# SPECIAL SECTION -

# **Antibodies**

#### INTRODUCTION

1191 The Future Is Now

#### **REVIEWS**

- 1192 Antibody Therapeutics in Cancer M. X. Sliwkowski and I. Mellman
- 1199 Antibodies in HIV-1 Vaccine Development and Therapy F. Klein et al.
  - >> Science Podcast
- 1205 Diversity Among Memory B Cells: Origin, Consequences, and Utility D. Tarlinton and K. Good-Jacobson
- >> Editorial p. 1151; News stories pp. 1164 and 1168

# **EDITORIAL**

1151 Translating Antibody Insights
Julie Louise Gerberding
>> Antibodies section p. 1191

#### **NEWS OF THE WEEK**

1156 A roundup of the week's top stories

# **NEWS & ANALYSIS**

- 1158 It's Official—Voyager Has Left the Solar System
  - >> Science Express Report by
    D. A. Gurnett et al.; Science Podcast
- 1160 Researchers Wary as DOE Bids to Build Sixth U.S. Climate Model
- 1161 Novel Craft Sets Out to Probe the Mysteries of Moondust
- 1163 Researchers to Explore Promise, Risks of Sequencing Newborns' DNA

# **NEWS FOCUS**

- 1164 | Alarm Over Autism Test
- 1168 Bound for Glory
  A Once-in-a-Lifetime Flu Shot?
  >> Antibodies section p. 1191

# **LETTERS**

1173 Turkey's Biodiversity Funding on the Rise
A. Waldron et al.

Waiving Concerns About Conflicts of Interest

R. Lutter

Response

S. F. Wood and J. Mador

- 1175 CORRECTIONS AND CLARIFICATIONS
- 1175 TECHNICAL COMMENT ABSTRACTS

# **BOOKS** ET AL.

- 1176 The Body Economic
  D. Stuckler and S. Basu,
  reviewed by J. A. Tapia Granados
- 1177 George Catlin
  S. Pratt and J. Carpenter Troccoli, curators

#### **POLICY FORUM**

1178 DNA Identification After Conflict or Disaster
A. J. London et al.

>> Science *Podcast* 

#### **PERSPECTIVES**

- 1181 Toward Lighter, Stiffer Materials T. A. Schaedler et al.
  - >> Report p. 1219
- 1182 What, Where, and When? S. Knapp
- 1184 Sensing Endotoxins from Within J. C. Kagan
  - >> Reports pp. 1246 and 1250
- 1185 Opportunities Knock with a More Stable Optical Clock
  - H. S. Margolis
  - >> Report p. 1215
- 1186 Circulating Tumor Cells

  V. Plaks et al.
- 1188 Cold Atom Cosmology
  J. Schmiedmayer and J. Berges
  >> Report p. 1213

**CONTENTS** continued >>



page 1161



page 1178

# ON THE WEB THIS WEEK

# >> Science Podcast

Listen to stories on DNA and disasters, new immunological weapons against HIV, Voyager's latest exit, and more.

## >> Find More Online

Check out *Science* Express, our podcast, videos, daily news, our research journals, and *Science* Careers at **www.sciencemag.org**.



#### COVER

Structural model showing the electron density surface of immunoglobulin G, a major antibody subtype. The human immune system generates a diversity of these Y-shaped antibodies that recognize foreign molecules and directly neutralize the targeted invaders or tag them for destruction. Antibodies that bind one or more specific targets are being harnessed in the treatment of disease and are informing vaccine design. See page 1191.

Image: Alfred Pasieka/Science Source

#### **DEPARTMENTS**

1149 This Week in Science

1153 Editors' Choice

1154 Science Staff

1257 New Products

1258 *Science* Careers

#### RESEARCH ARTICLE

1212 Quantifying the Influence of Climate on Human Conflict

S. M. Hsiang et al.

Across disciplinary boundaries, recently published evidence links climate change to increased violent conflict.

>> Research Article Summary; for full text: http://dx.doi.org/10.1126/science.1235367

## **REPORTS**

1213 From Cosmology to Cold Atoms: Observation of Sakharov Oscillations in a Quenched Atomic Superfluid C.-L. Hung et al.

Abrupt interaction changes in an ultracold gas reveal oscillations analogous to peaks in the cosmic microwave background.

>> Perspective p. 1188

1215 An Atomic Clock with 10<sup>-18</sup> Instability N. Hinkley et al.

An ytterbium-based optical clock exhibits a precision of nearly one part per quintillion. >> Perspective p. 1185

1219 Reversibly Assembled Cellular **Composite Materials** 

> K. C. Cheung and N. Gershenfeld Reversible assembly of mass-produced composite-material parts created a stiff, ultralight structure.

>> Perspective p. 1181

1222 Topotactic Interconversion of Nanoparticle Superlattices

R. J. Macfarlane et al.

DNA-coated nanoparticles can reversibly incorporate a third nanoparticle.

1225 Organotextile Catalysis

1.-W. Lee et al.

Metal-free molecular catalysts can be tethered to nylon to render them recoverable and recyclable.

1229 Slow Earthquakes, Preseismic Velocity Changes, and the Origin of Slow Frictional Stick-Slip

> B. M. Kaproth and C. Marone Slip-stick experiments reveal the evolution of frictional behavior during slow earthquakes.

1233 HONO Emissions from Soil Bacteria as a Major Source of Atmospheric Reactive Nitrogen

R. Oswald et al.

Nitrous acid emissions from soil are comparable to those of nitric oxide in arid and arable regions.

Channelized Ice Melting in the Ocean Boundary Layer Beneath Pine Island Glacier, Antarctica

T. P. Stanton et al.

A complex pattern of channelized melting exists on the underside of the ice shelf of Pine Island Glacier in Antarctica.

1239 Marine Taxa Track Local Climate Velocities M. L. Pinsky et al.

> Variation in species' responses to climate change can be explained by differences in the local rates of climate change.

1243 The Molecular Trigger for High-Speed Wing Beats in a Bee

H. Iwamoto and N. Yaqi High-speed x-ray imaging of bee flight muscle reveals that stretch-activated myosin deformation drives high-frequency wing beats.

Noncanonical Inflammasome Activation by Intracellular LPS Independent of TLR4 N. Kayagaki et al.

Cytoplasmic LPS Activates Caspase-11: Implications in TLR4-Independent **Endotoxic Shock** 

J. A. Hagar et al.

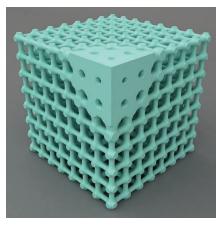
Cytoplasmic lipopolysaccharide from Gram-negative bacteria can activate the innate immune system directly.

>> Perspective p. 1184

1254 Interacting Gears Synchronize Propulsive Leg Movements in a Jumping Insect

M. Burrows and G. Sutton

Functional gears are involved in the ballistic jumping movements of the flightless planthopper insect, Issus.



pages 1181 & 1219



page 1182

SCIENCE (ISSN 0036-8075) is published weekly on Friday, except the 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 © 2013 by the American Association for the Advancement of Science. The title SCIENCE is a registered trademark of the AAAS. Domestic individual membership and subscription (51 issues): 5149 (574 allocated to subscription). Domestic institutional subscription (51 issues): 5990; Foreign postage extra: Mexico, Caribbean (surface mail S55; other countries (air assist delivery) S85. First class, airmail, student, and emeritus rates on request. Canadian rates with GST available upon request, GST #1254 88122. 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: \$10.00 current issue, \$15.00 back issue prepaid includes surface postage; bulk rates on request. Authorization to photocopy material for internal or personal use under circumstances not falling within the fair use provisions of the Copyright Act is granted by AAAS to libraries and other users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service, provided that \$30.00 per article is paid directly to CCC, 222 Rosewood Drive, Danvers, MA 01923. The identification code for Science is 0036-8075. Science is indexed in the Reader's Guide to Periodical Literature and in several specialized indexes.

# Science

Science 341 (6151), 1149-1257.

ARTICLE TOOLS http://science.sciencemag.org/content/341/6151

PERMISSIONS http://www.sciencemag.org/help/reprints-and-permissions

Use of this article is subject to the Terms of Service