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COVER

Pulsars in our Galaxy newly discovered by the Fermi Gamma-ray Space Telescope, launched in June 2008. The objects emit broad gamma-ray beams that have enabled Fermi to locate a never-before-seen population. Fermi has also seen pulsars with millisecond periods and has detected at least one globular cluster (center left). See the Research Article and two Reports beginning on page 840.

Image: NASA/U.S. Department of Energy/Fermi LAT Collaboration/Sonoma State University/Aurore Simonnet
BREVIA
833 Local Adaptation of Bacteriophages to Their Bacterial Hosts in Soil
M. Vos et al.
A host-parasite system indicates how ecological and evolutionary mechanisms shape the distribution of microbes in soil.

RESEARCH ARTICLES
834 Lysine Acetylation Targets Protein Complexes and Co-Regulates Major Cellular Functions
C. Choudhary et al.
A proteomic-scale analysis of protein acetylation suggests that it is an important biological regulatory mechanism.

840 Detection of 16 Gamma-Ray Pulsars Through Blind Frequency Searches Using the Fermi LAT
A. A. Abdo et al.
Most of these identifications correspond to gamma-ray sources long suspected to be pulsars. >>Perspective p. 821; Reports pp. 845 & 848

REPORTS
845 Detection of High-Energy Gamma-Ray Emission from the Globular Cluster 47 Tucanae with Fermi
A. A. Abdo et al.
The Fermi Large Area Telescope reveals up to 60 millisecond pulsars in this globular cluster, twice as many as predicted by radio observations. >>Perspective p. 821; Research Article p. 840; Report p. 848

848 A Population of Gamma-Ray Millisecond Pulsars Seen with the Fermi Large Area Telescope
A. A. Abdo et al.
These objects appear to share a common emission mechanism with standard gamma-ray pulsars. >>Perspective p. 821; Research Article p. 840; Report p. 845

852 Impact of Anode Microstructure on Solid Oxide Fuel Cells
T. Suzuki et al.
A porous form of the oxide anode of a fuel cell with a zirconia-based electrolyte reduces its operating temperature.

855 Docking in Metal-Organic Frameworks
Q. Li et al.
Guest molecules bind site-specifically in macrocycles incorporated into the ligands of a metal organic framework solid.

859 Fire As an Engineering Tool of Early Modern Humans
K. S. Brown et al.
Early modern humans had used fire to improve the fracturing of silcrete in making tools in South Africa by 72,000 years ago. >>Perspective p. 820; Science Podcast

862 Mesotocin and Nonapeptide Receptors Promote Estrildid Flocking Behavior
J. L. Goodson et al.
Oxytocin and oxytocin-like receptors control group size preference in a songbird, suggesting an evolutionarily conserved role in social affiliation.

866 The Transcriptional Repressor DEC2 Regulates Sleep Length in Mammals
Y. He et al.
Some people are genetically determined to get by with less sleep than other people. >>Perspective p. 825

870 Protein Friction Limits Diffusive and Directed Movements of Kinesin Motors on Microtubules
V. Bormuth et al.
Rupture of bonds between a molecular machine and its track creates friction, which constrains speed and efficiency. >>Perspective p. 826

874 Mechanistic Analysis of a Dynamin Effector
L. L. Lackner et al.
During mitochondrial division, a pair of proteins interacts to promote membrane scission.

877 ER Stress Controls Iron Metabolism Through Induction of Hepcidin
C. Vecchi et al.
Stress signals in the endoplasmic reticulum activate a transcription factor that induces expression of an iron-regulatory hormone.

880 Capuchin Monkeys Display Affiliation Toward Humans Who Imitate Them
A. Paukner et al.
The chameleon effect also operates in monkeys. >>Perspective p. 824; Science Podcast

883 Mindblind Eyes: An Absence of Spontaneous Theory of Mind in Asperger Syndrome
A. Senju et al.
Asperger syndrome individuals do not pass a nonverbal false-belief test.}

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Published by AAAS
Mares that form close friendships have more healthy offspring. The joy of playing with her granddaughter tickles the neurons of a noted neuroscientist. Evidence for Obliguity Forcing of Glacial Termination II Marine records suggest that the early onset of the penultimate deglaciation was due to changes in Earth’s obliquity. Evidence for Obliguity Forcing of Glacial Termination II R. N. Drysdale et al. A catalytic protein is identified that regulates nacre formation in the Japanese pearl oyster. A catalytic protein is identified that regulates nacre formation in mollusk shells. The Molecular Basis of Nacre Formation M. Suzuki et al. A matrix complex guides the intricate process of nacre formation in mollusk shells. A matrix complex guides the intricate process of nacre formation in mollusk shells. Formation of ArF from LpDar(F): Catalytic Conversion of Aryl Triflates to Aryl Fluorides D. A. Watson et al. A catalyst enables versatile carbon-fluorine bond formation using simple fluoride salts. A catalyst enables versatile carbon-fluorine bond formation using simple fluoride salts. Evidence for Obliguity Forcing of Glacial Termination II R. N. Drysdale et al. Marine records suggest that the early onset of the penultimate deglaciation was due to changes in Earth’s obliquity. Evidence for Obliguity Forcing of Glacial Termination II R. N. Drysdale et al. A catalytic protein is identified that regulates nacre formation in the Japanese pearl oyster. A catalytic protein is identified that regulates nacre formation in mollusk shells. The Molecular Basis of Nacre Formation M. Suzuki et al. A matrix complex guides the intricate process of nacre formation in mollusk shells. A matrix complex guides the intricate process of nacre formation in mollusk shells.