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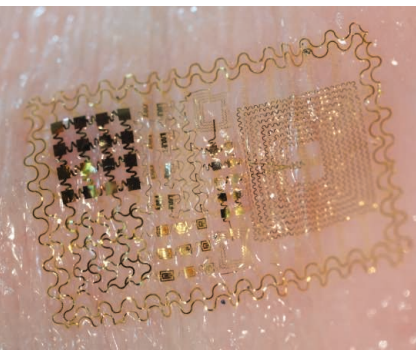
COVER

Low-energy (<10 millielectron volts) electronic spectra of bilayer graphene undergoing nematic phase transition from an isotropic, unperturbed form (top left) to an asymmetric form (bottom right). Electron-electron interactions in suspended graphene layers drive this transition, causing a change in the material's band structure and, thus, its electronic properties. See page 860.

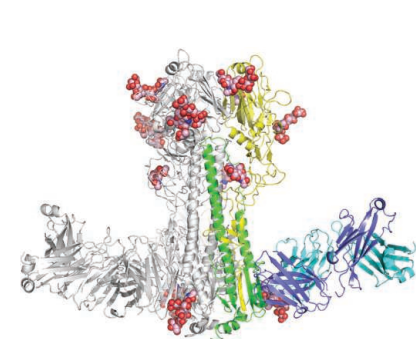
Image: *Kostya S. Novoselov/University of Manchester and Yael Fitzpatrick/Science*

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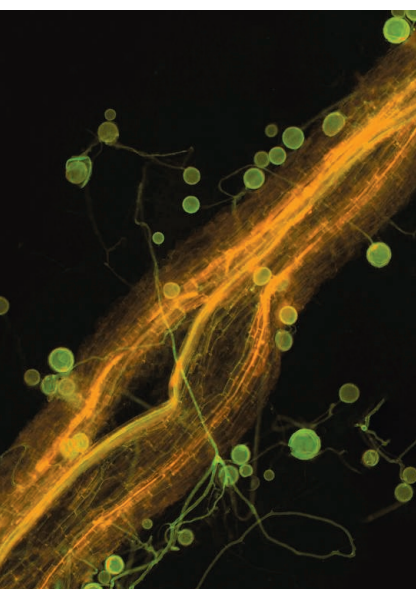
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BREVIA

- 837** A Simple Type of Wood in Two Early Devonian Plants
P. Gerrienne et al.
The earliest evolution of wood occurred in plants of surprisingly small stature.

RESEARCH ARTICLES

- 838** Epidermal Electronics
D.-H. Kim et al.
Electronic systems with physical properties matched to the human epidermis can be used in clinical monitoring.
>> *Perspective p. 830; Science Podcast*
- 843** A Highly Conserved Neutralizing Epitope on Group 2 Influenza A Viruses
D. C. Ekiert et al.
An antibody against a conserved epitope broadly neutralizes group 2 influenza viruses.
- 850** A Neutralizing Antibody Selected from Plasma Cells That Binds to Group 1 and Group 2 Influenza A Hemagglutinins
D. Corti et al.
An antibody able to broadly neutralize both group 1 and group 2 influenza A viruses—and its target epitope—are identified.
>> *Perspective p. 834*
- 870** Viviparity and K-Selected Life History in a Mesozoic Marine Plesiosaur (Reptilia, Sauropterygia)
F. R. O'Keefe and L. M. Chiappe
Plesiosaurs gave birth to a single, live large offspring and may have engaged in maternal care.
- 874** Nest Inheritance Is the Missing Source of Direct Fitness in a Primitively Eusocial Insect
E. Leadbeater et al.
Fitness benefits from the inheritance of breeding resources may explain why *Polistes* wasps cooperate with nonrelatives.
>> *Perspective p. 833*
- 876** Archaeorhizomycetes: Unearthing an Ancient Class of Ubiquitous Soil Fungi
A. Rosling et al.
Cultivation and cloning allow phylogenetic placement of a prominent fungal lineage.
- 880** Reciprocal Rewards Stabilize Cooperation in the Mycorrhizal Symbiosis
E. T. Kiers et al.
Plants and their associated fungi reward partners that offer the best resources to sustain mutualism in complex systems.
>> *Perspective p. 828*
- 883** The Structure of the Kinesin-1 Motor-Tail Complex Reveals the Mechanism of Autoinhibition
H. Y. K. Kaan et al.
A tail domain autoinhibits a dimeric kinesin by preventing relative movement of the two motor domains.
- 885** *Drosophila Sex lethal* Gene Initiates Female Development in Germline Progenitors
K. Hashiyama et al.
Primordial germ cells are directed toward oogenesis even before they migrate to the gonads of the fruit fly.
>> *Perspective p. 829*
- 888** Nicotinic Acetylcholine Receptor $\beta 2$ Subunits in the Medial Prefrontal Cortex Control Attention
K. Guillem et al.
An important molecular mechanism involved in cognition has been unraveled.
- 891** Schema-Dependent Gene Activation and Memory Encoding in Neocortex
D. Tse et al.
New hippocampal-dependent learning is in parallel consolidated with existing memories in the neocortex.

REPORTS

- 856** Circumstellar Material in Type Ia Supernovae via Sodium Absorption Features
A. Sternberg et al.
Most of the progenitors of type Ia supernovae in nearby spiral galaxies may be white dwarf–normal star binary systems.
- 860** Interaction-Driven Spectrum Reconstruction in Bilayer Graphene
A. S. Mayorov et al.
A correlated-electron phase was observed at low temperatures in suspended graphene bilayers with high carrier mobilities.
- 863** A Synthetic Nickel Electrocatalyst with a Turnover Frequency Above $100,000 \text{ s}^{-1}$ for H_2 Production
M. L. Helm et al.
Precisely shaped basic ligands protect highly reactive protons and electrons to help accelerate catalytic hydrogen formation.
- 866** The Persistently Variable “Background” Stratospheric Aerosol Layer and Global Climate Change
S. Solomon et al.
An increase in the amount of aerosols in the stratosphere during the past decade has decreased the rate of global warming.

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Coherent Two-Dimensional Nanoscopy

M. Aeschlimann et al.

Coherent electronic states excited by ultrafast laser pulses were imaged at subwavelength resolution with photoelectrons.

10.1126/science.1209206

Focused Evolution of HIV-1 Neutralizing Antibodies Revealed by Structures and Deep Sequencing

X. Wu et al.

Broadly neutralizing antibodies to HIV with similar specificities can be found in multiple HIV-infected individuals.

10.1126/science.1207532

Ribosome Assembly Factors Prevent Premature Translation Initiation by 40S Assembly Intermediates

B. S. Strunk et al.

Ribosome assembly factors block multiple steps in translation initiation.

10.1126/science.1208245

Pyrazinamide Inhibits Trans-Translation in *Mycobacterium tuberculosis*

W. Shi et al.

The target of a first-line tuberculosis drug that acts against persister bacteria is identified.

10.1126/science.1208813

Role for the Membrane Receptor Guanylyl Cyclase-C in Attention Deficiency and Hyperactive Behavior

R. Gong et al.

A receptor for gut hormones also functions in the brain, where its loss affects attention.

10.1126/science.1207675

SCIENCE NOW

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Highlights From Our Daily News Coverage

Lab Chimps Extend a Helping Hand

Females aid their comrades even when it doesn't seem to do them any good.

<http://scim.ag/labchimps>

The Fate of the First Black Hole

Or what do the band Rush, Stephen Hawking, and a bright source of x-rays have in common?

<http://scim.ag/holefate>

Yeast Get By on Almost No Oxygen

Finding may explain success of oxygen-dependent organisms on early Earth.

<http://scim.ag/yeast-02>

SCIENCE SIGNALING

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The Signal Transduction Knowledge Environment

9 August issue: <http://scim.ag/ss080911>

EDITORIAL GUIDE: Focus Issue—Cracking the G Protein–Coupled Receptor Code

N. R. Gough

Research reveals how GPCRs produce ligand-specific, cell-specific, and genome-specific responses.

RESEARCH ARTICLE: Distinct Phosphorylation Sites on the β_2 -Adrenergic Receptor Establish a Barcode That Encodes Differential Functions of β -Arrestin

K. N. Nobles et al.

PERSPECTIVE: Phosphorylation Barcoding as a Mechanism of Directing GPCR Signaling

S. B. Liggett

GRK-mediated phosphorylation patterns orchestrate GPCR signaling output.

RESEARCH ARTICLE: Quantitative Encoding of the Effect of a Partial Agonist on Individual Opioid Receptors by Multisite Phosphorylation and Threshold Detection

E. K. Lau et al.

PODCAST

M. von Zastrow and A. M. VanHook

Partial and full agonists enrich distinct populations of phosphorylated receptors.

RESEARCH ARTICLE: A Polymorphism-Specific “Memory” Mechanism in the β_2 -Adrenergic Receptor

A. Ahles et al.

PERSPECTIVE: β_2 -Adrenergic Receptor Polymorphisms and Signaling—Do Variants Influence the “Memory” of Receptor Activation?

P. A. Insel

Genetic variation in the β_2 -adrenergic receptor produces distinct responses to repeated drug exposure.

PERSPECTIVE: Intracellular Signaling and the Origins of the Sensations of Itch and Pain

S. K. Ham and M. I. Simon

Signals underlying itch and pain emanating from the application of the same compound may be encoded by different receptors.

SCIENCE CAREERS

www.sciencereers.org/career_magazine

Free Career Resources for Scientists

A Juggling Act in Paradise

G. Koch

Graduate student Kawika Winter directs a Hawaiian botanical garden and preserve.

http://scim.ag/Kawika_Winter

A Mathematician Takes to the Streets

E. Pain

Portuguese mathematician Sara Santos has forged a career communicating her passion for mathematics.

http://scim.ag/Sara_Santos

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Integrating Medicine and Science

10 August issue: <http://scim.ag/stm081011>

COMMENTARY: Core Facilities—Maximizing the Return on Investment

G. K. Farber and L. Weiss

Cutting-edge translational research requires specialized core facilities with highly trained staff.

FOCUS: Type 1 Diabetes Immunotherapy—Is the Glass Half Empty or Half Full?

K. C. Herold and J. A. Bluestone

The islet cell preservation seen in immunotherapy clinical trials should motivate the diabetes community.

RESEARCH ARTICLE: T Cells with Chimeric Antigen Receptors Have Potent Antitumor Effects and Can Establish Memory in Patients with Advanced Leukemia

M. Kalos et al.

Adoptively transferred gene-modified T cells eliminate leukemic cells and form functional memory cells.

RESEARCH ARTICLE: Curaxins—Anticancer Compounds That Simultaneously Suppress NF- κ B and Activate p53 by Targeting FACT

A. V. Gasparian et al.

PERSPECTIVE: Cancer Drug Discovery Faces the FACT

G. F. Draetta and R. A. DePinho

The quinacrine-related curaxin compounds target multiple pro-cancer pathways with minimal toxicity.

RESEARCH ARTICLE: Rare Copy Number Variation Discovery and Cross-Disorder Comparisons Identify Risk Genes for ADHD

A. C. Lionel et al.

Copy number variation in ADHD patients reveals overlap with genes implicated in autism.

SCIENCE PODCAST

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On the 12 August *Science* Podcast: epidermal electronics, hydropower development in the Mekong Basin, and more.

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