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

DEPARTMENTS
691 Science Online
693 This Week in Science
699 Editors’ Choice
702 Contact Science
705 Random Samples
707 Newsmakers
829 New Products
830 Science Careers

EDITORIAL
697 Science for the Globe
by David Baltimore

SPECIAL SECTION
Cities

INTRODUCTION
Reimagining Cities

NEWS
China’s Living Laboratory in Urbanization
Calming Traffic on Bogotá’s Killing Streets
Durban’s Poor Get Water Services Long Denied
Pipe Dreams Come True
Rebuilt From Ruins, a Water Utility Turns Clean and Pure
Living in the Danger Zone
Choking on Fumes, Kolkata Faces a Noxious Future
From Gasoline Alleys to Electric Avenues
Unclogging Urban Arteries
Upending the Traditional Farm
Imagining a City Where (Electrical) Resistance Is Futile
Money—With Strings—to Fight Poverty
Building on a Firm Foundation

REVIEWS
ECOLOGY: Global Change and the Ecology of Cities
N. B. Grimm et al.
ECONOMICS: Urbanization and the Wealth of Nations
D. E. Bloom, D. Canning, G. Fink

PERSPECTIVES
The Urban Transformation of the Developing World
M. R. Montgomery
Reproducing in Cities
R. Mace
Health and Urban Living
C. Dye
The Size, Scale, and Shape of Cities
M. Batty

NEWS OF THE WEEK
Kenyan Scientists Endure Violent Unrest, University Closings
Lifting the Veil on Traditional Chinese Medicine
Exotic Disease of Farm Animals Tests Europe’s Responses

SCIENCESCOPE
Prizes Eyed to Spur Medical Innovation

NEWS FOCUS
A Science Budget of Choices and Chances
A Broken Record?
Near-Term Energy Research Prospects
NIH Hopes for More Mileage From Roadmap
Earth Gets a Closer Look
Can the Upstarts Top Silicon?
MESSENGER Flyby Reveals a More Active and Stranger Mercury
Berkeley Hyenas Face an Uncertain Future

>> Editorial p. 697; for related online material, see p. 691 or go to www.sciencemag.org/cities

Published by AAAS
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

MATHEMATICS
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

TECHNICAL COMMENT ABSTRACTS

MATHEMATICS
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.
>> Perspective p. 734

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.
Exciting the CH bond in CHD
D. R. Killelea, V. L. Campbell, N. S. Shuman, A. L. Utz
Catalyzed Reaction

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.

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.

Stochastic Optical Reconstruction Microscopy
B. Huang, W. Wang, M. Bates, X. Zhuang
Three-dimensional "super-resolution" imaging of cellular structures in fixed cells is realized at 20- to 30-nanometer lateral and 50-nanometer axial resolution, without scanning.

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.

Direct and Indirect Effects of Resource Quality on Food Web Structure
T. Bukovinszky, F. J. F. van Veen, Y. Jongema, M. Dicke
Warming and cooling in different parts of the North Atlantic since 1950 reflects variable atmospheric circulation, complicating understanding of anthropogenic changes.

EVOCATION

D. A. Belonoshko et al.
Like a lattice fence, a silver-based framework material expands greatly in one direction upon heating, while contracting even more in the orthogonal direction.
Team Uncovers New Evidence of Recent Human Evolution
Adaptation to disparate environments resulted in mutations related to obesity and diabetes.

Don’t It Make Your Brown Eyes Blue?
Researchers locate genetic change that leads to baby blues, and it’s not where they expected.

Move Over Beavers, Here Come Salmon
The big fish don’t just swim upstream—they shape the stream.

Exosomes spread inflammatory signals.

SCIENCE SIGNALING
www.stke.org  THE SIGNAL TRANSDUCTION KNOWLEDGE ENVIRONMENT

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.

SCIENCEPODCAST
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.

www.sciencemag.org/about/podcast.dtl

SCIENCE ONLINE FEATURE
VIDEO: Cities
An accompaniment to this week’s special section exploring the benefits and challenges of urbanization.

www.sciencemag.org/cities

Separate individual or institutional subscriptions to these products may be required for full-text access.
Science 319 (5864), 693-836.

Science 319 (5864), 693-836.

ARTICLE TOOLS http://science.sciencemag.org/content/319/5864

PERMISSIONS http://www.sciencemag.org/help/reprints-and-permissions

Use of this article is subject to the Terms of Service