Interactions between microbes and plants can vary widely, depending upon the context and the partners of the interaction. An Editorial on page 691 and a collection of Perspectives starting on page 742 discuss recent advances in our understanding of the biochemistry, signaling, and ecosystem dynamics that reflect how microbes and plants interact.

Illustration: Chris Bickel
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736 Elemental Composition of the Martian Crust
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759 Representation of Confidence Associated with a Decision by Neurons in the Parietal Cortex
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Sharing a single photon between four optical modes creates entangled states that could be used in quantum information processing.

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The edges of graphene nanoribbons incorporate nitrogen atoms after heating in an atmosphere of ammonia.

772 An Experimental Design Method Leading to Chemical Turing Patterns
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Three design criteria were used to create sustained stationary patterns in the thiourea-iodate-sulfite reaction system.

775 An Observation Linking the Origin of Plasmaspheric Hiss to Discrete Chorus Emissions
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The radio waves that remove energetic electrons from Earth’s radiation belts originate outside the plasmasphere.

778 The Role of Aerosols in the Evolution of Tropical North Atlantic Ocean Temperature Anomalies
A. T. Evan et al.
Changes in tropical North Atlantic sea surface temperatures are caused by variability in atmospheric aerosol abundances.

UV Absorption Cross Sections of ClOOCI Are Consistent with Ozone Degradation Models
H.-Y. Chen et al.
Measurements of how well ClOOCI molecules absorb ultraviolet light support standard models of chlorine-induced ozone degradation.

Host Inhibition of a Bacterial Virulence Effector Triggers Immunity to Infection
V. Ntoukasakis et al.
An enzyme in tomato targets bacterial virulence to change the outcome of infection from susceptibility to immunity.

Development of a Second-Generation Antiandrogen for Treatment of Advanced Prostate Cancer
C. Tran et al.
A drug that binds to the androgen receptor acts by disrupting its activity in the cell nucleus.

Basin-Scale Coherence in Phenology of Shrimps and Phytoplankton in the North Atlantic Ocean
P. Koeller et al.
Shrimp reproduction is primed by bottom temperature and not directly by cues from the spring phytoplankton bloom.

Apicomplexan Parasites Co-Opt Host Calpains to Facilitate Their Escape from Infected Cells
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A host protease helps newly replicated microbial parasites escape from incubator cells.

Human Induced Pluripotent Stem Cells Free of Vector and Transgene Sequences
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Human induced pluripotent stem cells can be generated without integration of exogenous DNA into their genomes.

Benzothiazinones Kill Mycobacterium tuberculosis by Blocking Arabinan Synthesis
V. Makarov et al.
An isomerase required for cell-wall synthesis is a target for an alternative drug lead for tuberculosis treatment.

Mammalian Expression of Infrared Fluorescent Proteins Engineered from a Bacterial Phytochrome
X. Shu et al.
An engineered infrared fluorescent protein derived from an extremophile bacterium gives a strong signal in mammalian cells.

High-Throughput Sequencing of the Zebrafish Antibody Repertoire
J. A. Weinstein et al.
Sequencing of immunoglobulin messenger RNA characterizes the diversity of the antibody repertoire in individual zebrafish.

Movement Intention After Parietal Cortex Stimulation in Humans
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Electric vehicles powered by electricity made from biofuels are more efficient than vehicles fueled by bioethanol.
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Predominantly single-layer graphene films grow in a self-limited manner on copper and can be transferred to other substrates.
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M. A. Balanomits et al.

Transcriptional activation kinetics vary in different cell types, in part because related transcription factors make alternative mediator interactions.

PERSPECTIVE: Nitric Oxide Links Mitochondrial Fission to Alzheimer’s Disease
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Amyloid β-induced nitrosylation of a GTPase involved in mitochondrial fission is neurotoxic.

PERSPECTIVE: Fragile Axons Forge the Path to Gene Discovery—A MAP Kinase Pathway Regulates Axon Regeneration
G. S. O’Brien and A. Sagasti

In Caenorhabditis elegans, a mitogen-activated protein kinase pathway is required for regenerative, but not developmental, axon outgrowth.

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