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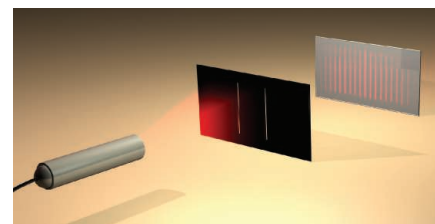
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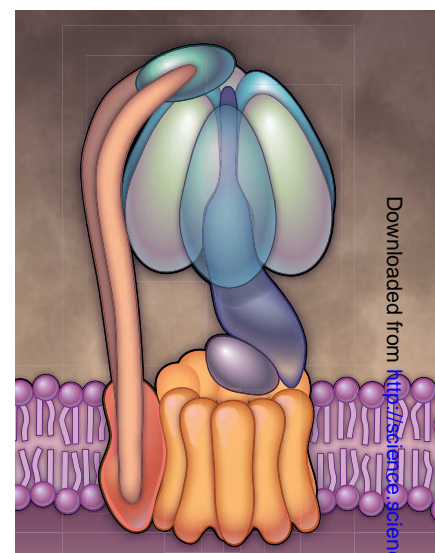
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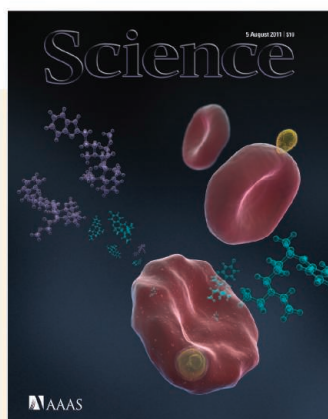


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## COVER

A pair of chemical compounds (light blue and purple) target wild-type and mutant forms of the *Plasmodium falciparum* chloroquine resistance transporter, which mediates the parasite's (yellow) resistance to the widely used antimalarial drug. Using high-throughput chemical and genetic analyses, Yuan *et al.* identify potential new antimalarial drugs that could be used in combination to suppress the development of drug resistance. See page 724.

*Image: Ethan Tyler and Alan Hoofring, Division of Medical Arts, National Institutes of Health*

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*L. Bäckman et al.*  
A cognitive training program that improves working memory is associated with increased dopamine release during task performance.

## RESEARCH ARTICLES

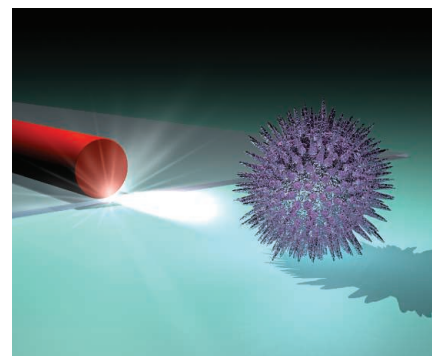
- 719 Glacial-Interglacial Indian Summer Monsoon Dynamics  
*Z. An et al.*  
Indian summer monsoon changes during the Pleistocene were influenced by dynamic effects originating in both hemispheres.  
>> *Perspective p. 706*
- 724 Chemical Genomic Profiling for Antimalarial Therapies, Response Signatures, and Molecular Targets  
*J. Yuan et al.*  
There are a limited number of ways that the malaria parasite can develop drug resistance.  
>> *Perspective p. 705*

## REPORTS

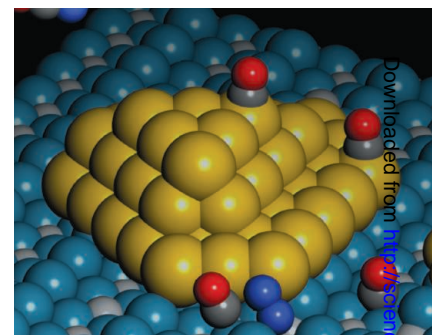
- 729 Nonreciprocal Light Propagation in a Silicon Photonic Circuit  
*L. Feng et al.*  
An engineered metallic-silicon waveguide allows for direction-dependent light propagation.
- 733 A Synthetic Model of the Mn<sub>3</sub>Ca Subsite of the Oxygen-Evolving Complex in Photosystem II  
*J. S. Kanady et al.*  
A model compound sheds light on the puzzling role of calcium in the metal cluster that oxidizes water during photosynthesis.
- 736 Spectroscopic Observation of Dual Catalytic Sites During Oxidation of CO on a Au/TiO<sub>2</sub> Catalyst  
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The low-temperature oxidation of carbon monoxide proceeds initially with oxygen molecules that bridge titanium and gold sites.
- 740 Seasonal Flows on Warm Martian Slopes  
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Rare meter-scale slope features on Mars might be explained by the transient flow of liquid salty water.  
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- 743 Reduced Interannual Rainfall Variability in East Africa During the Last Ice Age  
*C. Wolff et al.*  
Extreme rainfall was weaker and less frequent in East Africa during the last ice age.
- 747 A 10,000-Year Record of Arctic Ocean Sea-Ice Variability—View from the Beach  
*S. Funder et al.*  
Sea-ice coverage near northern Greenland and in the western Arctic Ocean varied in opposition over much of the Holocene.

- 751 Signal Perception in Frogs and Bats and the Evolution of Mating Signals  
*K. L. Akre et al.*  
Receiver perception limits the evolution of increasingly elaborate calls in túngara frogs.  
>> *Perspective p. 708; Science Podcast*
- 753 Extending the Carbon Chain: Hydrocarbon Formation Catalyzed by Vanadium/Molybdenum Nitrogenases  
*Y. Hu et al.*  
The molybdenum nitrogenase enzyme can reduce carbon monoxide, albeit inefficiently, in addition to its native substrate, nitrogen.
- 755 High-Speed Atomic Force Microscopy Reveals Rotary Catalysis of Rotorless F<sub>1</sub>-ATPase  
*T. Uchihashi et al.*  
Intrinsic cooperativity drives cyclic propagation of conformational states in the stator ring of an adenosine triphosphate-driven rotary motor.  
>> *Perspective p. 704*
- 758 Structural Basis for Tail-Anchored Membrane Protein Biogenesis by the Get3-Receptor Complex  
*S. Stejfer et al.*  
Docking of cytoplasmic and membrane receptors facilitates conformational changes that drive protein insertion.
- 762 The Plant Cell Wall—Decomposing Machinery Underlies the Functional Diversity of Forest Fungi  
*D. C. Eastwood et al.*  
Comparative genomic analysis of “dry rot” fungus shows both convergent evolution and divergence among fungal decomposers.
- 765 The Leukemogenicity of AML1-ETO Is Dependent on Site-Specific Lysine Acetylation  
*L. Wang et al.*  
A protein that drives the growth of leukemia does so only when it carries a specific posttranslational modification.
- 769 Cartilage Acidic Protein—1B (LOTUS), an Endogenous Nogo Receptor Antagonist for Axon Tract Formation  
*Y. Sato et al.*  
A molecule that functions in normal olfactory tract development could provide clues to failed neuronal regeneration in adults.
- 773 Integrating What and When Across the Primate Medial Temporal Lobe  
*Y. Naya and W. A. Suzuki*  
Structures of the medial temporal lobe provide distinct but complementary signals to encode temporal-order information.
- 776 Google Effects on Memory: Cognitive Consequences of Having Information at Our Fingertips  
*B. Sparrow et al.*  
Owing to Internet search, we are more likely to encode “where” aspects of memory rather than “what.”

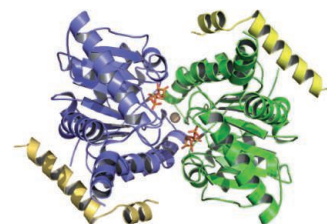
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## SCIENCEONLINE

## SCIENCEEXPRESS

[www.scienceexpress.org](http://www.scienceexpress.org)

## Vacuum-Induced Transparency

*H. Tanji-Suzuki et al.*

The transmission of light through an atomic gas can be controlled by manipulating the confining cavity.

10.1126/science.1208066

## Single-Shot Correlations and Two-Qubit Gate of Solid-State Spins

*K. C. Nowack et al.*

Independent readout of two single-spin qubits in quantum dots is achieved in an all-electrical setup.

10.1126/science.1209524

## Control of Local Protein Synthesis and Initial Events in Myelination by Action Potentials

*H. Wake et al.*

Axons signal through both glutamate and adenosine triphosphate release to regulate their insulating wraps.

10.1126/science.1206998

## Tet-Mediated Formation of 5-Carboxylcytosine and Its Excision by TDG in Mammalian DNA

*Y.-F. He et al.*

Evidence for a possible route for DNA demethylation in animals is suggested.

10.1126/science.1210944

Mutations in *CIC* and *FUBP1* Contribute to Human Oligodendroglioma

*C. Bettegowda et al.*

A gene originally studied for its role in fruit fly embryogenesis is implicated in the growth of a common human brain tumor.

10.1126/science.1210557

## SCIENCE NOW

[www.sciencenow.org](http://www.sciencenow.org)

Highlights From Our Daily News Coverage

## Lab-Grown Disks May Cure

## That Aching Back

'Living disks' could replace painkillers and spinal fusion surgery.

<http://scim.ag/backdisks>

## Shrimp Hurt the Sponges That Shelter Them

Seemingly parasitic crustacean species living deep inside sponges pig out on their hosts.

<http://scim.ag/shrimp-sponge>

## Gene May Explain 'Elephant Man' Disorder

A rare mutation leads to deformed hands and feet.

<http://scim.ag/elephant-man>

## SCIENCE SIGNALING

[www.sciencesignaling.org](http://www.sciencesignaling.org)

The Signal Transduction Knowledge Environment

**2 August issue:** <http://scim.ag/ss080211>

## RESEARCH ARTICLE: Structure of a Light-Activated LOV Protein Dimer That Regulates Transcription

*A. T. Vaidya et al.*

Light-induced conformational changes in a blue-light sensor facilitate its dimerization.

## PERSPECTIVE: K2P Potassium Channels, Mysterious and Paradoxically Exciting

*S. A. N. Goldstein*

K2P potassium channels become permeable to Na<sup>+</sup> with low extracellular K<sup>+</sup> concentrations and may thereby increase the risk for cardiac arrhythmias.

## JOURNAL CLUB: MicroRNAs Add an Additional Layer to the Complexity of Cell Signaling

*J. I. Herschkowitz and X. Fu*

Down-regulation of microRNAs associated with EGF signaling may contribute to tumor progression.

## GLOSSARY

Find out what KDAC, NF2, and TANK mean in the world of cell signaling.

## SCIENCE TRANSLATIONAL MEDICINE

[www.sciencetranslationalmedicine.org](http://www.sciencetranslationalmedicine.org)

Integrating Medicine and Science

**3 August issue:** <http://scim.ag/stm080311>

## COMMENTARY: Defining Success for Translational Research Organizations

*R. Pozen and H. Kline*

To promote translational research foundations requires a flexible framework for performance assessment.

## RESEARCH ARTICLE: Targeting GLUT1 and the Warburg Effect in Renal Cell Carcinoma by Chemical Synthetic Lethality

*D. A. Chan et al.*

A screen identifies a drug that specifically kills glycolysis-dependent cancer cells by inhibiting glucose uptake.

## RESEARCH ARTICLE: A Prime-Boost Strategy Using Virus-Like Particles Pseudotyped for HCV Proteins Triggers Broadly Neutralizing Antibodies in Macaques

*P. Garrone et al.*

## PERSPECTIVE: Progress Toward Development of a Hepatitis C Vaccine with Broad Shoulders

*R. Ray*

Rational mechanism-based design of vaccine immunogens elicits broadly neutralizing antibodies against HCV.

## PODCAST

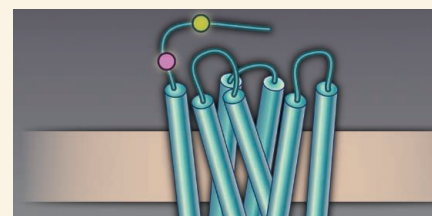
*D. Klatzmann and A. Colmone*

A new vaccine strategy induces broadly neutralizing antibodies to hepatitis C virus.

## RESEARCH ARTICLE: Urine TMPRSS2:ERG Fusion Transcript Stratifies Prostate Cancer Risk in Men with Elevated Serum PSA

*S. A. Tomlins et al.*

Urine TMPRSS2:ERG gene fusion could be used for stratification of patients at higher risk for prostate cancer.



## SCIENCE SIGNALING

Light-regulated gene expression.

## SCIENCE CAREERS

[www.sciencecareers.org/career\\_magazine](http://www.sciencecareers.org/career_magazine)

Free Career Resources for Scientists

## From Mycology to Oncology

*R. Kaufman*

Wilma Lingle started out studying mushrooms but transformed herself into a Mayo Clinic breast cancer researcher and the manager of two core facilities.

<http://scim.ag/WilmaLingle>

## Taken for Granted: Everything Money Can Buy

*B. L. Benderly*

The vast wealth of the oil-rich Arab states is creating opportunities for scientists who can stand the heat.

[http://scim.ag/TFG\\_Qatar](http://scim.ag/TFG_Qatar)

## SCIENCE PODCAST

[www.sciencemag.org/multimedia/podcast](http://www.sciencemag.org/multimedia/podcast)

Free Weekly Show

On the 5 August *Science* Podcast: evidence of briny flows on Mars, signal perception in frogs and bats, teaching climate change in the classroom, and more.

## SCIENCE INSIDER

[news.sciencemag.org/scienceinsider](http://news.sciencemag.org/scienceinsider)

Science Policy News and Analysis

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