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Science



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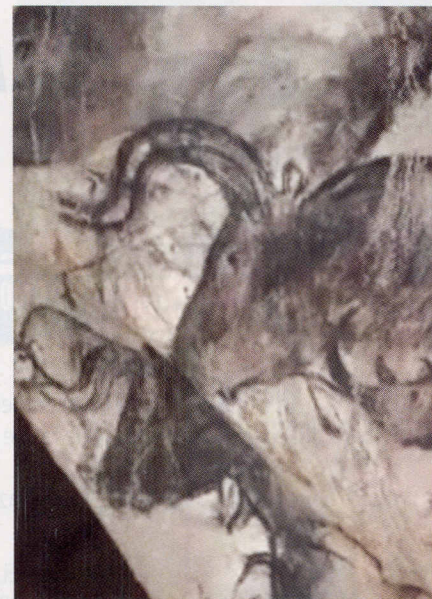
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- 929 **A Diiron Protein Autogenerates a Valine-Phenylalanine Cross-Link**
R. B. Cooley et al.
An enzyme creates its own cofactor by linking two nonfunctionalized amino acid side chains.

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COVER

Phase contrast photomicrograph of a *Schizosaccharomyces octosporus* ascus, a sac-like cell that typically contains eight spores (each ~2 micrometers across). *S. octosporus* and other fission yeasts are important models of eukaryote biology and have evolved a single-celled lifestyle independently from their budding yeast cousins. On page 930, Rhind et al. present a comparative genomic analysis of fission yeasts that sheds light on their genome structure and gene regulation.

Image: Dr. George Wilder/Visuals Unlimited, Inc.

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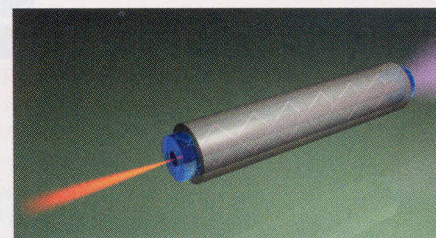
RESEARCH ARTICLE

- 930** **Comparative Functional Genomics of the Fission Yeasts**
N. Rhind et al.
 A combined analysis of genome sequence, structure, and expression gives insights into fission yeast biology.

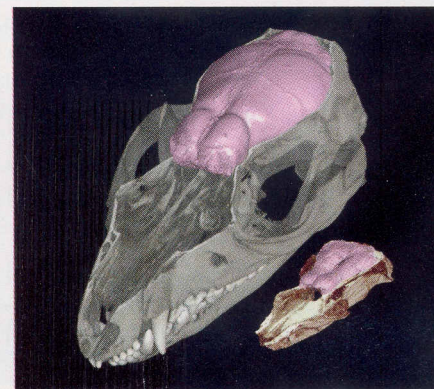
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- 937** **Dimensionality Control of Electronic Phase Transitions in Nickel-Oxide Superlattices**
A. V. Boris et al.
 The structure of metal-oxide superlattices is used to control the electronic order of the system.
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- 940** **Competition of Superconducting Phenomena and Kondo Screening at the Nanoscale**
K. J. Franke et al.
 A manganese complex adsorbed on a superconducting lead surface creates a mosaic of two magnetic ground states.
- 944** **Chlorinated Indium Tin Oxide Electrodes with High Work Function for Organic Device Compatibility**
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 Closer matching of the energy levels of transparent electrodes and active materials in organic light-emitting diodes improves efficiency.
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T. Ito and M. Simons
 Monitoring the response to ocean tidal loads reveals detailed variations in Earth's internal structure.
- 951** **Impact of Polar Ozone Depletion on Subtropical Precipitation**
S. M. Kang et al.
 The Antarctic ozone hole has led to increased summertime precipitation in the subtropics of the Southern Hemisphere.
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- 966** **Spatial Coupling of mTOR and Autophagy Augments Secretory Phenotypes**
M. Narita et al.
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B. D. Muegge et al.
 The normal range of physiological and metabolic phenotypes has been shaped by coevolution with microbial symbionts.
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- 974** **The Toll-Like Receptor 2 Pathway Establishes Colonization by a Commensal of the Human Microbiota**
J. L. Round et al.
 Signaling through innate immune receptors promotes commensal bacteria colonization of the gut.
- 977** **A Packing Mechanism for Nucleosome Organization Reconstituted Across a Eukaryotic Genome**
Z. Zhang et al.
 Genome-wide nucleosome positioning is a self-organizing system amenable to in vitro reconstitution.
- 981** **Structures of the Bacterial Ribosome in Classical and Hybrid States of tRNA Binding**
J. A. Dunkle et al.
 Two crystal structures indicate how conformational changes in the ribosome assist protein synthesis.

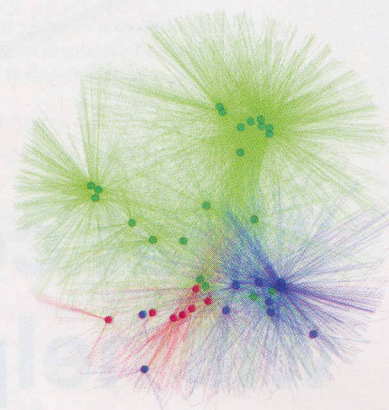
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SCIENCEONLINE

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The Visual Impact of Gossip

E. Anderson et al.

Negative gossip about a person renders that person's face more visible to the onlooker.

10.1126/science.1201574

Predicting a Human Gut Microbiota's Response to Diet in Gnotobiotic Mice

J. J. Faith et al.

Model microbial communities in mouse guts respond quickly and predictably to dietary shifts.

10.1126/science.1206025

Widespread RNA and DNA Sequence Differences in the Human Transcriptome

M. Li et al.

All 12 categories of discordances can be observed where the RNA sequence does not match that of the DNA.

10.1126/science.1207018

Thermal Structure and Dynamics of Saturn's Northern Springtime Disturbance

L. N. Fletcher et al.

Satellite and ground-based observations characterize a massive storm on Saturn and its effects on the atmosphere.

10.1126/science.1204774

Endotoxin-Induced Structural Transformations in Liquid Crystalline Droplets

I.-H. Lin et al.

Bacterial lipid A was detected by its interactions with defects in droplet-confined liquid crystals.

10.1126/science.1195639

The 2011 Magnitude 9.0 Tohoku-Oki Earthquake: Mosaicking the Megathrust from Seconds to Centuries

M. Simons et al.

10.1126/science.1206731

Shallow Dynamic Overshoot and Energetic Deep Rupture in the 2011 M_w 9.0 Tohoku-Oki Earthquake

S. Ide et al.

10.1126/science.1207020

Displacement Above the Hypocenter of the 2011 Tohoku-Oki Earthquake

M. Sato et al.

Detailed geophysical measurements reveal features of the 2011 Tohoku-Oki megathrust earthquake.

10.1126/science.1207401

>> News story p. 911

TECHNICALCOMMENTS

Comment on "Positive Selection of Tyrosine Loss in Metazoan Evolution"

Z. Su et al.

Full text at www.sciencemag.org/cgi/content/full/332/6032/917-a

Response to Comment on "Positive Selection of Tyrosine Loss in Metazoan Evolution"

C. S. H. Tan et al.

Full text at www.sciencemag.org/cgi/content/full/332/6032/917-b

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Highlights From Our Daily News Coverage

Bright Lights, Rich Cities

Satellite images of nighttime lights could help economists model GDP in regions where it is poorly reported.

<http://scim.ag/bright-lights>

Controversial Computer Is at Least a Little Quantum Mechanical

Skepticism of the system remains, however.

<http://scim.ag/quantum-computer>

Mice Reject Reprogrammed Cells

Finding underscores challenges of using iPS cells as a potential therapy for humans.

<http://scim.ag/ips-rejection>

SCENCESIGNALING

www.sciencesignaling.org

The Signal Transduction Knowledge Environment

17 May issue: <http://scim.ag/ss051711>

RESEARCH ARTICLE: Ca^{2+} Signaling Tools Acquired from Proasomes Are Required for Progesterone-Induced Sperm Motility

K.-H. Park et al.

PERSPECTIVE: Calcium Signaling in Sperm—Help from Proasomes

D. Ren

Proteins involved in calcium signaling are delivered to sperm through fusion with prostate-derived vesicles.

RESEARCH ARTICLE: Stomatal Closure by Fast Abscissic Acid Signaling Is Mediated by the Guard Cell Anion Channel SLAH3 and the Receptor RCAR1

D. Geiger et al.

Plant survival during periods of drought may involve SLAH3, a nitrate-conducting anion channel activated by abscissic acid.

PRESENTATION: Network-Based Tools for the Identification of Novel Drug Targets

I. J. Farkas et al.

Analysis of network topology and dynamics holds promise for identifying new sets of potential drug targets.

SCIENCECAREERS

www.sciencereers.org/career_magazine

Free Career Resources for Scientists

Focus on Aging: Engineering Safer Drivers

L. Chiu

MIT engineer Bryan Reimer designs systems to monitor and improve drivers' performance behind the wheel.

<http://scim.ag/aging-engineering>

Tooling Up: I've Got a Great Idea

D. Jensen

Two recent entrepreneurs offer advice on starting a new company.

http://scim.ag/startup_success

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www.sciencetranslationalmedicine.org

Integrating Medicine and Science

18 May issue: <http://scim.ag/stm051811>

EDITORIAL: NCATS Purrs—Emerging Signs of Form and Function

G. A. FitzGerald

Derisking and repurposing therapeutics will be among the aims of the National Center for Advancing Translational Science.

RESEARCH ARTICLE: Functional Regulatory T Cells Produced by Inhibiting Cyclic Nucleotide Phosphodiesterase Type 3 Prevent Allograft Rejection

G. Feng et al.

RESEARCH ARTICLE: Massive ex Vivo Expansion of Human Natural Regulatory T Cells (T_{regs}) with Minimal Loss of in Vivo Functional Activity

K. L. Hippen et al.

RESEARCH ARTICLE: Human Regulatory T Cells with Alloantigen Specificity Are More Potent Inhibitors of Alloimmune Skin Graft Damage than Polyclonal Regulatory T Cells

P. Sagoo et al.

PERSPECTIVE: Regulatory T Cells—Customizing for the Clinic

X. Wang et al.

A collection of new data provides a platform for clinical use of regulatory T cells as personalized therapeutic agents.

SCIENCEPODCAST

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Free Weekly Show

On the 20 May Science Podcast: diet and mammalian gut microbiomes, the science of alchemists, inquiry-based writing, and more.

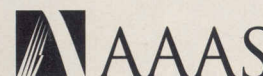
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Science Policy News and Analysis

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