SPECIAL SECTION

Quantum Matter

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Quantum Information Matters  1209
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I. A. Walmsley

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COVER
Like a cauliflower, the quantum critical regime has the same appearance irrespective of viewing distance. Fluctuations prevent a stable phase from developing; instead a patchwork of mixed phases arises. See the special section on quantum matter beginning on page 1201.

Image: Getty Images

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CLIMATE CHANGE
Covariant Glacial-Interglacial Dust Fluxes in the Equatorial Pacific and Antarctica
G. Winckler, R. F. Anderson, M. Q. Fleisher, D. McGee, N. Mahowald
A 500,000-year record shows that more dust, which provides iron and other nutrients, was blown into the equatorial Pacific during glacial periods than during warm periods.
10.1126/science.1150595

GEOCHEMISTRY
Graphite Whiskers in CV3 Meteorites
M. Fries and A. Steele
Graphite whiskers, a naturally occurring allotrope of carbon, have been found in primitive grains in several meteorites and may explain spectral features of supernovae.
10.1126/science.1153578

MEDICINE
TDP-43 Mutations in Familial and Sporadic Amyotrophic Lateral Sclerosis
J. Sreedharan et al.
Mutations in a gene that encodes a protein that aggregates in several neurodegenerative disorders are linked to amyotrophic lateral sclerosis (Lou Gehrig’s disease).
10.1126/science.1154584

NEUROSCIENCE
Protein Synthesis and Neurotrophin-Dependent Structural Plasticity of Single Dendritic Spines
J. Tanaka et al.
Pairing of stimuli in hippocampal cells induces secretion of the growth factor BDNF, causing enlargement of individual spines and strengthening of synapses.
10.1126/science.1152864

LETTERS
The Need to Cut China’s Illegal Timber Imports
W. F. Laurance
Response G. Wang et al.

Minding Controls in Curriculum Study
J. Mercer
Response A. Diamond

BOOKS ET AL.
How and Why Species Multiply
P. R. Grant and B. R. Grant, reviewed by H. Kokko

The Telephone Gambit
Chasing Alexander Graham Bell’s Secret
S. Shulman, reviewed by D. L. Morton Jr.

EDUCATION FORUM
Integrating Content Detail and Critical Reasoning
By Peer Review
R. Iyengar et al.

PERSPECTIVES
No ESCRTs for Exosomes
M. Marsh and G. van Meer

New Materials at a Glance
M. J. Brett and M. M. Hawkeye

GENETICS
Complete Chemical Synthesis, Assembly, and Cloning of a Mycoplasma genitalium Genome
D. G. Gibson et al.
A complete bacterial genome is synthesized, assembled, and cloned, providing a method that will be useful for generating large DNA molecules de novo.

ASTROPHYSICS
Asphericity in Supernova Explosions from Late-Time Spectroscopy
K. Maeda et al.
Spectroscopic signatures show that supernova explosions of stars that have lost their hydrogen envelopes are strongly aspherical and may be jetlike.

1151 & 1244
**CELL BIOLOGY**

Membrane Proteins of the Endoplasmic Reticulum Induce High-Curvature Tubules

J. Hu et al.

Integral membrane proteins from the endoplasmic reticulum induce the development of tubular structures in vitro by forming oligomers in the plane of the membrane.

**PHYSIOLOGY**

Leading-Edge Vortex Improves Lift in Slow-Flying Bats

F. T. Muijres et al.

Flying bats generate high lift forces similar to those used by insects, creating a vortex of air that stays attached to the wing on the downward stroke.

**NEUROSCIENCE**

Synaptic Protein Degradation Underlies Destabilization of Retrieved Fear Memory

S.-H. Lee et al.

Upon recollection, mouse memories of fearful situations become labile, as postsynaptic proteins are degraded by proteosomes and then are reconsolidated via protein synthesis.

**PHYSICS**

Proton Radiography of Inertial Fusion Implosions

J. R. Rygg et al.

Beams of protons used to map laser fusion targets as they implode reveal the generation of long plasma filaments and a strong radial electric field.  >>Perspective p. 1193

**CELL BIOLOGY**

Transgenic Inhibition of Synaptic Transmission Reveals Role of CA3 Output in Hippocampal Learning

T. Nakashiba et al.

Blockade of neural activity in the CA3 region of the hippocampus with a reversible, inducible transgenic method inhibits rapid learning but spares certain spatial tasks.

**NEUROSCIENCE**

Hybrid Neurons in a MicroRNA Mutant Are Putative Evolutionary Intermediates in Insect CO2 Sensory Systems

P. Cayirlioglu et al.

Loss of a microRNA in *Drosophila* leads to misexpression of CO2-sensing neurons in the mouthparts, creating a possible evolutionary hybrid between the fruit fly and mosquito.

**PSYCHOLOGY**

BOLD Responses Reflecting Dopaminergic Signals in the Human Ventral Tegmental Area

K. D’Ardenne, S. M. McClure, L. E. Nystrom, J. D. Cohen

In humans, activity measurements in a small midbrain region show rewards in a learning task.

**CELL BIOLOGY**

Destabilization of Retrieved Fear Memory Synaptic Protein Degradation Underlies

K. D’Ardenne, S. M. McClure, L. E. Nystrom, J. D. Cohen

In humans, activity measurements in a small midbrain region show rewards in a learning task.
Bigger amygdalas in aggressive teens.

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Tough-to-handle adolescents share bigger amygdala.

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Disease prevalence lower than thought.

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Computer models show how releasing clouds of fine particles could cool the planet.

SCIENCE SIGNALING
www.stke.org THE SIGNAL TRANSDUCTION KNOWLEDGE ENVIRONMENT

MEETING REPORT: cGMP Matters
B. Kemp-Harper and R. Feil
Emerging therapies for treating cardiovascular disorders target the cGMP signaling system.

TEACHING RESOURCE: Using Web-Based Discussion Forums as a Model of the Peer-Review Process and a Tool for Assessment
Asynchronous discussion forums have several advantages over in-class journal club discussions.

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www.sciencecareers.org CAREER RESOURCES FOR SCIENTISTS

Research in Translation: Getting Published
S. Carpenter
Careful planning and choosing the right journal are key in publishing translational research.

In Person: Frequent Flyer
A. McNeil
Faculty interviews come with tight scheduling, awkward questions, and jet lag.

M. P. DeWhyse
Can Micella regain confidence in her abilities for her interview?

From the Archives: Disasters of the Famous
K. Arney
Prominent scientists’ stories of lab errors remind us that everyone makes mistakes.

cGMP is a therapeutic target.

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Science 319 (5867), 1157-1268.