article** Open Access 02 Sept 2026
**Intracellular complement factor H protects neurons during CNS inflammation**
CFH is a key mediator of neuronal resilience across the central nervous system in mice and humans.
Christina Mayer, Marcel S. Woo ... Manuel A. Friese

**Article** Open Access 12 Aug 2026
**Biomarkers of nivolumab benefit in resectable non-small cell lung cancer**
Potential predictive biomarkers of perioperative nivolumab therapy benefit in non-small cell lung cancer are identified from evaluable participants in the CheckMate 77T trial.
Tina Cascone, Mark M. Awad ... Mariano Provencio

**Article** Open Access 26 Aug 2026
**A binding-to-release strategy for targeted anticancer drug delivery**
A binding-to-release drug conjugate strategy enables targeted payload release without cellular internalization, improving tumour specificity, efficacy and expanding therapeutic targets beyond conventional drug conjugates.
Zihao Wen, Mengxin Xu ... Zhibo Liu

**Article** Open Access 02 Sept 2026
**3D epigenome of glial cell types in developing human cortex**
Integrative 3D epigenomic profiling of four glial cell types from the mid-gestation human cortex reveals cell-type-specific regulatory elements and chromatin interactions that illuminate the roles of non-coding variants in neuropsychiatric disease and human-specific cortical evolution.
Ian R. Jones, Li Wang ... Yin Shen

**Article** Open Access 02 Sept 2026
**Creating bottom-up RNA transfer vehicles from synthetic protein assemblies**
Synthetic virus-like protein architectures designed by artificial intelligence show superior ability to deliver RNA into cells, compared with their naturally occurring counterparts, by overcoming the evolutionary constraints limiting viral evolution.
Maren Kirstin Schuhmacher, Christoph Gruber ... Wolfgang Wurst

**Article** 02 Sept 2026
**Rewiring the ribosome to translate proteins encoded in its own RNA**
Bacterial ribosomes can synthesize proteins encoded within their own RNA.
Kasra Alizadeh, Dorota Klepacki ... Alexander S. Mankin

Top of page

## Amendments & Corrections

**Author Correction** Open Access 23 Sept 2026
**Author Correction: Large recoverable elastic energy in chiral metamaterials via twist buckling**
Xin Fang, Dianlong Yu ... Peter Gumbsch

**Author Correction** 29 Sept 2026
**Author Correction: Proteasome-guided haem signalling axis contributes to T cell exhaustion**
Yingxi Xu, Yangtao Shangguan ... Ping-Chih Ho

**Retraction** 01 Oct 2026
**Retraction Note: Ribosomal frameshifting in the *CCR5* mRNA is regulated by miRNAs and the NMD pathway**
Ashton Trey Belew, Arturas Meskauskas ... Jonathan D. Dinman

Top of page

## Nature Index

**Nature Index** 14 Oct 2026
**Biomedical engineering**
From wearable sensors to advanced prosthetics and engineered tissues, biomedical engineering is producing new ways to understand the human body and improve patient care across the board.

Top of page

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