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1512 Cause and Effect in Biology Revisited: Is Mayr’s Proximate-Ultimate Dichotomy Still Useful?
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1517 A Natural Deletion of the HoxC Cluster in Elasmobranch Fishes
B. L. King et al.
Sequence analysis shows that sharks and batoids lack one of four Hox gene clusters once thought necessary for development.

RESEARCH ARTICLES

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D. N. Reshef et al.
A statistical method reveals relationships among variables in complex data sets.
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1524 The Structure of the Eukaryotic Ribosome at 3.0 Å Resolution
A. Ben-Shem et al.
A close-up view of the ribosome’s 79 proteins and 5500 RNA nucleotides.

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O. E. Semonin et al.
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T. C. T. Pham et al.
Precise control over synthetic conditions eliminates misalignment of pore channels during the growth of zeolite films.

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J. Daranlot et al.
Rates have been measured for a chemical transformation of interstellar interest in which both reagents are unstable.
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G. W. Holtgrieve et al.
Deposition of reactive nitrogen from human activities occurred in the preindustrial era.
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1548 High Relatedness Is Necessary and Sufficient to Maintain Multicellularity in Dictyostelium
J. J. Kuzdzal-Fick et al.
Experimental evolution shows that the cooperation of cells in multicellular organisms degrades under low relatedness.

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S. Zhang and D. A. Bryant
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The bacterial pathogen Legionella pneumophila ensures amino acid supplies by promoting degradation of target host proteins.

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E. St. John Smith et al.
Life in a high–carbon dioxide environment has eliminated acid-evoked pain in the naked mole-rat.
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1558 Uninformed Individuals Promote Democratic Consensus in Animal Groups
I. D. Couzin et al.
Uninformed individuals inhibit extremism and enforce fair representation during collective decision-making.
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The Southern Ocean’s Role in Carbon Exchange During the Last Deglaciation
A. Burke and L. F. Robinson
Radio carbon measurements of deep-sea corals reveal the presence of old, carbon-rich water in the Southern Ocean.
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Asymmetry and Aging of Mycobacterial Cells Lead to Variable Growth and Antibiotic Susceptibility
B. B. Aldridge et al.
The growing pole of the tuberculosi s-causing bacteria is inherited by only one offspring, which can then elongate faster.
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Asymmetric B Cell Division in the Germinal Center Reaction
B. E. Barnett et al.
Germinal center B cells undergo asymmetric cell division.
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C.-L. Hsu et al.
Lack of the transporter critical for recycling of nucleosides after phagocytosis results in a fatal expansion of macrophages.
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M. O. Casanueva et al.
Stochastic variation in a cellular stress response pathway can predict the outcome of mutations in individuals.
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B. M. Altevogt et al.
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RESEARCH ARTICLE: H2-S-Induced Sulfhydration of the Phosphatase PTP1B and Its Role in the Endoplasmic Reticulum Stress Response
N. Krishnan et al.
Reversible inactivation by sulfhydration of the protein tyrosine phosphatase PTP1B activates the kinase PERK to promote the ER stress response.

RESEARCH ARTICLE: Triggering Actin Comets Versus Membrane Ruffles—Distinctive Effects of Phosphoinositides on Actin Reorganization
T. Ueno et al.
The ability of phosphoinositides to promote functionally diverse effects may depend on the relative concentrations of different species.

PERSPECTIVE: Is the Regulation of Insulin Signaling Multi-Organismal?
A. E. Douglas
Gut microbiota in Drosophila promote metabolic signaling pathways, resulting in increased growth and development rates.

PROTOCOL: A Method to Separate Nuclear, Cytosolic, and Membrane-Associated Signaling Molecules in Cultured Cells
X. Liu and F. Fogotto
A semipermeabilization step and a specific Percoll gradient composition enable effective cellular fractionation.

GLOSSARY
Find out what FLP, sAC, and CR3 mean in the world of cell signaling.

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L. Walker et al.
Mandatory data sharing offers scientific advantages, but more transparency around data use is needed.

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S. Usar et al.

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Designer antibodies that mimic hormone activity provide new approaches to treating diabetes.

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S. Shof et al.
The stress surveillance response to cell damage varies among humans, perhaps explaining differences in transplant rejection.

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