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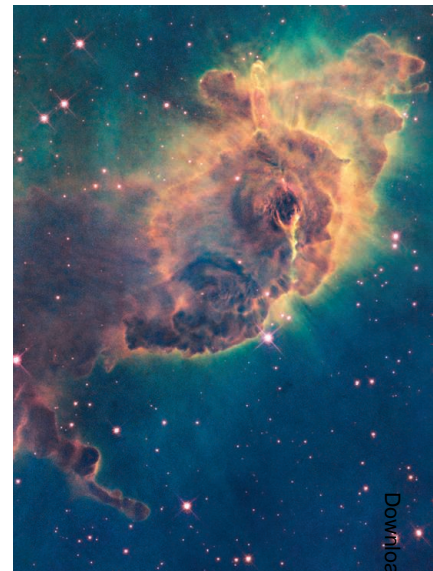
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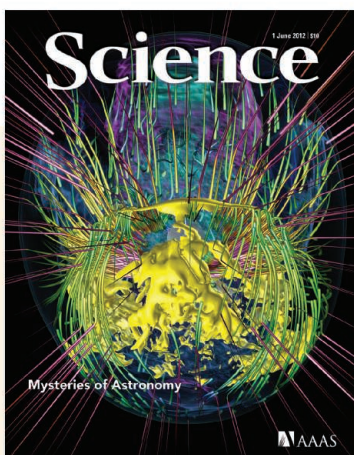


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COVER

Three-dimensional computer models such as this one help researchers explore the mechanisms behind core-collapse supernovae, the violent death of short-lived massive stars. In the image, tubes represent paths of gas falling into a supernova, deflected by an accretion shockwave (horizontal width of 600 km); colors represent different velocities. The question of how stars explode is one of the "Mysteries of Astronomy" described in a special News package beginning on page 1090.

Visualization: Hongfeng Yu and Kwan-Liu Ma, University of California-Davis and the SciDAC Institute for Ultra-Scale Visualization; Simulation: John Blondin, North Carolina State University

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A general computational method allows the design of proteins that self-assemble into a desired symmetric architecture.

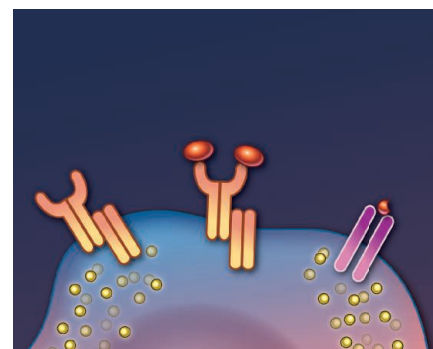
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- 1130** Quantum Algorithms for Quantum Field Theories
S. P. Jordan et al.
A quantum computer may be able to efficiently simulate theories used to describe particle scattering in accelerators.
>> *Perspective p. 1122*; *Science Podcast*

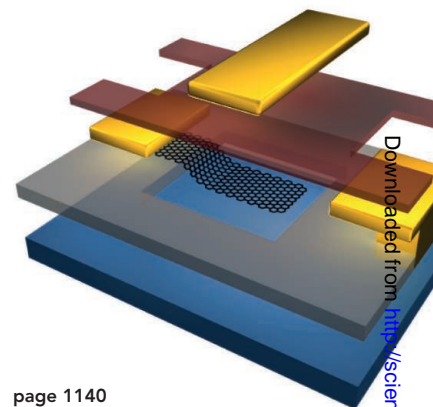
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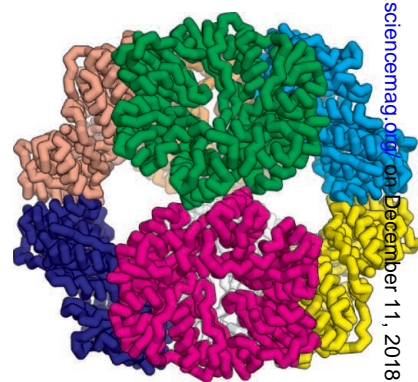
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- 1157** Evolutionary Trade-Offs, Pareto Optimality, and the Geometry of Phenotype Space
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P. J. Barrett et al.
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Structural Basis of Wnt Recognition by Frizzled
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The structure of the morphogen Wnt bound to its receptor provides a basis for understanding Wnt's functional pleiotropy.

10.1126/science.1222879

A Lipid Linchpin for Wnt-Fz Docking

M. Bienz and X. He

10.1126/science.1224468

Crystal Structure of the Heterodimeric CLOCK:BMAL1 Transcriptional Activator Complex
N. Huang et al.

Structure-function analyses reveal details of the interaction between two proteins that regulate daily rhythms in mammals.

10.1126/science.1222804

High-Resolution Protein Structure Determination by Serial Femtosecond Crystallography

S. Boutet et al.

A powerful x-ray laser source can probe proteins in detail using much smaller crystals than previously required.

10.1126/science.1217737

Membrane Fusion Intermediates via Directional and Full Assembly of the SNARE Complex

J. M. Hernandez et al.

During vesicle membrane fusion, straining of lipids at the edges of an extended contact zone may initiate fusion.

10.1126/science.1221976

A *Papaver somniferum* 10-Gene Cluster for Synthesis of the Anticancer Alkaloid Noscapine

T. Winzer et al.

A biosynthetic pathway inherited as a gene cluster generates a pharmaceutically useful alkaloid in poppies.

10.1126/science.1220757

SCIENCE NOW

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Occupy the Neolithic

Skeletons of early farmers reveal the roots of social inequality.

<http://scim.ag/Social-Inequality>

No New Neurons for Smell?

Lack of stimulation may have robbed the smell center of the human brain of new cells.

http://scim.ag/Neurons_Smell

'Asian Brown Cloud' Threatens U.S.

Continued growth in Asian pollution could warm United States.

<http://scim.ag/Asian-Pollution>

SCIENCE SIGNALING

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The Signal Transduction Knowledge Environment
29 May issue: <http://scim.ag/ss052912>

EDITORIAL GUIDE: Focus Issue—Signaling Architecture From Domains to Complexes

W. Wong and N. R. Gough

Structural analyses of domains, proteins, and complexes provide insight into signaling mechanisms and uncover therapeutic potential.

RESEARCH ARTICLE: Sequence-Specific Recognition of a PxLPxL Motif by an Ankyrin Repeat Tumbler Lock

C. Xu et al.

Phosphorylation of a motif that binds to ankyrin repeat domains switches its binding preference to 14-3-3 proteins.

REVIEW: Signal Activation and Inactivation by the α Helical Domain—A Long-Neglected Partner in G Protein Signaling

H. G. Dohlman and J. C. Jones

Structural studies suggest that the helical domain of G protein α subunits is an active participant in G protein signaling.

REVIEW: Structural Insights into the Assembly of Large Oligomeric Signalosomes in the Toll-Like Receptor—Interleukin-1 Receptor Superfamily

R. Ferrao et al.

Structural studies show that Toll-like receptors assemble into oligomeric intracellular signaling complexes upon ligand binding.

ST NETWORK: UCSF Chimera, PyMOL

Render structures of biomolecules in various formats, generate animations, and model binding events.

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30 May issue: <http://scim.ag/stm053012>

EDITORIAL: Seeking Validation

D. Roblin

Clinical validation of new drug targets may best occur in precompetitive partnerships.

RESEARCH ARTICLE: Noninvasive Identification and Monitoring of Cancer Mutations by Targeted Deep Sequencing of Plasma DNA

T. Forshew et al.

Sizable genomic regions were screened and low-frequency mutations were identified in circulating DNA of cancer patients using tagged-amplicon deep sequencing (TAM-Seq).

RESEARCH ARTICLE: SIV Replication in the Infected Rhesus Macaque Is Limited by the Size of the Preexisting T_H17 Cell Compartment

D. J. Hartigan-O'Connor et al.

Macaques with abundant T_H17 cells in blood and intestinal tissue before infection are resistant to SIV replication.

RESEARCH ARTICLE: Kinase-Impaired BRAF Mutations in Lung Cancer Confer Sensitivity to Dasatinib

B. Sen et al.

Induction of tumor cell senescence may explain the response of a patient with BRAF kinase-impaired lung cancer to the multikinase inhibitor dasatinib.

RESEARCH ARTICLE: A Peptide Derived from Endostatin Ameliorates Organ Fibrosis

Y. Yamaguchi et al.

FOCUS: Relief from Within—A Peptide Therapy for Fibrosis

S. P. Atamas

A naturally occurring peptide from endostatin can inhibit fibrosis in lung and skin, even when it is already established.

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<http://scim.ag/Mavalvala>

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B. L. Benderly

A new book looks at science careers across the stages of women's lives.

http://scim.ag/TFG_ScienceWhileFemale

Career Q&A: Often Wrong, Never in Doubt

M. Fessenden

As head of the accelerator division at TRIUMF, Lia Merminga is a rare woman in the upper echelons of physics.

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