COVER
Lake Boku at the Ounianga oasis in remote northeastern Chad, one of the few remaining bodies of water in the almost rainless Sahara. Still sustained by fossil groundwater dating from the humid past, it is doomed because of encroaching dunes. See page 765.

Photo: S. Kröpelin

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M. Hsu, C. Anen, S. R. Quartz
A brain region linked to emotion-processing systems is activated as humans weigh fairness to an individual against benefit for a group.
10.1126/science.1153651

MICROBIOLOGY
Anticipatory Behavior Within Microbial Genetic Networks
I. Tagkopoulos, Y.-C. Liu, S. Tavazoie
Predictable sequences of environmental signals can be exploited by bacteria so that they learn to anticipate future metabolic needs and thereby gain a competitive edge.
10.1126/science.1154456

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Climate-Driven Ecosystem Succession in the Sahara: The Past 6000 Years
S. Kröpelin et al.

CLIMATE CHANGE
Fracture Propagation to the Base of the Greenland Ice Sheet During Supraglacial Lake Drainage
S. B. Das et al.

CLIMATE CHANGE
Seasonal Speedup Along the Western Flank of the Greenland Ice Sheet
I. Joughin et al.
Measurements of ice motion from Greenland show that summer meltwater accelerates ice sheet flow by 50 to 100% overall but has less effect in the faster outlet glaciers.

CELL BIOLOGY
An in Vivo Map of the Yeast Protein Interactome
K. Tarassov et al.
A method that identifies pairs of proteins that are 8 nanometers apart produces a map of interacting proteins in living yeast, finding known and previously unknown networks.
10.1126/science.1153878

MOLECULAR BIOLOGY
PERSPECTIVE: Slicing and Dicing for Small RNAs
J. A. Birchler and H. H. Kavi
10.1126/science.1159018
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Monte Verde: Seaweed, Food, Medicine, and the Peopling of South America
T. D. Dillehay et al.
Carbon-14 dates on seaweed brought to Monte Verde, Chile, show that the site was used 14,000 years ago and that the earliest New World people consumed marine resources. >> News story p. 729

Anthropology
DNA from Pre-Clovis Human Coprolites in Oregon, North America
M. T. P. Gilbert et al.
Fossil human feces from an Oregon cave predate the Clovis culture by about 1000 years, and DNA from the feces marks the presence of Native Americans in North America.

Biochemistry
Spatial Regulators for Bacterial Cell Division Self-Organize into Surface Waves in Vitro
M. Loose et al.
Two proteins that define the plane of cell division self-organize into waves and spirals on a flat membrane, suggesting that these patterns underlie their function in vivo. >> Perspective p. 755

Biochemistry
Reconstitution of Contractile FtsZ Rings in Liposomes
M. Osawa, D. E. Anderson, H. P. Erickson
A tubulin homolog from prokaryotes can, without other proteins, assemble into rings around liposomes and constrict, suggesting a primordial cell division mechanism. >> Perspective p. 755

Biochemistry
Architecture of a Charge-Transfer State Regulating Light Harvesting in a Plant Antenna Protein
T. K. Ahn et al.
To protect itself from oxidative damage in bright light, photosystem II operates a tunable shunt that directs excess energy to a yellow accessory pigment that is abundant in corn.

Virology
Phosphorylation of Retinoblastoma Protein by Viral Protein with Cyclin-Dependent Kinase Function
A. J. Hume et al.
A human cytomegalovirus protein takes control of the host cell cycle by mimicking a cell cycle kinase that phosphorylates and inactivates a tumor suppressor.

Ecology
Adaptive Phenotypic Plasticity in Response to Climate Change in a Wild Bird Population
A. Charmanter et al.
A 47-year study of great tits in Britain shows that the ability of individual birds to shift their breeding date has enabled the species to thrive as climate has changed.

Neuroscience
Temperature Sensing by an Olfactory Neuron in a Circuit Controlling Behavior of Caenorhabditis elegans
A. Kuhara et al.
An olfactory neuron in Caenorhabditis elegans also senses the ambient temperature and is necessary for worms’ propensity to seek out the temperature at which they were raised.

Cell Biology
Discovery of a Cytokine and Its Receptor by Functional Screening of the Extracellular Proteome
H. Lin et al.
A systematic, functional screen of extracellular proteins in yeast identified a previously unknown receptor-ligand pair: the cytokine interleukin-34 and its receptor.

Cell Biology
Regulation of the Cellular Heat Shock Response in Caenorhabditis elegans by Thermosensory Neurons
V. Prahlad, T. Cornelius, R. I. Morimoto
Activation of a heat-sensitive sensory neuron in the worm Caenorhabditis elegans unexpectedly triggers a heat-shock response throughout the animal.
Multiple models compete to explain T cell receptor activation.

EXPERIMENTAL BIOLOGY 2008

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PERSPECTIVE: TCR Triggering by the pMHC Complex—Valency, Affinity, and Dynamics

Multiple models compete to explain T cell receptor activation.

REVIEW: Is Zinc a Neuromodulator?

A. R. Kay and K. Tóth

Experiments with metal chelators provide the best evidence for zinc as a regulator of synaptic activity.

FORUM: Open Forum on Cell Signaling

N. R. Gough and J. F. Foley

Read highlights from the Experimental Biology 2008 meeting.