REVIEW

How to Think, Say, or Do Precisely the Worst Thing for Any Occasion
D. M. Wegner

BREVIA

Serengeti Birds Maintain Forests by Inhibiting Seed Predators
G. J. Sharam et al.
Fruit-eating birds inhibit seed predation by beetles, a mechanism that is destabilized when disturbance opens the forest canopy.

RESEARCH ARTICLE

Dissociable Components of Rule-Guided Behavior Depend on Distinct Medial and Prefrontal Regions
M. J. Buckley et al.
A card-sorting task shows that three distinct regions of the monkey prefrontal cortex perform distinct cognitive functions.

REPORTS

H₂O at the Phoenix Landing Site
P. H. Smith et al.
A water ice layer was found 5 to 15 centimeters beneath the soil of the north polar region of Mars.

Evidence for Calcium Carbonate at the Mars Phoenix Landing Site
W. V. Boynton et al.
The action of liquid water may have helped to form the calcium carbonate found in the soils around the Phoenix landing site.

Detection of Perchlorate and the Soluble Chemistry of Martian Soil at the Phoenix Lander Site
M. H. Hecht et al.
Most of the chlorine at the Phoenix landing site is in the form of perchlorate, a salt that is highly soluble in water.

Mars Water-Ice Clouds and Precipitation
J. A. Whiteway et al.
Laser remote sensing from Mars’ surface revealed water-ice clouds that formed during the day and precipitated at night.

A Coherent Single-Hole Spin in a Semiconductor
D. Brunner et al.
Manipulating holes instead of electrons results in the enhancement of the coherence properties of quantum dots.

Self-Assembling Sequence-Adaptive Peptide Nucleic Acids
Y. Ura et al.
A synthetic DNA analog can dynamically adapt its sequence in response to changing templates.

Impact of Shifting Patterns of Pacific Ocean Warming on North Atlantic Tropical Cyclones
H.-M. Kim et al.
Warming of the central Pacific sea surface causes different patterns of atmospheric circulation than do El Niño events.

Successful Conservation of a Threatened Maculinea Butterfly
J. A. Thomas et al.
Prediction of population dynamics in relation to habitat requirements has led to a conservation success in the UK.

Meningococcal Type IV Pili Recruit the Polarity Complex to Cross the Brain Endothelium
M. Coureuil et al.
Adhesion of bacteria to cells lining blood vessels in the brain induces them to part and allows pathogen invasion.

Role of Layer 6 of V2 Visual Cortex in Object-Recognition Memory
M. F. López-Aranda et al.
Experiments reveal the localization of short- and long-term visual memory encoding in the rat visual cortex.

JmjD6 Catalyses Lysyl-Hydroxylation of U2AF65, a Protein Associated with RNA Splicing
C. J. Webby et al.
An oxygenase with an important role in vertebrate development hydroxylates a messenger RNA splicing factor.

Essential Role of the Glycosyltransferase Sxc/Ogt in Polycomb Repression
M. C. Gambetta et al.
The Polycomb-group protein super sex combs acts to glycosylate a second Polycomb repressor protein.

Ligand-Gated Chloride Channels Are Receptors for Biogenic Amines in C. elegans
N. Ringstad et al.
An expanded family of receptor channels that bind neurotransmitters in worms might help to explain behavioral effects in humans.

LXR Regulates Cholesterol Uptake Through Idol-Dependent Ubiquitination of the LDL Receptor
N. Zelcer et al.
Cholesterol metabolism is regulated by a signaling pathway that targets the LDL receptor for degradation.
New discoveries indicate that cave-dwellers in Stone-Age Europe had a rich musical life. Ancient flutes suggest the existence of complex musical traditions, hinting at a level of sophistication in early human cultures.

Warmer climates accelerate the evolution rate in homing pigeons in midflight. This finding underscores the role of environmental changes in shaping genetic diversity and adaptation in wild species.

A new lightweight device measures brain activity, offering a portable solution for monitoring neurological functions in various settings. This technology has implications for both research and clinical applications.

The VERITAS Collaboration seen with the Fermi Large Area Telescope has identified a population of gamma-ray pulsars. These objects appear to share a common emission mechanism with standard gamma-ray pulsars. This discovery enhances our understanding of high-energy astrophysical phenomena.

Environmental change has led to decreasing body size in a sheep population over 20 years, despite selection for increased size. This study highlights the complex interplay between genetic and environmental factors in determining organismal traits.


Particles are accelerated to very high energies in close proximity to a super-massive black hole. This phenomenon is crucial for understanding the dynamics of active galactic nuclei and the origin of cosmic rays.

Detection of 16 Gamma-Ray Pulsars Through Blind Frequency Searches Using the Fermi LAT A. A. Abdo et al.

These objects appear to share a common emission mechanism with standard gamma-ray pulsars.

A Population of Gamma-Ray Millisecond Pulsars Seen with the Fermi Large Area Telescope A. A. Abdo et al.

Science Career: Mycology Careers S. Coelho

Mycologists can find career opportunities in areas such as environmental science, pharmaceuticals, and material science, among others. This field offers a unique blend of biological research and practical applications.

Employment prospects for professional science master’s degree program graduates seem strong. The deluge of NIH “challenge grants” promises to strain the reviewer pool.

Therapeutically Targeting ErbB3—A Key Node in Ligand-Induced Activation of the ErbB Receptor–PI3K Axis B. Schoeberl et al.

Computational modeling of the ErbB signaling network affirms ErbB3 as a therapeutic target. This target identification underscores the importance of systems-level approaches in drug discovery.

Regulation of an α5 Integrin–ZO-1 Complex Controls Lamellae Formation in Migrating Cancer Cells S. Tuomi et al.

Phosphorylated ZO-1 relocates from tight junctions to lamellae to associate with α5 integrin and control migration. This mechanism is critical for cellular adhesion and migration, essential processes in wound healing and metastasis.

Perspective: AIMing 2 Detect Foreign DNA A. M. Krieg

AIM2 is a receptor for cytoplasmic double-stranded DNA and induces the formation of an IL-1β–secreting inflammasome. This pathway is pivotal in the innate immune response to pathogens.

Podcast

U. B. Nielsen and A. M. VanHook

Mathematical modeling of signaling pathways can be used to identify candidate targets for cancer therapies.

Glossary

Find out what ERM, FMN, and LH mean in the world of cell signaling.

Science Career: Free Career Resources for Scientists B. L. Benderly

Taken for Granted: An Alternative to the Ph.D. Track B. L. Benderly

Employment prospects for professional science master’s degree program graduates seem strong.

Science Career: Fun with Fungi: Mycology Careers S. Coelho

Fun with Fungi: Mycology Careers offers opportunities in areas such as environmental science, pharmaceuticals, and material science, among others. This field offers a unique blend of biological research and practical applications.

Science Policy News and Analysis

The Signal Transduction Knowledge Environment

Mathematical modeling of signaling pathways can be used to identify candidate targets for cancer therapies.

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