

CONTENTS

4 August 2011 / Vol 476 / Issue No 7358

THIS WEEK

EDITORIALS

5 CHINA

Staying at home

China's bid to keep its talent could make it a major scientific force

5 REGENERATIVE MEDICINE

Safe, not secure

Legal victory for US stem-cell research will not end uncertainty for the field

WORLD VIEW

7 We thought trouble was coming

Chris Funk

The droughts behind the East African famine were predicted a year ago

RESEARCH HIGHLIGHTS

8 SELECTIONS FROM THE SCIENTIFIC LITERATURE

Chimp brains are for life / Trilobite lifestyle / Rapid HIV test / Butterfly effect for nanostructures / Iron nanoparticles in drug delivery

SEVEN DAYS



10 THE NEWS IN BRIEF

ALMA telescope opens fresh window on the Universe / UK backs primate research / Obama revises fuel economy standards / Court win for Myriad Genetics

CAREERS

115 INTERDISCIPLINARY STUDIES

Seeking the right toolkit

Straddling disciplines can lead to good science — but can limit job options

117 COLUMN

Scientists for sale

Mariano A Loza-Coll

A job-seeking scientist needs to know the market

NEWS IN FOCUS



13 PLANETARY SCIENCE

Juno mission set to probe how Jupiter formed

14 REGENERATIVE MEDICINE

Washington judge rules in favour of federal funding for human embryonic stem-cell research

16 ENVIRONMENT

Suspension of government scientist puts focus on polar bear deaths

17 POLICY

NIH retreats on funding transparency

18 PUBLISHING

Google and Microsoft open free routes to science metrics

19 CONSERVATION

Search for genes may help save Mexican oasis

FEATURES

20 BIOLOGY

Out on a limb

Does the existence of giant viruses mean the tree of life must be rewritten?

CHINA

Growth factor

Mu-ming Poo is nurturing China's ambitions for neuroscience **PAGE 22**



COMMENT



COMPUTING

Hard to find

Oren Etzioni asks some searching questions about the Internet **PAGE 25**

27 ETHICS

Growth of genome screening needs debate

David B Goldstein

BOOKS & ARTS

29 EVOLUTION

Not so selfish

Peter Richerson

30 ASTROBIOLOGY

Life's beginnings

Robert Shapiro

31 BOOKS IN BRIEF

32 CONSERVATION

How art is saving the West

Anthony King



CORRESPONDENCE

33 Learning from the German *E. coli* outbreak / Insuring against climate change / Scientists need to manage / China's need for potash

FUTURES

120+ Ted Agonistes

Rahul Kanakia

CONTENTS

4 August 2011 / Vol 476 / Issue No 7358

RESEARCH

NEW ONLINE

35 Papers published this week at nature.com

NEWS & VIEWS

36 PLANETARY SCIENCE

Making mountains out of a moon

Lunar companion as the origin of the Moon's farside highlands

Maria T Zuber [SEE LETTER P.69](#)

37 HIGH-TEMPERATURE SUPERCONDUCTIVITY

The great quantum conundrum

Insights into high-temperature superconductivity

Paul Michael Grant [SEE LETTER P.73](#)

39 ANTHROPOLOGY

Shades of the savannah

Nature of habitats occupied by early hominins

Craig S Feibel [SEE ARTICLE P.51](#)

40 NEUROSCIENCE

Heat-thirsty bats

The TRPV1 ion channel and thermosensation in vampire bats

M Brock Fenton [SEE LETTER P.88](#)

41 OCEANOGRAPHY

Forecasting the rain ratio

How coccolithophore algae respond to ocean acidification

David A Hutchins [SEE LETTER P.80](#)

REVIEW

43 CLIMATE SCIENCE Non-CO₂ greenhouse gases and climate change

S A Montzka, E J Dlugokencky & J H Butler

ZOOLOGY

Shaping up

The looping pattern of the gut is determined by physical forces. [PAGE 57](#)



ON THE COVER

Seeing red

The vampire bat (*Desmodus rotundus*) has a highly specialized facial structure called the pit organ that detects infrared radiation — and warm blood — using a variant of the TRPA1 ion channel. [PAGES 40 & 80](#)

ARTICLES

51 ANTHROPOLOGY Woody cover and hominin environments in the past 6 million years

T E Cerling et al. [SEE N&V P.39](#)

57 ZOOLOGY On the growth and form of the gut

T Savin et al.

63 DEVELOPMENTAL BIOLOGY A critical role for TCF-1 in T-lineage specification and differentiation

B N Weber et al.

LETTERS

69 PLANETARY SCIENCE Forming the lunar farside highlands by accretion of a companion moon

M Jutzi & E Asphaug [SEE N&V P.36](#)

73 PHYSICS Link between spin fluctuations and electron pairing in copper oxide superconductors

K Jin, N P Butch, K Kirshenbaum, J Paglione & R L Greene [SEE N&V P.37](#)

76 PHYSICS Decoherence in crystals of quantum molecular magnets

S Takahashi et al.

80 MICROBIOLOGY Sensitivity of coccolithophores to carbonate chemistry and ocean acidification

L Beaufort et al. [SEE N&V P.41](#)

84 ECOLOGY Excess digestive capacity in

predators reflects a life of feast and famine

J B Armstrong & D E Schindler

88 NEUROBIOLOGY Ganglion-specific splicing of TRPV1 underlies infrared sensation in vampire bats

E O Gracheva et al. [SEE N&V P.40](#)

92 NEUROSCIENCE Photoentrainment and pupillary light reflex are mediated by distinct populations of ipRGCs

S-K Chen, T C Badea & S Hattar

96 IMMUNOLOGY HIV-1 adaptation to NK-cell-mediated immune pressure

G Alter et al.

101 DEVELOPMENTAL BIOLOGY DMRT1 prevents female reprogramming in the postnatal mammalian testis

C K Matson et al.

105 MOLECULAR BIOLOGY A Polycomb-based switch underlying quantitative epigenetic memory

A Angel, J Song, C Dean & M Howard

109 STRUCTURAL BIOLOGY Mitochondrial uncoupling protein 2 structure determined by NMR molecular fragment searching

M J Berardi, W M Shih, S C Harrison & J J Chou

114 ADDENDUM A strong ferroelectric ferromagnet created by means of spin-lattice coupling

J H Lee et al.

114 ERRATUM The Lkb1 metabolic sensor maintains haematopoietic stem cell survival

S Gurumurthy et al.

PLANETARY SCIENCE

Small bang

Did collision with a second Moon create lunar highlands? [PAGES 36 & 69](#)

