The Ginza area of Tokyo in 2006. By 2030 the number of urban dwellers will have exploded to 4.8 billion people, roughly 60 percent of the projected world population, whereas only 13 percent lived in cities in 1900. The special section beginning on page 739 includes News stories, Reviews, and Perspectives that explore the ramifications of urban transformation.

Photo: Getty Images

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PLANT SCIENCE
TOPLESS Mediates Auxin-Dependent Transcriptional Repression During Arabidopsis Embryogenesis
H. Szemenyei, M. Hannon, J. A. Long
A transcriptional co-repressor is part of the protein complex that inhibits developmental gene activation in Arabidopsis until the growth hormone auxin triggers its degradation.
10.1126/science.1151461

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.
10.1126/science.1150541

TECHNICAL COMMENT ABSTRACTS
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Comment on "Clustering by Passing Messages Between Data Points"
M. J. Brusco and H.-F. Köhn
full text at www.sciencemag.org/cgi/content/full/319/5864/726c
Response to Comment on "Clustering by Passing Messages Between Data Points"
B. J. Frey and D. Dueck
full text at www.sciencemag.org/cgi/content/full/319/5864/726d

BREVIA
PHYSIOLOGY
Experienced Saxophonists Learn to Tune Their Vocal Tracts
J. M. Chen, J. Smith, J. Wolfe
To play the high range of the saxophone, players learn to tune the second resonance of their vocal tract to the desired note.

RESEARCH ARTICLES
IMMUNOLOGY
Innate Immune Homeostasis by the Homeobox Gene Caudal and Commensal-Gut Mutualism in Drosophila
J.-H. Ryu et al.
A Drosophila gene important in development also inhibits the production of harmful antimicrobial peptides that could kill off beneficial gut microbes.
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REPORTS
PHYSICS
Quantum Phase Extraction in Isospectral Electronic Nanostructures
C. R. Moon et al.
Surface electronic states with different shapes but the same spectrum, like two different drums with the same sound, provide an extra handle for extracting the quantum phase.
A knee-mounted device can generate several watts of power just before it collides with a nickel braking in hybrid cars. J. M. Donelan, Biomechanical Energy Harvesting: Generating Electricity During Walking with Minimal User Effort.

Like a lattice fence, a silver-based framework material expands greatly in one direction upon heating, while contracting even more in the orthogonal direction. A. L. Goodwin, Colossal Positive and Negative Thermal Expansion in the Framework Material Ag₃[Co(CN)₄]₃.

In humans, an inherited condition with small brain size and near-normal intelligence is caused by mutations that disrupt chromosome separation during cell division. A. Rauch et al, An Association Between the Kinship and Fertility of Human Couples.

To become a cytotoxic rather than a helper T cell—is controlled by repression of the helper T cell transcription factor by a second transcription factor. R. Setoguchi et al, Runx Complexes in Cytotoxic T Cell Development: Repression of the Transcription Factor Th-POK by a second transcription factor.

A mouse cell-surface protein exports excess heme, which is toxic when free in the cytoplasm, ensuring normal red blood cell maturation and systemic iron balance. S. B. Keel et al, A Heme Export Protein Is Required for Red Blood Cell Differentiation and Iron Homeostasis.


In humans, an inherited condition with small brain size and near-normal intelligence is caused by mutations that disrupt chromosome separation during cell division. A. Rauch et al, An Association Between the Kinship and Fertility of Human Couples.


A mouse cell-surface protein exports excess heme, which is toxic when free in the cytoplasm, ensuring normal red blood cell maturation and systemic iron balance. S. B. Keel et al, A Heme Export Protein Is Required for Red Blood Cell Differentiation and Iron Homeostasis.
PERSPECTIVE: Novel Roles for the NF-κB Signaling Pathway in Regulating Neuronal Function
M. C. Boersma and M. K. Meffert
Components of the NF-κB pathway may use multiple mechanisms to influence synaptic plasticity, learning, and memory.

PERSPECTIVE: Exosomes Secreted by Bacterially Infected Macrophages Are Proinflammatory
H. C. O’Neill and B. J. C. Quah
The release of bacterial components in vesicles secreted by infected macrophages helps promote inflammation.

SCIENCE PODCAST
Download the 8 February Science Podcast to hear about greenhouse emissions from biofuel-dedicated land, the 2009 U.S. science budget, good mentoring relationships, reproducing in cities, and more.

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E. Pain
What makes mentoring relationships successful?

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S. Webb
An industry mentor helped physicist Joan Hoffmann navigate graduate school and launch her career.

Mentoring Opposites
C. Wald
A mentor and student turned their differences into strengths as they became scientific collaborators.

From the Archives: The Commandments of Cover Letter Creation
P. Fiske
A good cover letter highlights your qualifications and guides readers through the most important parts of your work history.