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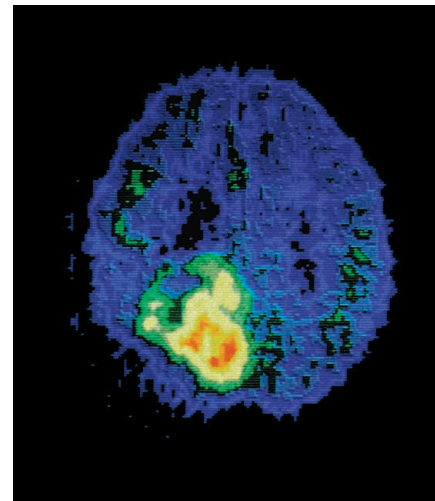
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COVER

The porous deposit of candle soot can be used as a template for a super oil- and water-repellent coating. The soot is coated with a thin silica shell to form a replica and is then removed by calcination. The silica is treated with a fluorosilane, yielding a transparent, stable coating. This cheap and easily upscalable approach may inspire the design of anti-fingerprint coatings, which are desirable for touchscreens or glasses. See page 67.

Photo illustration: Bricelyn Strauch and Yana Hammond/Science; candle image: Fotosearch

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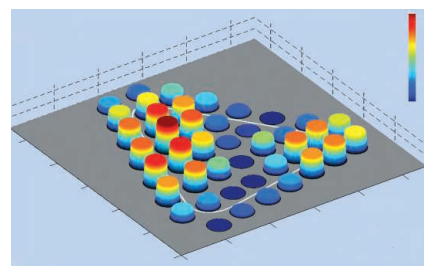
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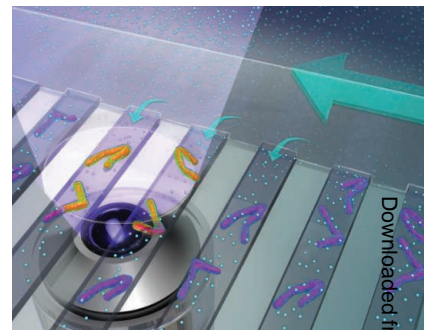
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Structural Basis for Sequence-Specific Recognition of DNA by TAL Effectors

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The Crystal Structure of TAL Effector PthXo1 Bound to Its DNA Target

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Structures show how a virulence factor in a plant pathogen recognizes and binds to host DNA.
10.1126/science.1216211

Activation-Induced B Cell Fates Are Selected by Intracellular Stochastic Competition

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Cell-fate decisions in activated B lymphocytes are determined by stochastic competition.
10.1126/science.1213230

Centrosome Loss in the Evolution of Planarians

J. Azimzadeh et al.
Analysis of centriole assembly in planaria gives insight into the evolution and function of the centrosome in animal cells.
10.1126/science.1214457

RNA Editing Underlies Temperature Adaptation in K⁺ Channels from Polar Octopuses

S. Garrett and J. J. C. Rosenthal
Octopus potassium channels function efficiently at different temperatures due to RNA editing and not genetic differences.
10.1126/science.1212795

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Comment on "Nonreciprocal Light Propagation in a Silicon Photonic Circuit"

S. Fan et al.
Full text at www.sciencemag.org/cgi/content/full/335/6064/38-b

Response to Comment on "Nonreciprocal Light Propagation in a Silicon Photonic Circuit"

L. Feng et al.
Full text at www.sciencemag.org/cgi/content/full/335/6064/38-c

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Highlights From Our Daily News Coverage

A Surprising Threshold for Seabird Survival
Across species, seabird numbers plummet when stocks of prey fish fall below one-third of their maximum size.

<http://scim.ag/SeabirdSurvival>

No Joke: Pigeons Ace a Simple Math Test
Observation shows that numerical reasoning is not limited to primates.

http://scim.ag/Pigeons_Math

Elephants Have a Sixth 'Toe'
CT scans help finger a mystery bone in the fat pads of pachyderm feet.

<http://scim.ag/Sixth-Toe>

SCIENCE SIGNALING

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The Signal Transduction Knowledge Environment
3 January issue: <http://scim.ag/ss01032012>

EDITORIAL GUIDE: 2011—Signaling Breakthroughs of the Year

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RESEARCH ARTICLE: Inhibition of PP1 Phosphatase Activity by HBx—A Mechanism for the Activation of Hepatitis B Virus Transcription

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A virus prolongs the activity of a host transcription factor to promote expression of viral genes.

RESEARCH ARTICLE: Incoherent Feedforward Control Governs Adaptation of Activated Ras in a Eukaryotic Chemotaxis Pathway

K. Takeda et al.
Rapid adaptation to changes in chemoattractant concentration involves an incoherent feedforward structure of the underlying signaling network.

LETTERS: Comment and Response on "Load-Induced Modulation of Signal Transduction Networks"—Reconciling Ultrasensitivity with Bifunctionality?

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Integrating Medicine and Science

4 January issue: <http://scim.ag/stm010412>

REVIEW: NEW—Network-Enabled Wisdom in Biology, Medicine, and Health Care

E. E. Schadt and J. L. M. Björkegren
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RESEARCH ARTICLE: Vaccine Vectors Derived from a Large Collection of Simian Adenoviruses Induce Potent Cellular Immunity Across Multiple Species

S. Colloca et al.
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RESEARCH ARTICLE: Novel Adenovirus-Based Vaccines Induce Broad and Sustained T Cell Responses to HCV in Man

E. Barnes et al.
An adenoviral HCV vaccine induces antiviral T cell responses in human volunteers.

FOCUS: Chimp Virus Makes a Savvy Vaccine Vector

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RESEARCH ARTICLE: Paracrine Signaling Through MYCN Enhances Tumor-Vascular Interactions in Neuroblastoma

Y. H. Chanthery et al.
PI3K/mTOR inhibitors inhibit angiogenesis by blocking MYCN-dependent paracrine signaling between tumor and endothelial cells.

SCIENCE CAREERS

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Free Career Resources for Scientists

Taken For Granted: Academia's Crooked Money Trail

B. Benderly
Paula Stephan's new book looks beyond rosy press releases to uncover the harsh economic realities of the academic job market.

http://scim.ag/TFG_PaulaStephan

Getting Science to Those Who Need It

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A former Silicon Valley entrepreneur found his calling helping biotech-derived therapies reach those who need them most.

<http://scim.ag/SocialBiotech>

Firing Up Tomorrow's Science Stars

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Astrophysicist Aude Alapani-Odunlade's true passion is earthbound: helping teachers give their students a solid science education.

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