EDITORIAL
722  Speak Up for Science Funding
Alan I. Leshner and Mary Woolley

NEWS OF THE WEEK
726  A roundup of the week’s top stories

NEWS & ANALYSIS
728  Scientists Assess Damage
From Sandy’s Deadly Punch
730  Did Pulses of Climate Change
Drive the Rise and Fall of the Maya?
>> Report p. 788
731  Lung-on-a-Chip Breaths New Life
Into Drug Discovery
>> Sci. Transl. Med. Research Articles by
D. Huh et al. and K. S. Thorneloe et al.
and Perspective by D. M. Dambach and H. Uppal
732  As Drug Pilot Wraps Up, a Lively Debate
About Its Future
733  Question of Martian Methane
Is Still Up in the Air

NEWS FOCUS
734  Weather Forecasts Slowly Clearing Up
One Sandy Forecast a Bigger Winner Than Others
>> Science Podcast
738  Poor but Smart

LETTERS
740  Limits to Religious Conservation Efforts
B. Gong et al.
Credit Due to Peter Higgs
J. Ellis
Evolution’s Misleading Language
A. N. Burdett
742  TECHNICAL COMMENT ABSTRACTS
742  CORRECTIONS AND CLARIFICATIONS

BOOKS ET AL.
743  Visible Empire
D. Bleichmar, reviewed by P. H. Smith
744  Measurement
P. Lockhart, reviewed by B. Finegold

POLICY FORUM
745  Law and Science Collide
Over Human Gene Patents
R. Cook-Deegan

PERSPECTIVES
748  A Decorated Virus Cannot Hide
R. W. Herzog and D. A. Ostrov
>> Report p. 795
749  Constraints on Sexual Selection
M. J. Wade
>> Report p. 802
750  Emerging Disease or Diagnosis?
S. K. Gire et al.
752  Driving the Formation of Molecular Knots
J. S. Siegel
>> Report p. 783
754  A Single-Molecule Engine
M. W. Bockrath
>> Report p. 779
755  Constraining Cloud Feedbacks
K. M. Shell
>> Report p. 792
756  Epigenetic Islands in a Genetic Ocean
D. Schübeler

ASSOCIATION AFFAIRS
758  Presidential Address: Transposable
Elements, Epigenetics, and Genome
Evolution
N. V. Fedoroff

CONTENTS continued >>

COVER
Masks on the facade of the Codz Poop Palace (Kabah site, Yucatan, Mexico). Kabah and other Maya sites in the Puuc region flourished during the Terminal Classic Period (800 to 1000 C.E.), while cities to the south collapsed as the climate became drier. Political collapse was part of a complex two-stage societal response to global climate change. See page 788.

Photo: Getty Images/DEA/G. Dagli Orti
REVIEW
768 Hepcidin and the Iron-Infection Axis
H. Drakesmith and A. M. Prentice

REPORTS
773 An Interacting Binary System Powers Precessing Outflows of an Evolved Star
H. M. J. Boffin et al.
Spectra of a planetary nebula’s central star reveal a companion star responsible for launching the system’s rotating jets.
775 Polarity-Switching Top Coats Enable Orientation of Sub–10-nm Block Copolymer Domains
C. M. Bates et al.
A chemical reaction in a thin polymer film imposes orientational ordering of lamellar domains in an underlying film.
779 Driving a Macroscopic Oscillator with the Stochastic Motion of a Hydrogen Molecule
C. Latz et al.
The random motion of an activated hydrogen molecule produces forces that drive periodic motions of a scanning probe cantilever.
783 Discovery of an Organic Trefoil Knot
N. Ponnuswamy et al.
Hydrophobic interactions appear to steer three molecular fragments into a knot, rather than a simpler ring geometry.
785 Tissint Martian Meteorite: A Fresh Look at the Interior, Surface, and Atmosphere of Mars
H. Chennaoui Aoudjehane et al.
A meteorite that fell in Morocco in July 2011 provides a sample to study processes that operated on Mars 700,000 years ago.
788 Development and Disintegration of Maya Political Systems in Response to Climate Change
D. J. Kennett et al.
A record of rainfall from a stalagmite in southern Belize provides a context for better understanding Maya civilization.
792 A Less Cloudy Future: The Role of Subtropical Subsidence in Climate Sensitivity
J. T. Fasullo and K. E. Trenberth
Seasonal variations in tropospheric relative humidity may provide an observational constraint on climate sensitivity.
795 Coagulation Factor X Activates Innate Immunity to Human Species C Adenovirus
K. Doronin et al.
Tagging adenovirus with a serum protein prompts an immune response when the virus enters cells.
798 Germ Cell Migration Across Sertoli Cell Tight Junctions
B. E. Smith and R. E. Braun
Syncytial germ cell chains span a network of transient compartments to cross the blood-testis barrier in adult mice.
802 Bateman in Nature: Predation on Offspring Reduces the Potential for Sexual Selection
J. Byers and S. Dunn
The relationship between mate number and offspring output in male pronghorn confirms Bateman’s findings.
804 Corals Chemically Cue Mutualistic Fishes to Remove Competing Seaweeds
D. L. Dixson and M. E. Hay
Goby fish remove toxic algae from their coral habitat, becoming more distasteful to predators in the process.
807 A Core Metabolic Enzyme Mediates Resistance to Phosphine Gas
D. I. Schlipalius et al.
Mutations in a lipoic acid metabolism enzyme confer resistance to phosphine but also result in sensitivity to arsenite.
810 Optical Control of Protein Activity by Fluorescent Protein Domains
X. X. Zhou et al.
Shining light onto an engineered fluorescent protein controls the activity of domains fused to the protein.
815 Intramitochondrial Transport of Phosphatidic Acid in Yeast by a Lipid Transfer Protein
M. Connerth et al.
A lipid transfer protein, Ups1, controls the accumulation of cardiolipin in mitochondrial outer and inner membranes.
818 IRE1α Cleaves Select microRNAs During ER Stress to Derepress Translation of Proapoptotic Caspase-2
J. P. Upton et al.
Protein misfolding stimulates the destruction of microRNAs and the synthesis of an enzyme that promotes cell death.
822 Mitochondrial Network Size Scaling in Budding Yeast
S. M. Rafelski et al.
Yeast cells produce buds with uniform mitochondrial content, even as the aging mother cell loses out.
Many-Eyed Monsters Prove the Eyes Have It

Robert Parducci

Comment: H. H. Birks

Published by AAAS

ACUTE INFLAMMATION INITIATES THE REGENERATIVE RESPONSE IN THE ADULT ZEBRAFISH BRAIN

N. Kyritsis et al.

10.1126/science.1228773

CYTOPLASMIC ATP HYDROLYSIS POWERS TRANSPORT OF LIPIDOPOLYSACCHARIDE ACROSS THE PERIPLASM IN E. COLI

S. Okuda et al.

10.1126/science.1228984

ROBUST PHOTOGENERATION OF H2 IN WATER USING SEMICONDUCTOR NANOCRYSTALS AND A NICKEL CATALYST

Z. Han et al.

10.1126/science.1227775

Z. Han et al.

Published by AAAS

The Signal Transduction Knowledge Environment: 6 November issue: http://scim.ag/ss110612

RESEARCH ARTICLE: Key Roles for the Lipid Signaling Enzyme Phospholipase D1 in the Tumor Microenvironment During Tumor Angiogenesis and Metastasis

Q. Chen et al.

PODCAST

M. A. Frohman and A. M. VanHook

Tumor growth and metastasis are attenuated in mice lacking a lipid signaling enzyme.

RESEARCH ARTICLE: Proliferative and Antiapoptotic Signaling Stimulated by Nuclear-Localized PDK1 Results in Oncogenesis

C. K. Kitani et al.

PDK1 in the nucleus drives oncogenesis in mice and correlates with human prostate tumor grade.

PERSPECTIVE: Sexy DEG/ENaC Channels Involved in Gustatory Detection of Fruit Fly Pheromones

C. W. Pikielny et al.

DEG/ENaC channels allow male fruit flies to “taste” their mates.

PERSPECTIVE: Grb2, A Double-Edged Sword of Receptor Tyrosine Kinase Signaling

A. A. Belov and M. Mohammadi

The adaptor Grb2 plays both positive and negative roles in FGF receptor signaling.

Integrating Medicine and Science

7 November issue: http://scim.ag/stm110712

RESEARCH ARTICLE: A Human Disease Model of Drug Toxicity–Induced Pulmonary Edema in a Lung-on-a-Chip Microdevice

D. Huh et al.

A human lung-on-a-chip model of human pulmonary edema predicts the efficacy of a new drug being tested in animals.

RESEARCH ARTICLE: An Orally Active TRPV4 Channel Blocker Prevents and Resolves Pulmonary Edema Induced by Heart Failure

K. S. Thorneoe et al.

Blocking TRPV4 ion channels expressed in the lung in vivo and in vitro resolves pulmonary edema induced by heart failure.

PERSPECTIVE: Improving Risk Assessment

D. M. Dambach and H. Uppal

A collaborative effort to build human organs-on-a-chip and the Maya, the challenges of weather forecasting, and more.