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- 602 Facile Synthesis of AsP₃
B. M. Cossairt et al.
The question of the stability of solid AsP₃, a simple inorganic molecule, has been settled by its synthesis.

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COVER

Desert locusts, *Schistocerca gregaria*, are normally solitary and avoid each other (green individual, lower right). Forced proximity between them leads to the release of the neurotransmitter serotonin, which changes their behavior to mutual attraction and initiates a cascade of events leading to swarm formation, including a change in appearance (black and yellow group). See page 627.

Image: Tom Fayle, Swidbert Ott, and Stephen Rogers/University of Cambridge

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- 603 Anomalous Criticality in the Electrical Resistivity of $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$

R. A. Cooper et al.

High magnetic fields can strip away the superconducting regime of a cuprate superconductor, revealing the presence of an enigmatic quantum critical point.

>> Perspective p. 590

REPORTS

- 607 Revealing the Maximum Strength in Nanotwinned Copper

L. Lu et al.

Studies of nanocrystalline copper reveal changes in deformation mechanisms with grain size and the role played by twin boundaries.

- 610 Control of Graphene's Properties by Reversible Hydrogenation: Evidence for Graphane

D. C. Elias et al.

Graphene can be transformed from a conductor to an insulator by exposure to hydrogen atoms and reversed by a thermal treatment.

>> Perspective p. 589

- 614 Dynamical Quorum Sensing and Synchronization in Large Populations of Chemical Oscillators

A. F. Taylor et al.

Communication between chemical oscillators in solution can mimic that of large populations of single-celled organisms.

- 617 Single Nanocrystals of Platinum Prepared by Partial Dissolution of Au-Pt Nanoalloys

M. Schriener et al.

Gold-platinum nanoparticles, held in polymer networks on latex beads, are converted into platinum nanocrystals.

- 620 Cascadia Tremor Located Near Plate Interface Constrained by S Minus P Wave Times

M. La Rocca et al.

A series of microearthquakes near Puget Sound originate near or on the subduction zone fault from a recurrent source.

- 623 Divergent Evolution of Duplicate Genes Leads to Genetic Incompatibilities Within *A. thaliana*

D. Bikard et al.

The divergent evolution of a duplicated gene results in genetic incompatibilities between strains of the plant *Arabidopsis*.

- 627 Serotonin Mediates Behavioral Gregarization Underlying Swarm Formation in Desert Locusts

M. L. Anstey et al.

Serotonin induces the phenotypic switch from solitary to gregarious behavior in desert locusts.

>> Perspective p. 594; Science Podcast

- 630 Survival from Hypoxia in *C. elegans* by Inactivation of Aminoacyl-tRNA Synthetases

L. L. Anderson et al.

Reduced activity of aminoacyl-transfer RNA synthetases allows for survival from hypoxic insult in the nematode *C. elegans*.

- 633 Ligand-Dependent Equilibrium Fluctuations of Single Calmodulin Molecules

J. P. Junker et al.

Single-molecule force spectroscopy reveals the equilibrium dynamics of calmodulin folding and how it is modulated by peptide ligands.

>> Perspective p. 593

- 638 Stretching Single Talin Rod Molecules Activates Vinculin Binding

A. del Rio et al.

Force-induced stretching of proteins can expose previous cryptic binding sites and promote binding to their ligands.

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- 642 Mechanically Activated Integrin Switch Controls $\alpha_5\beta_1$ Function

J. C. Friedland et al.

Myosin contraction and extracellular matrix stiffness drive a tension-induced cell-surface integrin switch that regulates cell signaling.

>> Perspective p. 588

- 644 A Human Telomerase Holoenzyme Protein Required for Cajal Body Localization and Telomere Synthesis

A. S. Venteicher et al.

Telomerase Cajal body protein 1 (TCAB1) is the fourth discovered subunit of the chromosome end-capping enzyme telomerase.

- 649 PAN1: A Receptor-Like Protein That Promotes Polarization of an Asymmetric Cell Division in Maize

H. N. Cartwright et al.

Asymmetric cell division in plants is regulated by a receptor-like kinase, implicating a signaling cascade in cell polarization.

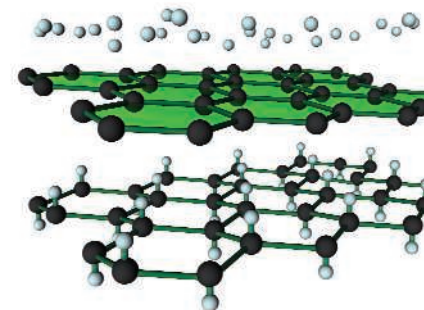
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- 651 Calcineurin/NFAT Signaling Is Required for Neuregulin-Regulated Schwann Cell Differentiation

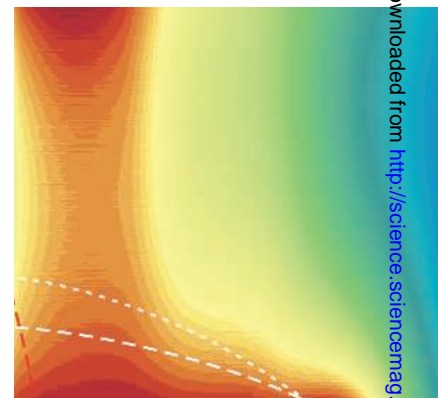
S.-C. Kao et al.

The cell signaling components calcineurin/NFATc and Sox10 control Schwann cell myelination.

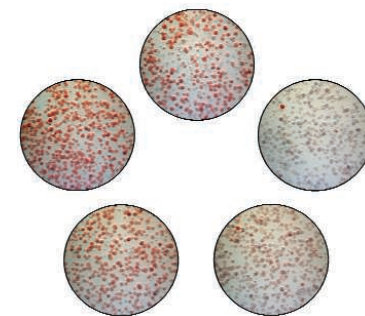
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A Role for RNAi in the Selective Correction of DNA Methylation Defects

F. K. Teixeira et al.

An RNA interference–dependent DNA methylation rescue system helps to preserve a subset of DNA methylation marks in *Arabidopsis*.
10.1126/science.1166313

The Role of Fingerprints in the Coding of Tactile Information Probed with a Biomimetic Sensor

J. Scheibert et al.

Fingertip ridges improve the tactile perception of fine features.
>> *News story p. 572*
10.1126/science.1166467

Zircon Dating of Oceanic Crustal Accretion

C. J. Lissenberg et al.

Zircon dates from the slow-spreading mid-Atlantic Ridge show that magmatic intrusions formed new oceanic crust regularly and evenly, thereby providing cooling times.
10.1126/science.1167330

Inducing a Magnetic Monopole with Topological Surface States

X.-L. Qi et al.

A magnetic monopole is theoretically predicted to be induced at the surface of a topological insulator.
10.1126/science.1167747

TECHNICALCOMMENTS

Comment on “Arsenic (III) Fuels Anoxygenic Photosynthesis in Hot Spring Biofilms from Mono Lake, California”

B. Schoepp-Cothenet et al.

full text at www.sciencemag.org/cgi/content/full/323/5914/583c

Response to Comment on “Arsenic(III) Fuels Anoxygenic Photosynthesis in Hot Spring Biofilms from Mono Lake, California”

R. S. Oremland et al.

full text at www.sciencemag.org/cgi/content/full/323/5914/583d

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Highlights From Our Daily News Coverage

A Millennia-Long Greenhouse Disaster

The physics of global warming would make for essentially irreversible global damage.

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Dung beetle gives up excrement for the life of a hunter.

Death March of the Penguins?

Shrinking sea ice may decimate penguin population that starred in 2005 movie.

SCIENCE SIGNALING

www.sciencesignaling.org

The Signal Transduction Knowledge Environment

EDITORIAL GUIDE: Freedom of Materials

M. B. Yaffe

Intellectual property concerns bring into conflict data sharing and accessibility of materials.

RESEARCH ARTICLE: Direct Response to Notch Activation—Signaling Crosstalk and Incoherent Logic

A. Krejčí et al.

Identification of the direct target genes of Notch reveals complex input into multiple signaling pathways that goes beyond coordination of transcriptional networks.

RESEARCH ARTICLE: Differential Requirement of mTOR in Postmitotic Tissues and Tumorigenesis

C. Nardella et al.

Conditional inactivation of *mTOR* has little effect in the adult mouse prostate, but it suppresses tumor initiation and progression.

RESEARCH ARTICLE: Characterization of the Intrinsic and TSC2–GAP–Regulated GTPase Activity of Rheb by Real-Time NMR

C. B. Marshall et al.

An NMR-based assay enables real-time analysis of the GTPase activity of Rheb and of the effect of its GTPase-activating protein TSC2.

RESEARCH ARTICLE: EGFR Signals to mTOR Through PKC and Independently of Akt in Glioma

Q.-W. Fan et al.

Akt is dispensable for signaling between EGFR and mTOR in glioma cells, whereas PKC is critical.

PERSPECTIVE: Grab Your Partner with Both Hands—Cytoskeletal Remodeling by Arp2/3 Signaling

S. H. Soderling

Dimerization provides an additional layer of regulation to the activity of a family of actin-nucleating factors.

PODCAST

J. F. Foley and A. M. VanHook

Leptin secreted by adipose tissue decreases insulin production through both direct and indirect mechanisms.

NETWATCH: iBioSeminars

View seminars from leading cell biology researchers; in Web Broadcasts.

NETWATCH: Foldit

A computer game teaches students about the energetics and dynamics of protein folding; in Educator Sites.

SCIENCE CAREERS

www.sciencecareers.org/career_magazine

Free Career Resources for Scientists

Women M.D.-Ph.D. 's: Life in the Trenches

K. Hede

Physician-scientists urge a focus on solutions, not problems, to advance women in academic medicine.

Perspective: Ensuring Retention of Women in Physician-Scientist Training

J. M. Pauff and M. C. Richards

Why do more women than men drop out of M.D.-Ph.D. programs?

Feet on the Ground, Head in the Sky

E. Pain

Spain's Juan A. Añel has quickly established himself in the field of atmospheric physics.

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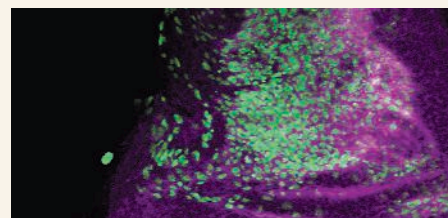
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SCIENCE SIGNALING

Specifying muscle.

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