A jumble of icebergs forms in front of the heavily crevassed calving front of Jakobshavn Isbrae, one of the fastest outlet glaciers draining the Greenland Ice Sheet. The ~5-kilometer-wide ice front rises ~80 meters out of the water and extends more than 600 meters underwater. Recent research shows that the speeds of Greenland glaciers are increasing. See page 576.

Photo: Ian Joughin
## RESEARCH ARTICLE

555 Spin-Torque Switching with the Giant Spin Hall Effect of Tantalum  
L. Liu et al.  
Tantalum is found to generate strong spin currents that can induce switching of ferromagnets efficiently and reliably.

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### Spin-Orbital Short-Range Order on a Honeycomb-Based Lattice
559 S. Nakatsuji et al.  
Magnetic measurements indicate that a material remains disordered to millikelvin temperatures, thanks to its unusual lattice structure.  
>> Perspective p. 547

### Anisotropic Energy Gaps of Iron-Based Superconductivity from Intraband Quasiparticle Interference in LiFeAs
563 M. P. Allan et al.  
The energy needed to break up electron pairs in a pnictide superconductor depends on position on the Fermi surface.

### Magnetic Reconnection in the Near Venusian Magnetotail
567 T. L. Zhang et al.  
Venus Express observations show that magnetic reconnection occurs in the magnetotail of an unmagnetized planet.  
>> Perspective p. 548

### Ancient Impact and Aqueous Processes at Endeavour Crater, Mars
570 S. W. Squyres et al.  
Analysis of data from the Mars Exploration Rover Opportunity provides evidence for past water flow near an ancient crater.  
>> Science Podcast

### 21st-Century Evolution of Greenland Outlet Glacier Velocities
576 T. Moon et al.  
A decade-long compilation of velocity data for Greenland’s outlet glaciers shows complex spatial and temporal variability.

### Imaginal Discs Secrete Insulin-Like Peptide 8 to Mediate Plasticity of Growth and Maturation
579 A. Garelli et al.  
An insulin/relaxin-like peptide coordinates final organ size in response to fly injury and tumors.

### Secreted Peptide Dilp8 Coordinates Drosophila Tissue Growth with Developmental Timing
582 J. Colombani et al.  
In fruit flies, growing tissues send signals to the endocrine system to coordinate growth and metamorphosis.

### Function, Developmental Genetics, and Fitness Consequences of a Sexually Antagonistic Trait
585 A. Khila et al.  
Sex-specific modifications of male water strider antennae that are important for mating require distal-less gene expression.

### Impacts of Biodiversity Loss Escalate Through Time as Redundancy Fades
589 P. B. Reich et al.  
Long-term grassland experiments show that high-diversity species combinations become more functionally diverse with time.  
>> Perspective p. 552

### Removal of Shelterin Reveals the Telomere End-Protection Problem
593 A. Sfeir and T. de Lange  
“Naked” chromosome ends are mistakenly targeted by six different DNA repair–related systems in the cell.

### Elementary Ca** Signals Through Endothelial TRPV4 Channels Regulate Vascular Function
597 S. K. Sankusare et al.  
Imaging reveals single-channel openings of cation channels at the heart of endothelial cell–mediated blood pressure control.  
>> Perspective p. 546

### Multidimensional Optimality of Microbial Metabolism
601 R. Schuetz et al.  
A key design principle of bacterial metabolic networks is optimal performance, but not at the expense of adaptability.

### Radio-Wave Heating of Iron Oxide Nanoparticles Can Regulate Plasma Glucose in Mice
604 S. A. Stanley et al.  
Gene expression in mice can be activated remotely and noninvasively by radio-wave heating of nanoparticles.  
>> Science Podcast

### Substrate-Controlled Succession of Marine Bacterioplankton Populations Induced by a Phytoplankton Bloom
612 H. Teeling et al.  
Seasonal diatom growth in the North Sea results in a temporal succession of metabolically specialized bacteria.  
Don’t Look Back in Anger! Responsiveness to Missed Chances in Successful and Nonsuccessful Aging  
S. Brassen et al.  
Emotionally healthy older adults show a reduced responsiveness to regret when performing a sequential decision task.
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Interglacial Hydroclimate in the Tropical West Pacific Through the Late Pleistocene
A. N. Meckler et al.
Precipitation in Borneo, largely invariant during the last four interglacial periods, decreased during glacial terminations.
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B Cell Receptor Signal Transduction in the GC Is Short-Circuited by High Phosphatase Activity
A. M. Khalil et al.
Restricted B cell signaling in the areas responsible for immune memory cell production promotes affinity maturation.
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Awake Hippocampal Sharp-Wave Ripples Support Spatial Memory
S. P. Jadhav et al.
The neuronal “playback” of past experience may allow animals to retrieve specific memories and use them to guide behavior.
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MORC Family ATPases Required for Heterochromatin Condensation and Gene Silencing
G. Moisard et al.
A conserved family of adenosine triphosphatases predicted to catalyze alterations in chromosome superstructure is required for gene silencing.
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Comment on “Global Resilience of Tropical Forest and Savanna to Critical Transitions”
Z. Ratnajizak and J. B. Nipper
Full text at www.sciencemag.org/cgi/content/full/336/6081/541-c

Response to Comment on “Global Resilience of Tropical Forest and Savanna to Critical Transitions”
E. H. Van Nes et al.
Full text at www.sciencemag.org/cgi/content/full/336/6081/541-d

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Church records confirm that 18th and 19th century people still followed Darwin’s rules.
http://sci.am/natural-selection

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Neural activity predicts which antismoking ad will elicit the greatest public response.
http://sci.am/neural_activity

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The Signal Transduction Knowledge Environment
1 May issue: http://scim.ag/ss050112

RESEARCH ARTICLE: TACE Activation by MAPK-Mediated Regulation of Cell Surface Dimerization and TIMP3 Association
P. Xu et al.
A metalloproteinase implicated in inflammation and cancer is inactive as a dimer and active as a monomer.

RESEARCH ARTICLE: Genomic Survey of Premetazoa Shows Deep Conservation of Cytoplasmic Tyrosine Kinases and Multiple Radiations of Receptor Tyrosine Kinases
H. Suga et al.

PODCAST
H. Suga and A. M. VanHook
A genomic survey suggests that cytoplasmic tyrosine kinases diversified before the establishment of multicellular organisms.

PERSPECTIVE: Phosphoinositides as Regulators of Protein–Chromatin Interactions
K. Viri et al.
Phosphoinositides can promote or reduce the binding of proteins with roles in transcription to chromatin.

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2 May issue: http://scim.ag/stm050212

RESEARCH ARTICLE: Temporal Dynamics of the Human Vaginal Microbiota
P. Gajer et al.
FOCUS: Complexities of the Uniquely Human Vagina
S. S. Witkin and W. J. Ledger
The vaginal microbiome is dynamic, varying over time in composition and function with implications for women’s health.

RESEARCH ARTICLE: Decade-Long Safety of Proteins with Roles in Transcription to Chromatin
K. Viiri et al.
Adaptively transferred chimeric antigen receptor T cells have stable stem cell–like persistence for at least a decade and more than 500 years of patient safety.

RESEARCH ARTICLE: Vascular COX-2 Modulates Blood Pressure and Thrombosis in Mice
Y. Yu et al.
Deletion of vascular COX-2 predisposes mice to thrombosis and hypertension.

RESEARCH ARTICLE: Human Mesenchymal Stem Cell–Derived Matrices for Enhanced Osteoregeneration
S. Zeitouni et al.
Stem cell–generated matrices provide optimal environment for bone regeneration in mice.

COMMENTARY: Learning from Hackers—Open-Source Clinical Trials
A. G. Dunn et al.
The open-source software movement can serve as a model for a similar initiative in the clinical trial community.

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B. L. Benderly
Why do clinical medicine and academic science—both expert labor markets—offer such different career outlooks?
http://scim.ag/TFG_Flexner

Translational Volcanology
R. Berkowitz
Volcanologists have a range of opportunities to help predict eruptions and limit damage to people and places.
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Volcanologists for Public Safety
R. Berkowitz
Three volcanologists tell Science Careers how their work enhances public health and safety for communities at risk from volcanoes.
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Science 336 (6081), 517-615.