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COVER
Viewed from the inside of a fractured rice leaf, cells of the rice pathogenic bacterium Xanthomonas oryzae pv. oryzicola invade through a stoma. Xanthomonas species inject host cells with unusual DNA binding proteins called transcription activator–like (TAL) effectors to up-regulate genes important for infection. Two studies in this issue (pages 1501 and 1509; related Perspective, page 1491) decipher TAL effector target specificity and show that new specificities can be engineered.

Image: Adam Bogdanove and Harry Horner/Iowa State University; false color: Yael Kats/Science
BREVIA

1501 A Simple Cipher Governs DNA Recognition by TAL Effectors
M. J. Moscou and A. J. Bogdanove

Xanthomonas bacteria use an amino acid–based code to target effector molecules to specific DNA sequences.
>> Perspective p. 1491; Research Article p. 1509

RESEARCH ARTICLES

1502 Cell-Specific Information Processing in Segregating Populations of Eph Receptor Ephrin–Expressing Cells
C. Jørgensen et al.

A proteomic strategy elucidates signaling networks between cells communicating through ephrin proteins and their receptors.

1509 Breaking the Code of DNA Binding Specificity of TAL-Type III Effectors
J. Bach et al.

Artificial effectors with new specificities have been constructed that mimic proteins injected into plant cells by pathogens.
>> Perspective p. 1491; Brevia p. 1501

REPORTS

1512 Modulated High-Energy Gamma-Ray Emission from the Microquasar Cygnus X-3
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Gamma-ray emission from the jet of an accreting binary star system is correlated with the jet’s radio emission.
>> Perspective p. 1490

1516 Organic Nonvolatile Memory Transistors for Flexible Sensor Arrays
T. Sekitani et al.

An array of organic-based flash memory–type devices is demonstrated as a pixelated pressure sensor.

1520 Gigahertz Dynamics of a Strongly Driven Single Quantum Spin
G. D. Fuchs et al.

Fast spin-flips are observed in the nitrogen vacancy centers in diamond.
>> Perspective p. 1499

1522 Meteorite Kr in Earth’s Mantle Suggests a Late Accretionary Source for the Atmosphere
G. Holland et al.

Heavy noble gases acquired during Earth’s formation contributed little to the evolution of Earth’s atmosphere.

1525 Evolution of Organic Aerosols in the Atmosphere
J. L. Jimenez et al.

Organic aerosols are not compositionally static, but they evolve dramatically within hours to days of their formation.
>> Perspective p. 1493

1530 A Complete Skeleton of a Late Triassic Saurischian and the Early Evolution of Dinosaurs
S. J. Nesbitt et al.

A complete theropod from New Mexico implies that early dinosaurs dispersed widely, perhaps originating from South America.
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An Introduction to Monkey Grammar?

S. Nechaev et al.

Epithelial cells play a role in tubercular granuloma formation and mycobacterial virulence. 10.1126/science.1179663

Global Analysis of Short RNAs Reveals Widespread Promoter-Proximal Stalling and Arrest of Pol II in Drosophila

S. Nechaev et al.

The initially transcribed sequence plays a key role in inducing polymerase stalling. 10.1126/science.1181421

Lapetus: Unique Surface Properties and a Global Color Dichotomy from Cassini Imaging

T. Dek et al.

10.1126/science.1177088

Formation of Lapetus’ Extreme Albedo Dichotomy by Exogenically Triggered Thermal Ice Migration

J. R. Spencer and T. Denk

Thermal migration of water ice explains the observed color asymmetry of Saturn’s unusual moon, Lapetus. 10.1126/science.1177132

SCIENCEONLINE

www.sciencexpress.org

Adaptive Evolution of Pelvic Reduction in Sticklebacks by Recurrent Deletion of a Pitx1 Enhancer

Y. F. Chan et al.

Loss of a tissue-specific enhancer explains multiple parallel losses of the pelvic girdle in stickleback populations. 10.1126/science.1182213

Tuberculous Granuloma Induction via Interaction of a Bacterial Secreted Protein with Host Epithelium

H. E. Volkman et al.

Epithelial cells play a role in tubercular granuloma formation and mycobacterial virulence. 10.1126/science.1179663

Lose Genes, Gain Weight

Some obese patients are missing a chunk of one of their chromosomes.

A History of Beginnings

blogs.sciencemag.org/origins

An Introduction to Monkey Grammar?

Primates produce new alarm calls in a way that might resemble human language.

The death of a principal investigator leaves behind a scientific gap, practical problems, and grieving colleagues.

Dealing With a Lab Leader’s Death

S. Coelho

Why Your Older Brother Didn’t Share Sibling pecking order makes firstborns less cooperative than their siblings.

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www.sciencecareers.org/career_magazine

Free Career Resources for Scientists

A Killer Whale Biologist Vocalizes

V. Venkatraman

Ari Daniel Shapiro is leaving scientific research to produce radio programs about science and the people who do science.

A Killer Whale Biologist Vocalizes

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Ari Daniel Shapiro is leaving scientific research to produce radio programs about science and the people who do science.

In Person: A Dream Lab in Romania

T. Luchian

1989 was a momentous year for Romania, but it was not until the mid-2000s that Tudor Luchian found resources to establish a cutting-edge lab at home.