An earlier start for suggestive Fossil sites at risk **Engineered enzyme** humans p. 86.99, 8 97 forges fused rings p. 71 in India p. 22 MAY - 2 2018 LO SET VIS LIBRARY 6 APRIL 2018 sciencemag.org MAAAS PRZEWALSKI'S HORSES Ancient genomes illuminate early horse domestication p. 111

6 APRIL 2018 • VOLUME 360 • ISSUE 6384



33 & 49

Repairing a leaky membrane



# **NEWS**

#### IN BRIEF

10 News at a glance

### IN DEPTH

## 12 IN ITS SECOND YEAR, MARCH FOR SCIENCE GROWS UP

This year's event, set for 14 April, is only one element in a global pro-science movement *By J. Mervis* 

# 13 UNIVERSITY IS QUICK TO DISCLOSE MISCONDUCT

The Ohio State University wins plaudits for unusually rapid transparency By A. McCook

# 14 HUMANE STUDIES OF OCTOPUSES GET A BOOST

By identifying effective anesthetics, findings aid compliance with regulations By D. Staaf
▶ PODCAST

# 16 ROCKY START FOR CHINA'S JAMES WATSON CENTER

A new center named for the Nobel laureate faces funding and mission challenges *By D. Normile* 

# 17 NIH LOOKS TO PUNISH REVIEWERS WHO VIOLATE CONFIDENTIALITY

Agency re-reviewed dozens of funding proposals after officials discovered a violation of the rules *By J. Brainard* 

# **FEATURES**

## **18 A DELICATE BALANCE**

Routinely giving antibiotics to premature babies may do more harm than good *By M. Broadfoot* 

### 22 EDGE OF EXTINCTION

India's paleontologists are struggling to save fossil sites—and their own discipline *By S. Kumar* 

24 A one-man fossil rescue mission By S. Kumar

# **INSIGHTS**

## LETTERS

**26 NEXTGEN VOICES: A POSTDOC'S PURPOSE** 

### PERSPECTIVES

# 28 MICROPLASTICS RESEARCH— FROM SINK TO SOURCE

Microplastics are ubiquitous not just in the ocean but also on land and in freshwater systems *By C. M. Rochman* 

# 30 SUPPORTING RECOVERY FROM BRAIN INJURY

A window of therapeutic opportunity could widen beyond the initial phase of brain injury *By S. Rumpel* 

► RESEARCH ARTICLE P. 50

# 31 LATTICES FOR FRACTIONAL CHERN INSULATORS

Topological order beyond Landau levels is seen in encapsulated bilayer graphene By C. Repellin and N. Regnault

▶ REPORT P. 62

# 33 ESCRTS OFFER REPAIR SERVICE

A cellular membrane remodeling machinery repairs damaged organelles *By M. G. Gutierrez and J. G. Carlton* 

▶ RESEARCH ARTICLE P. 49

# **34 UP CLOSE WITH HERPESVIRUSES**

Two high-resolution structures reveal how ~3000 proteins are arranged in the herpes simplex virus capsid Bu E. E. Heldwein

▶ RESEARCH ARTICLES PP. 47 & 48

# 36 LRRK2 KINASE IN PARKINSON'S DISEASE

Defects in vesicular trafficking and immune responses are found in Parkinson's disease *By D. R. Alessi and E. Sammler* 

### **POLICY FORUM**

# 38 TESTING INTERNATIONAL EDUCATION ASSESSMENTS

Rankings get headlines, but often mislead By J. D. Singer and H. I. Braun



6 APRIL 2018 • VOLUME 360 • ISSUE 6384



Strained ring synthesizer

### **BOOKS ET AL.**

## 41 REVISITING A TRAGEDY AT GOMBE

Haunting clues suggest psychological distress preceded a researcher's 1969 death at Goodall's African research center By M. Stark-Rodenburg

# 42 2001, 50 YEARS LATER

A new book celebrates the making of the iconic space odyssey and its enigmatic director By J. P. Telotte

# RESEARCH

### IN BRIEF

44 From Science and other journals

## **RESEARCH ARTICLES**

### STRUCTURAL BIOLOGY

**47** Structure of the herpes simplex virus 1 capsid with associated tegument protein complexes X. Dai and Z. H. Zhou

RESEARCH ARTICLE SUMMARY; FOR FULL TEXT: dx.doi.org/10.1126/science.aao7298

48 Cryo-EM structure of a herpesvirus capsid at 3.1 Å S. Yuan et al.

RESEARCH ARTICLE SUMMARY; FOR FULL TEXT: dx.doi.org/10.1126/science.aao7283

▶ PERSPECTIVE P. 34

## **49 CELL BIOLOGY**

Triggered recruitment of ESCRT machinery promotes endolysosomal repair M. L. Skowyra et al.

RESEARCH ARTICLE SUMMARY; FOR FULL TEXT: dx.doi.org/10.1126/science.aar5078 ▶ PERSPECTIVE P. 33

# **50 NEUROSCIENCE**

CRMP2-binding compound, edonerpic maleate, accelerates motor function recovery from brain damage H. Abe et al.

▶ PERSPECTIVE P. 30

### **58 NITROGEN CYCLE**

Convergent evidence for widespread rock nitrogen sources in Earth's surface environment B. Z. Houlton et al.

### REPORTS

### **62 TOPOLOGICAL MATTER**

Observation of fractional Chern insulators in a van der Waals heterostructure E. M. Spanton et al.

▶ PERSPECTIVE P. 31

### **67 SOLAR CELLS**

Light-induced lattice expansion leads to high-efficiency perovskite solar cells H. Tsai et al.

# **71 BIOCATALYSIS**

Enzymatic construction of highly strained carbocycles K. Chen et al.

### 75 ORGANIC CHEMISTRY

Modular radical cross-coupling with sulfones enables access to sp3-rich (fluoro)alkylated scaffolds R. R. Merchant et al.

### 81 NEURODEVELOPMENT

Early emergence of cortical interneuron diversity in the mouse embryo D. Mi et al.

# PALEOANTHROPOLOGY

- 86 Environmental dynamics during the onset of the Middle Stone Age in eastern Africa R. Potts et al.
- 90 Long-distance stone transport and pigment use in the earliest Middle Stone Age A. S. Brooks et al.
- 95 Chronology of the Acheulean to Middle Stone Age transition in eastern Africa A. L. Deino et al.

### 99 STEM CELLS

Cell cycle heterogeneity directs the timing of neural stem cell activation from quiescence L. Otsuki and A. H. Brand

## 102 MOLECULAR BIOLOGY

Real-time imaging of DNA loop extrusion by condensin M. Ganji et al.

### 106 STEM CELLS

Hepatic thrombopoietin is required for bone marrow hematopoietic stem cell maintenance M. Decker et al.

### 111 ANCIENT GENOMES

Ancient genomes revisit the ancestry of domestic and Przewalski's horses C. Gaunitz et al.



### **DEPARTMENTS**

#### 9 EDITORIAL

Science for state legislatures By Mary E. Maxon and Bruce Alberts

## **122 WORKING LIFE**

No one is an island By Luke O'Loughlin

## ON THE COVER



Przewalski's horses, represented by this mare and foal from Orenburg Reserve, Russia, are a distinct and endangered lineage previously thought to have purely wild origins. Archaeological

and ancient genomic evidence now reveals that the earliest domesticated horses found in the Botai culture, Kazakhstan (5500 years ago), are likely the direct ancestors of Przewalski's horses rather than modern domestic stock. See page 111. Photo: Natalia Sudets

Science Staff	8
New Products	115
Science Careers	116