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COVER

False-colored electron micrograph of the rough endoplasmic reticulum (ER, light green), which consists of elongated membrane structures studded with ribosomes (dark green dots) and is adjacent to the nuclear envelope (dark green, right). The ER is the entry portal for newly synthesized membrane and secretory proteins (circular mitochondrion: ~0.49 micrometers wide). Two Reviews (pages 1081 and 1086) describe the ER's role in protein quality control. A News package (beginning on page 1046) discusses a number of fundamental mysteries in cell biology.

Image: *MedImage/Photo Researchers, Inc.*

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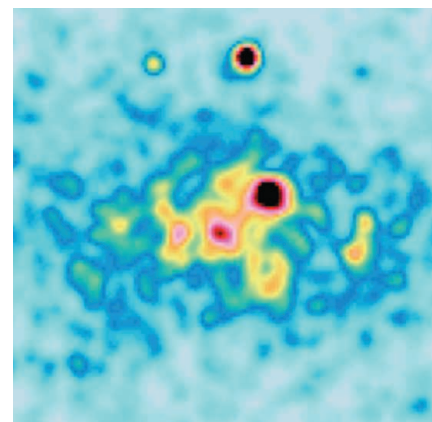
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The Technology Path to Deep Greenhouse Gas Emissions Cuts by 2050: The Pivotal Role of Electricity

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Reducing greenhouse gas emissions to 80% below 1990 levels by 2050 requires widespread electrification of transportation and other sectors.

10.1126/science.1208365

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Climate Sensitivity Estimated from Temperature Reconstructions of the Last Glacial Maximum

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Last Glacial Maximum temperature reconstructions and model simulations can constrain the equilibrium climate sensitivity.

10.1126/science.1203513

Using the Past to Predict the Future?

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Two players and one chair regulate this plant hormone signaling cascade.

10.1126/science.1215106

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10.1126/science.1211956

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10.1126/science.1211222

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D. J. Lawrence et al.

Full text at www.sciencemag.org/cgi/content/full/334/6059/1058-c

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Full text at www.sciencemag.org/cgi/content/full/334/6059/1058-d

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<http://scim.ag/zircon>

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This result might help explain why the universe is full of matter, not antimatter.

<http://scim.ag/PhysicsBreakthrough>

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The Signal Transduction Knowledge Environment

22 November issue: <http://scim.ag/ss112211>

EDITORIAL GUIDE: Focus Issue—Fine Tuning Hedgehog Signaling in Development and Disease

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The Hedgehog signaling cascade is regulated by a complex and diverse set of mechanisms.

PERPECTIVE: Barcoding Hedgehog for Intracellular Transport

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Cholesterol modification may influence where Hedgehog is released.

PRESENTATION: Sonic Hedgehog Activates the GTPases Rac1 and RhoA in a Gli-Independent Manner Through Coupling of Smoothed to G_i Proteins

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Smoothed signals through small G proteins in one type of noncanonical Hedgehog signaling.

PRESENTATION: Direct Delivery Mechanisms of Morphogen Dispersion

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PRESENTATION: Hedgehog Signaling and the Gli Code in Stem Cells, Cancer, and Metastases

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The balance between activator and repressor functions of Gli transcription factors influences stem cell-like behavior and metastasis.

RESEARCH ARTICLE: Agonist-Driven Maturation and Plasma Membrane Insertion of Calcium-Sensing Receptors Dynamically Control Signal Amplitude

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Activation of a G protein-coupled receptor increases its own surface abundance to enhance its signaling.

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M. Gabay et al.

Control of the insertion of G protein α subunits into endomembranes by Ric-8 proteins regulates the abundance and function of heterotrimeric G proteins.

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COMMENTARY: Engineering Efficient Technology Transfer

K. Lutchen et al.

PODCAST

K. Lutchen and K. LaMarco

Academic and industry leaders strategize for efficient translation of university-driven biomedical engineering innovations.

FOCUS: Glowing Tumors Make for Better Detection and Resection

M. Bouvet and R. M. Hoffman

Topical fluorescent probes make tumors selectively fluorescent and may improve cancer detection and removal.

RESEARCH ARTICLE: Rapid Cancer Detection by Topically Spraying a γ -Glutamyltranspeptidase-Activated Fluorescent Probe

Y. Urano et al.

A small-molecule imaging probe that fluoresces upon cleavage by a cancer-specific enzyme may improve surgical removal procedures of tumors.

RESEARCH ARTICLE: Bactericidal/Permeability-Increasing Protein (rBPI21) and Fluoroquinolone Mitigate Radiation-Induced Bone Marrow Aplasia and Death

E. C. Guinan et al.

An endotoxin-neutralizing protein fragment plus a fluoroquinolone antibiotic improve survival and hematopoietic recovery in mice after lethal radiation.

SCIENCE CAREERS

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Free Career Resources for Scientists

Perspective: The STEM Job Market

J. Austin

Recent reports on the scientific and technical workforce draw widely divergent conclusions.

<http://scim.ag/STEMJobsPerspective>

Experimental Error: Thanks 10⁶

A. Ruben

When you carve the turkey, don't forget to thank science.

http://scim.ag/EE_GivingThanks

Networking Your Way to a Job

E. Pain

Biologist Mary-Rose Hoja has forged a career in strategic networking, social media, and mingling.

http://scim.ag/Hoja_Profile

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