Phase contrast photomicrograph of a *Schizosaccharomyces octosporus* ascus, a sac-like cell that typically contains eight spores (each ~2 micrometers across). *S. octosporus* and other fission yeasts are important models of eukaryote biology and have evolved a single-celled lifestyle independently from their budding yeast cousins. On page 930, Rhind *et al.* present a comparative genomic analysis of fission yeasts that sheds light on their genome structure and gene regulation.

Image: Dr. George Wilder/Visuals Unlimited, Inc.
RESEARCH ARTICLE

930 Comparative Functional Genomics of the Fission Yeasts
N. Rhind et al.
A combined analysis of genome sequence, structure, and expression gives insights into fission yeast biology.

REPORTS

937 Dimensionality Control of Electronic Phase Transitions in Nickel-Oxide Superlattices
A. V. Boris et al.
The structure of metal-oxide superlattices is used to control the electronic order of the system.
>> Perspective p. 922

940 Competition of Superconducting Phenomena and Kondo Screening at the Nanoscale
K. J. Franke et al.
A manganese complex adsorbed on a superconducting lead surface creates a mosaic of two magnetic ground states.

944 Chlorinated Indium Tin Oxide Electrodes with High Work Function for Organic Device Compatibility
M. G. Helander et al.
Closer matching of the energy levels of transparent electrodes and active materials in organic light-emitting diodes improves efficiency.

947 Probing Asthenospheric Density, Temperature, and Elastic Moduli Below the Western United States
T. Ito and M. Simons
Monitoring the response to ocean tidal loads reveals detailed variations in Earth’s internal structure.

951 Impact of Polar Ozone Depletion on Subtropical Precipitation
S. M. Kang et al.
The Antarctic ozone hole has led to increased summertime precipitation in the subtropics of the Southern Hemisphere.
>> Perspective p. 925

955 Fossil Evidence on Origin of the Mammalian Brain
T. B. Rowe et al.
Evidence from two early fossils suggests that brain enlargement and specialization proceeded in three pulses.
>> Perspective p. 926

958 Industrial Melanism in British Peppered Moths Has a Singular and Recent Mutational Origin
A. E. van’t Hof et al.
The locus responsible for the dark form of the peppered moth is identified.

960 The Selaginella Genome Identifies Genetic Changes Associated with the Evolution of Vascular Plants
J. A. Banks et al.
The genome sequence of a lycophyte hints at ancient evolutionary transitions.

963 Chromatin “Prepattern” and Histone Modifiers in a Fate Choice for Liver and Pancreas
C.-R. Xu et al.
Screening histone modifications reveals distinctive patterns of chromatin marks for liver and pancreas development.

966 Spatial Coupling of mTOR and Autophagy Augments Secretory Phenotypes
M. Narita et al.
A cellular compartment allows simultaneous protein synthesis and degradation.
>> Perspective p. 923

970 Diet Drives Convergence in Gut Microbiome Functions Across Mammalian Phylogeny and Within Humans
B. D. Muegge et al.
The normal range of physiological and metabolic phenotypes has been shaped by coevolution with microbial symbionts.
>> Science Podcast

974 The Toll-Like Receptor 2 Pathway Establishes Colonization by a Commensal of the Human Microbiota
J. L. Round et al.
Signaling through innate immune receptors promotes commensal bacteria colonization of the gut.

977 A Packing Mechanism for Nucleosome Organization Reconstituted Across a Eukaryotic Genome
Z. Zhang et al.
Genome-wide nucleosome positioning is a self-organizing system amenable to in vitro reconstitution.

981 Structures of the Bacterial Ribosome in Classical and Hybrid States of tRNA Binding
J. A. Dunkle et al.
Two crystal structures indicate how conformational changes in the ribosome assist protein synthesis.

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