COVER
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.1152747

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.1151861

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

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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.

>> Perspective p. 734

REPORTS

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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.
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J. M. Donelan

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Three-Dimensional Super-Resolution Imaging by Stochastic Optical Reconstruction Microscopy

B. Huang, W. Wang, M. Bates, X. Zhuang

Three-dimensional fluorescence images of cellular structures in fixed cells are realized at 20- to 30-nanometer lateral and 50-nanometer axial resolution, without scanning.

GENETICS

An Association Between the Kinship and Fertility of Human Couples

A. Helgason et al.
The extensive genealogies of the Icelandic people show that couples who are 3rd or 4th cousins have more children and grandchildren than couples whose relationships are more or less distant.

GENETICS

Mutations in the Pericentrin (PCNT) Gene Cause Primordial Dwarfism

A. Rauch et al.
In humans, an inherited condition with small brain size and near-normal intelligence is caused by mutations that disrupt chromosome separation during cell division.

MOLECULAR BIOLOGY

Reciprocal Binding of PARP-1 and Histone H1 at Promoters Specifies Transcriptional Outcomes

R. Krishnakumar et al.
At certain genes regulated by the nucleosome-binding protein PARP-1, the presence of a linker histone at the promoter prevents PARP-1 binding, inhibiting gene activation.

IMMUNOLOGY

Repression of the Transcription Factor Th-POK by Runx Complexes in Cytotoxic T Cell Development

R. Setoguchi et al.
A key cell-fate decision—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.

MEDICINE

A Heme Export Protein Is Required for Red Blood Cell Differentiation and Iron Homeostasis

S. B. Keel et al.
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.
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* 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**

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