

CONTENTS

13 January 2011 / Vol 469 / Issue No 7329

THIS WEEK

EDITORIALS

131 CONSERVATION

Think big

US focus on landscapes offers park managers lesson in how to cope with climate change

131 SCIENCE FUNDING

Different strokes

Romania's renaissance stands in stark contrast to the outlook for Bulgarian science and education

132 NEUROSCIENCE

First do no harm

Much-needed aids to diagnose mental illnesses must be properly tested before they reach the clinic

WORLD VIEW



133 University cuts show science is far from saved

Colin Macilwain

Maintaining research spending is futile if the supporting infrastructure fails

RESEARCH HIGHLIGHTS

134 SELECTIONS FROM THE SCIENTIFIC LITERATURE

Malaria parasites watch the clock / Unintended consequences of species introduction / Making layered graphene / An early start for butterflies

SEVEN DAYS

136 THE NEWS IN BRIEF

Record rise for food prices / Where biology and physics meet / Australian reefs under threat from floods / Third stem-cell trial gets green light / First data from Planck spacecraft

CAREERS

255 EQUALITY

The fight for access

A disability need not be an impediment to a career in science

257 TURNING POINT

William Ja on how fruitfly genetics is informing age research

NEWS IN FOCUS

139 ETHICS

Report reveals errors in handling of cancer trials at Duke University

141 HIGH-ENERGY PHYSICS

US pulls the plug on the Tevatron



142 RESEARCH POLICY

Contrasting approaches to spending on science in Bulgaria and Romania

143 PLANETARY SCIENCE

Kepler telescope delivers glimpse of a rocky 'super-Earth' exoplanet

144 AGRICULTURE

Drought-tolerant maize makes its debut in US fields

145 ENVIRONMENTAL SCIENCE

Call for an end to north-south divide in polar research

146 CONSERVATION

Confusion reigns over how to design marine protected areas

FEATURES

148 NEUROSCIENCE

Thought experiment

Can near-infrared spectroscopy diagnose mental illness?

CONSERVATION BIOLOGY

Hot spot

Coping with climate change at Yellowstone **PAGE 150**



COMMENT

153 HAITI EARTHQUAKE

Corruption kills

Nicholas Ambraseys & Roger Bilham

156 MEDICINE

Bring on the biomarkers

George Poste

BOOKS & ARTS

NEUROSCIENCE

Brain food

A New York exhibition makes Josie Glausiusz think **PAGE 161**



158 OCEANS

The blue frontier

Clive Schofield

159 BOOKS IN BRIEF

160 NEUROSCIENCE

Knowing and feeling

Owen Flanagan



CORRESPONDENCE

162 The importance of survey data / An economic role for universities / Clean in Hungary / Communicating science

FUTURES

260 The perfect egg

Tania Herschman

CONTENTS

13 January 2011 / Vol 469 / Issue No 7329

RESEARCH

NEW ONLINE

163 Papers published this week at nature.com

NEWS & VIEWS

164 ANIMAL BEHAVIOUR

The price tag

Flipper bands on penguins have harmful effects

Rory P Wilson [SEE LETTER P.203](#)

165 PARTICLE PHYSICS

Beyond Feynman's diagrams

Mathematical innovation advances quantum field theory

Neil Turok

166 STRUCTURAL BIOLOGY

Finding the wet spots

Protein–water interactions revealed

Vincent J Hilser

167 CONDENSED-MATTER PHYSICS

The conducting face of an insulator

Insulator cleavage produces a conducting surface

Elbio Dagotto [SEE LETTER P.189](#)

169 CONSERVATION

The trouble with bumblebees

Populations of some North American bumblebees have collapsed

Mark J F Brown

170 EARTH SCIENCE

A back-arc in time

A fresh view of events at a back-arc spreading centre

Peter Michael [SEE LETTER P.198](#)

171 SYNTHETIC BIOLOGY

Division of logic labour

Multicellular approaches are a promising way to construct logic circuits

Bochong Li & Lingchong You

[SEE LETTERS P.207 & P.212](#)

172 CELL SIGNALLING

Binding the receptor at both ends

Insight into the activation of G protein-coupled receptors

Stephen R Sprang [SEE ARTICLE P.175 & LETTERS P.236 & P.241](#)

ARTICLE

175 **STRUCTURAL BIOLOGY** Structure of a nanobody-stabilized active state of the β_2 adrenoceptor

S G F Rasmussen et al. [SEE N&V P.172](#)



ON THE COVER

On the wing

King penguins on Possession Island, Crozet Archipelago, March 2009. A 10-year study suggests that flipper-banding, widely used to monitor penguins in the wild, reduces both their survival and breeding success, and also affects their response to climate variability. [PAGES 164 & 203](#)

LETTERS

181 **ASTRONOMY** A distortion of very-high-redshift galaxy number counts by gravitational lensing

J S B Wyithe, H Yan, R A Windhorst & S Mao

185 **PHYSICS** Local charge of the $\nu=5/2$ fractional quantum Hall state

V Venkatachalam et al.

189 **MATERIALS SCIENCE** Two-dimensional electron gas with universal subbands at the surface of SrTiO₃

A F Santander-Syro et al. [SEE N&V P.167](#)

194 **MATERIALS SCIENCE** Nanoscale chemical tomography of buried organic–inorganic interfaces in the chiton tooth

L M Gordon & D Joester

198 **GEOPHYSICS** Contrasting crustal production and rapid mantle transitions beneath back-arc ridges

R A Dunn & F Martinez [SEE N&V P.170](#)

203 **ECOLOGY** Reliability of flipper-banded penguins as indicators of climate change

C Saraux et al. [SEE N&V P.164](#)

207 **SYNTHETIC BIOLOGY** Distributed biological computation with multicellular engineered networks

S Regot et al. [SEE N&V P.171](#)

212 **SYNTHETIC BIOLOGY** Robust multicellular

computing using genetically encoded NOR gates and chemical 'wires'

A Tamsir, J J Tabor & C A Voigt [SEE N&V P.17](#)

216 **GENETICS** Integrative genomics identifies *LMO1* as a neuroblastoma oncogene

K Wang et al.

221 **BIOCHEMISTRY** A role for mitochondria in NLRP3 inflammasome activation

R Zhou, A S Yazdi, P Menu & J Tschoop

226 **CELL BIOLOGY** Hydrostatic pressure and the actomyosin cortex drive mitotic cell rounding

M P Stewart et al.

231 **CELL BIOLOGY** c-Jun N-terminal phosphorylation antagonises recruitment of the Mbd3/NuRD repressor complex

C Aguilera et al.

236 **STRUCTURAL BIOLOGY** Structure and function of an irreversible agonist- β_2 adrenoceptor complex

D M Rosenbaum et al. [SEE N&V P.172](#)

241 **STRUCTURAL BIOLOGY** The structural basis for agonist and partial agonist action on a β_1 -adrenergic receptor

T Warne et al. [SEE N&V P.172](#)

245 **MOLECULAR BIOLOGY** H2AX prevents CtIP-mediated DNA end resection and aberrant repair in G1-phase lymphocytes

B A Helmink et al.

250 **MOLECULAR BIOLOGY** ATM damage response and XLF repair factor are functionally redundant in joining DNA breaks

S Zha et al.

CELL BIOLOGY

Come round

Actomyosin and osmolarity combine to shape cells during division. [PAGE 226](#)

