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

SPECIAL SECTION

Quantum Matter

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Rocking the Cradle of Humanity 1182
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

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

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

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

Ubiquity of Biological Ice Nucleators in Snowfall
B. C. Christner et al.
Biogenic aerosols are ubiquitous in nuclei of ice particles that grow and form snowflakes, and thus may influence the precipitation cycle.

A complete bacterial genome is synthesized, assembled, and cloned, providing a method that will be useful for generating large DNA molecules de novo.

Spectroscopic signatures show that supernova explosions of stars that have lost their hydrogen envelopes are strongly aspherical and may be jetlike.
leads to misexpression of Sensory Endosomes, membrane-bound vesicles later released from cells, K. Trajkovic into Multivesicular Endosomes.

Ceramide Triggers Budding of Exosome Vesicles

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 are then reconsolidated via protein synthesis.

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.

NEUROSCIENCE

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.

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.
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.

Bigger amygdalas in aggressive teens.

www.sciencenow.org DAILY NEWS COVERAGE

Teen Aggressiveness in the Brain
Tough-to-handle adolescents share bigger amygdala.

New Map for Malaria
Disease prevalence lower than thought.

Giving Earth an Umbrella
Computer models show how releasing clouds of fine particles could cool the planet.

cGMP is a therapeutic target.

www.stke.org THE SIGNAL TRANSDUCTION KNOWLEDGE ENVIRONMENT

MEETING REPORT: cGMP Matters
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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.

Jetting to one more faculty interview.

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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.

SCIENCE PODCAST
Download the 29 February Science Podcast to hear about ice-nucleating bacteria in snow, how bats generate lift at slow speeds, future prospects for Mars research, and more.
www.sciencemag.org/about/podcast.dtl

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