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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
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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 Macrosopic Oscillator with the Stochastic Motion of a Hydrogen Molecule
C. Latze 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
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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
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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
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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
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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
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822 Mitochondrial Network Size Scaling in Budding Yeast
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Yeast cells produce buds with uniform mitochondrial content, even as the aging mother cell loses out.
Kinetic Responses of β-Catenin Specify the Sites of Wnt Control
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Acute Inflammation Initiates the Regenerative Response in the Adult Zebrafish Brain
N. Kyritsis et al.
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Cytoplasmic ATP Hydrolysis Powers Transport of Lippopolysaccharide Across the Periplasm in E. coli
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10.1126/science.1228984

Robust Photogeneration of H₂ in Water Using Semiconductor Nanocrystals and a Nickel Catalyst
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10.1126/science.1227775

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Comment and Response on “Glacial Survival of Boreal Trees in Northern Scandinavia”
Comment: H. H. Birk et al.
http://dx.doi.org/10.1126.science.1225476
Response: L. Parducci et al.
http://dx.doi.org/10.1126.science.1225476

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Even among birds, necessity is the mother of invention.
http://scim.ag/Innovative-Cockato
The Eternal Youth of Asteroid Vesta
The Dawn spacecraft shows how Vesta’s blemishes are removed, but why isn’t space aging it?
http://scim.ag/Eternal-Youth
Many-Eyed Monsters Prove the Eyes Have It
People seek out others’ eyes, even when they are not centered on the face.
http://scim.ag/Seek_Eyes

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. Kittani 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. Pikelney 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.

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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. Thorneloe 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 required to develop the necessary skills.

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