A yin-yang symbol superimposed on a scanning electron micrograph of a mouse tissue alveolar macrophage (diameter: ~18 micrometers). Macrophages are immune cells that mediate inflammation, but they often play protective roles as well. Several age-related chronic diseases—such as metabolic syndrome, cardiovascular disease, and neurodegenerative disease—have an inflammatory component. See the special section beginning on page 155.

Scanning electron microscope image: © Dennis Kunkel Microscopy, Inc.
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178  Quantum Back-Action of an Individual Variable-Strength Measurement  
M. Hatridge et al.  
The evolution of a quantum system can be tracked via a series of partial measurements  
that leave the system in a pure state.

182  Strong, Light, Multifunctional Fibers of Carbon Nanotubes with Ultrahigh  
Conductivity  
N. Behabtu et al.  
Exceptional carbon nanotube fibers are produced by a wet spinning process  
using longer nanotubes as feedstock.

186  Bio-Inspired Polymer Composite Actuator and Generator Driven by Water Gradients  
M. Ma et al.  
Polymer actuators are manipulated by changing hydration conditions and show  
strong contractile forces.  
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189  Sequence-Specific Peptide Synthesis by an Artificial Small-Molecule Machine  
B. Lewandowski et al.  
A macrocycle threaded on a rod can catalytically insert several amino acids  
placed along its path into a peptide chain.

193  Shape-Memory Nanopores Induced in Coordination Frameworks by Crystal  
Downsizing  
Y. Sakata et al.  
A porous material retains its framework shape after guest molecules desorb if its crystallites  
are sufficiently small.

197  Glutamate-Dependent Neuroglial Calcium Signaling Differs Between Young and Adult Brain  
W. Sun et al.  
The expression of metabotropic glutamate receptors in brain astrocytes is down-regulated  
in early postnatal development.  
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200  Neural Basis of a Pollinator’s Buffet: Olfactory Specialization and Learning in  
Manduca Sexta  
J. A. Riffell et al.  
Hawkmoths supplement their innate repertoire of attractive flower odors by  
learning new ones via an octopamine pathway.  
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204  Ezh2 Orchestrates Topographic Migration and Connectivity of Mouse Precerebellar Neurons  
T. Di Meglio et al.  
During brain development, epigenetic mechanisms allow tangentially migrating  
neurons to retain topographical organization.

208  Multiple Fitness Peaks on the Adaptive Landscape Drive Adaptive Radiation in the Wild  
C. H. Martin and P. C. Wainwright  
Increased competition drives phenotypic adaptive specialization within Cyprinodon  
pupfishes in lakes in the Bahamas.

211  Suppression of Oxidative Stress by β-Hydroxybutyrate, an Endogenous Histone Deacetylase Inhibitor  
T. Shimazau et al.  
Ketone bodies, metabolites that accumulate during fasting, change gene expression by  
inhibiting histone deacetylases.  
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215  The COMPASS Subunit Spp1 Links Histone Methylation to Initiation of Meiotic Recombination  
L. Acquaviva et al.  
A protein involved in histone methylation targets the meiotic recombination machinery  
to chromatin.

218  JNK Expression by Macrophages Promotes Obesity-Induced Insulin Resistance and Inflammation  
M. S. Han et al.  
A kinase in macrophages is required for high-fat diet–induced metabolic changes  
and inflammation.  
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222  Influence of Threonine Metabolism on S-Adenosylmethionine and Histone Methylation  
N. Shyh-Chang et al.  
Unusual threonine metabolism in mouse stem cells influences genetic reprogramming via  
altered histone methylation.  
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227  Natively Inhibited Trypanosoma brucei Cathepsin B Structure Determined by Using an X-ray Laser  
L. Redecke et al.  
In vivo crystallization and serial femtosecond crystallography reveal the structure of a sleeping sickness parasite protease.  
>> Perspective p. 146