

CONTENTS

7 AUGUST 2025 | VOLUME 389 | ISSUE 6760



SPECIAL ISSUE

Evolving immunity

INTRODUCTION

586 The multifunctional immune system

—Sarah Ross and Caroline Ash

REVIEWS

588 Evolution of antiviral host defenses against a backdrop of endogenous retroelements

—G. Kassiotis and J. P. Stoye

594 Immune system influence on physiology

—M. Nahrendorf *et al.*

599 Sex differences in tissue-specific immunity and immunology

—S. Sharma *et al.*

604 Convergence and divergence of individual immune responses over the life course

—C. J. E. Metcalf *et al.*

ON THE COVER



This illustration depicts the changes in the immune system throughout an individual's life span, from infancy to childhood, adulthood, and older age. The infant silhouette contains DNA, and the figures are enveloped by the nuclear and plasma membranes. These components reference the evolution of immunity over millennia, as viruses integrated into the genome and as life progressed from single-celled to multicellular organisms. See the special section beginning on page 586. Illustration: Rioka Hayama

EDITORIAL

551 The Columbia deal is a tragic wake-up call

—H. H. Thorp

NEWS

552 Study used DNA from thousands—without consent

iPsych, which investigates the genetics of psychiatric disorders, has sent 140,000 opt-out notices amid backlash —A. Inampudi

554 Senate panel rejects Trump's plan to slash NIH's budget

Bipartisan support for agency challenges proposed reorganization and overhead costs cap —J. Kaiser

556 Thank ketchup, and interbreeding, for your French fries

Hybridization 9 million years ago gave potatoes the genetic knack to develop tubers, a new study finds —E. Stokstad
PODCAST

557 Study reveals industrial-scale publishing fraud

Sophisticated global networks are infiltrating journals to publish fake papers —C. O'Grady

558 AI-generated text surges in research papers

One-fifth of computer science papers may include AI-written sentences —P. Jacobs

FEATURES

560 Losing protection

The United States helped beat back malaria in Guinea. Now, the disease is set to soar —M. Enserink

COMMENTARY

PERSPECTIVES

568 Hardening nature's toughest teeth

A protein that underlies the mineralization of chiton teeth is revealed —A. Scheffel
RESEARCH ARTICLE p. 637



Aissatou Diallo cries after her son is diagnosed with severe malaria in Guinea.

570 Moiré eyes detect the dim

Unusual electronic behavior of a moiré superlattice helps detect a single light particle —D. Bandurin
RESEARCH ARTICLE p. 644

571 Improving Alzheimer's disease immunotherapy

A modified antibody targeting amyloid- β reduces adverse events and increases efficacy in a mouse model —M. Xing and W. Song
RESEARCH SUMMARY p. 617

573 Opening the gateway to food-induced anaphylaxis

Cysteinyl leukotrienes are important drivers of the anaphylactic response to ingested food antigens —T. T. Haque and M. H. Kaplan
RESEARCH SUMMARIES pp. 613 & 614

POLICY FORUM

575 Quantum technology governance: A standards-first approach

Standards offer a flexible, globally harmonized path to govern early-stage quantum technologies while preserving innovation, security, and international cooperation —M. Abov *et al.*

BOOKS ET AL.

580 Revisiting the human sociobiology debate

What have we learned 50 years on? —G. R. Brown *et al.*

582 Roxie Laybourne, the first forensic ornithologist

A new biography probes the life of a taxidermist turned avian investigator —V. Venkatraman

LETTERS

583 Brazil's "devastation bill" empowers criminals

—A. Giles and B. M. Flores

583 Brazil's dangerous environmental licensing bill

—E. W. A. Weidlich

584 Community support for inclusive US education

—E. P. Driessen and A. K. Lane

RESEARCH

HIGHLIGHTS

610 From *Science* and other journals

RESEARCH SUMMARIES

Immunology

613 Intestinal mast cell-derived leukotrienes mediate the anaphylactic response to ingested antigens —N. D. Bachtel *et al.*

614 Cysteinyl leukotrienes stimulate gut absorption of food allergens to promote anaphylaxis in mice —L. R. Hoyt *et al.*

PERSPECTIVE p. 573

615 Cell biology

The membrane skeleton is constitutively remodeled in neurons by calcium signaling —E. Heller *et al.*

616 Disease genomics

Predicting expression-altering promoter mutations with deep learning —K. Jaganathan *et al.*

617 Neuroscience

Transferrin receptor-targeted anti-amyloid antibody enhances brain delivery and mitigates ARIA —M. E. Pizzo *et al.*

PERSPECTIVE p. 571

RESEARCH ARTICLES

618 Synthetic biology

An orthogonal T7 replisome for continuous hypermutation and accelerated evolution in *E. coli* —C. S. Diercks *et al.*

623 Magnetic sensing

Strain-coupled, crystalline polymer-inorganic interfaces for efficient magnetoelectric sensing —B. He *et al.*

632 Metallurgy

Three-dimensional nucleation and growth of deformation twins in magnesium —S. Lee *et al.*

637 Biominerals

Radular teeth matrix protein 1 directs iron oxide deposition in chiton teeth —M. Nemoto *et al.*

PERSPECTIVE p. 568

644 Optoelectronics

Single-photon detection enabled by negative differential conductivity in moiré superlattices —K. Nowakowski *et al.*

PERSPECTIVE p. 570

650 Chemical physics

Imaging collective quantum fluctuations of the structure of a complex molecule —B. Richard *et al.*

WORKING LIFE

658 How a diagnosis altered my path

—M. De Vuyst

550 *Science* Staff

655 New Products

656 *Science* Careers

Science serves as a forum for discussion of important issues related to the advancement of science by publishing material on which a consensus has been reached as well as including the presentation of minority or conflicting points of view. Accordingly, all articles published in *Science*—including editorials, news, commentary, and book reviews—are signed and reflect the individual views of the authors and not official points of view adopted by AAAS or the institutions with which the authors are affiliated. *Science* (ISSN 0036-8075) is published weekly on Thursday, except last week in December, by the American Association for the Advancement of Science, 1200 New York Avenue, NW, Washington, DC 20005. Periodicals mail postage (publication No. 484460) paid at Washington, DC, and additional mailing offices. Copyright © 2025 by the American Association for the Advancement of Science. The title *Science* is a registered trademark of the AAAS. Domestic individual membership, including subscription (12 months): \$165 (\$74 allocated to subscription). Domestic institutional subscription (51 issues): \$2865; Foreign postage extra: Air assist delivery: \$135. First class, airmail, student, and emeritus rates on request. Canadian rates with GST available upon request, GST #125488122. Publications Mail Agreement Number 1069624. Printed in the U.S.A. Change of address: Allow 4 weeks, giving old and new addresses and 8-digit account number. **Postmaster:** Send change of address to AAAS, P.O. Box 96178, Washington, DC 20090-6178. **Single-copy sales:** \$15 each plus shipping and handling available from backissues.science.org; bulk rate on request. **Authorization to reproduce** material for internal or personal use under circumstances not falling within the fair use provisions of the Copyright Act can be obtained through the Copyright Clearance Center (CCC), www.copyright.com. The identification code for *Science* is 0036-8075. *Science* is indexed in the *Reader's Guide to Periodical Literature* and in several specialized indexes.