CONTENTS

9 October 2014 / Vol 514 / Issue No 7521

THIS WEEK

EDITORIALS

139 INFECTIOUS DISEASES

Out of Africa

First Ebola cases outside Africa highlight consequences of slow control

139 PUBLISHING

A little knowledge

Policy-makers need to decide how to deal with unpublished knowledge

140 CLIMATE CHANGE

Holy cows

Arctic walruses struggle to cope with vanishing ice

WORLD VIEW

141 A call to those who care about Europe's science

Amaya Moro-Martin

Europe's new research commissioner needs to fight the funding-cuts trend



RESEARCH HIGHLIGHTS

142 SELECTIONS FROM THE SCIENTIFIC LITERATURE

Genetics and height / Oceans getting warmer / Fluid-based sensors / Living with ants / NIH grants reviews raise hackles / Curiosity boosts learning / Mid-depth quake risk

SEVEN DAYS

144 THE NEWS IN BRIEF

Italy declines to support stem-cell therapy / Imperial College cleared / Nobel prizes announced / First carbon-capture plant launched

CAREERS

263 FAMILY

Community care

Many researchers balance full-time research with care of elderly relatives

NATUREJOBS ADVERTISING FEATURE

Spotlight on the University of Tsukuba

NEWS IN FOCUS



147 GREENLAND

Telescope plans for Summit Station trigger rethink of site

148 POLICY

Australian scientists lash back at government cuts

150 PHYSICS

Metrologists look for ways to pin down gravitational constant

151 NEUROSCIENCE

Japan launches brain project that makes use of transgenic marmosets

152 NOBEL PRIZE

Blue light-emitting diodes win physics accolade

153 NORFI PRIZE

Brain's global positioning system scoops physiology award

FEATURES

NEUROSCIENCE

On the grid

Nobel prizewinners worked together on brain navigation for 30 years PAGE 154



158. PARTICLE PHYSICS

The big reboot

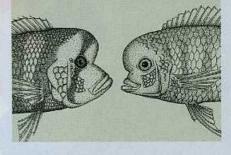
Physicists prepare for restart of Large Hadron Collider

COMMENT

POINT/COUNTERPOINT

Evolution rethink

Some biologists consider standard evolutionary theory inadequate, others think it is doing just fine PAGE 161



BOOKS & ARTS

166 PUBLIC HEALTH

The malaria wars Robert Seder

167 GERONTOLOGY

Ageing more gracefully Linda Geddes

CORRESPONDENCE

168 Remote sensing for all / Renewable energy doesn't travel / All-renewable is a realistic goal / A Franck look at photosynthesis / Brazilian maths 1, Brazilian football 0

FUTURES

266 Useful objects Erika L Satifka



CONTENTS

9 October 2014 / Vol 514 / Issue No 7521

RESEARCH

NEW ONLINE

169 Papers published this week at nature.com

NEWS & VIEWS

170 ARCHAEOLOGY
Art on the move
Indonesian cave paintings dated to
39,000 years ago
Wil Roebroeks SEE LETTER P.223

171 ULTRALUMINOUS X-RAY SOURCES
Small field with a large impact
The nature of ultraluminous X-ray
astronomical sources
Jeanette C Gladstone
SEE LETTERS P.198 & P.202

173 STRUCTURAL BIOLOGY

Lariat lessons

Crystal structure of a group II intron

Robert T Batey SEE ARTICLE P.193

174 PARTICLE PHYSICS
The mass of a top
Most-precise single measurement of
the mass of the top quark
Peter Skands

176 HEALTH
The weighty costs of
non-caloric sweeteners
Sugar substitutes alter gut microbiota
and induce metabolic changes
Taylor Feehley & Cathryn R Nagler
SEE ARTICLE P.181

177 MATERIALS ANALYSIS
Good vibrations
Electron monochromators for scanning transmission electron microscopy
Rik Brydson SEE LETTER P.209

178 ANIMAL BEHAVIOUR
Incipient tradition in wild
chimpanzees
Tracking tool-use adoption along a
chimp social network
Andrew Whiten

ARTICLES

181 MICROBIOME Artificial sweeteners induce glucose intolerance by altering the gut microbiota

J Suez et al. SEE N&V P.176

187 IMMUNOLOGY Inflammatory caspases are innate immune receptors for intracellular LPS

J Shi et al.



ON THE COVER

Origins of art

A representation of an anoa — a type of dwarf buffalo — and human hand stencils from a cave in Sulawesi, Indonesia. Figurative art of this type was present at opposite ends of the late Pleistocene world, not just in western Europe. Was cave painting practised by the first Homo sapiens to leave Africa tens of thousands of years earlier? PAGES 170 & 223

193 STRUCTURAL BIOLOGY Crystal structure of a eukaryotic group II intron lariat A R Robart, R T Chan, J K Peters, K R Rajashankar & N Toor SEE N&V P.173

LETTERS

198 ASTROPHYSICS A mass of less than 15 solar masses for the black hole in an ultraluminous X-ray source C Motch, M W Pakull, R Soria, F Grisé & G Pietrzyński SEE N&V P.171

202 ASTROPHYSICS An ultraluminous X-ray source powered by an accreting neutron star M Bachetti et al. SEE N&V P.171

205 CONDENSED-MATTER PHYSICS Large, nonsaturating magnetoresistance in WTe₂ M N Ali et al.

209 MICROSCOPY Vibrational spectroscopy in the electron microscope O L Krivanek et al. SEE N&V P.177

213 CLIMATE SCIENCES Global covariation of carbon turnover times with climate in terrestrial ecosystems N Carvalhais et al.

218 ATMOSPHERIC CHEMISTRY High

secondary aerosol contribution to particulate pollution during haze events in China R-J Huang et al.

223 ARCHAEOLOGY Pleistocene cave art from Sulawesi, Indonesia M Aubert et al. SEE N&V P.170

228 CANCER Inappropriate p53 activation during development induces features of CHARGE syndrome

J L Van Nostrand et al.

233 STEM CELLS Protein competition switches the function of COP9 from self-renewal to differentiation L Pan et al.

237 IMMUNOLOGY Interleukin-22 alleviates metabolic disorders and restores mucosal immunity in diabetes X Wang et al.

242 HAEMATOLOGICAL DISEASES HSP70 sequestration by free α-globin promotes ineffective erythropoiesis in β-thalassaemia

J-B Arlet et al.

247 CANCER PRC2 loss amplifies Rasdriven transcription and confers sensitivity to BRD4-based therapies T De Raedt et al.

252 STRUCTURAL BIOLOGY Mechanism of Dis312 substrate recognition in the Lin28-let-7 pathway C R Faehnle, J Walleshauser & L Joshua-Tor

257 MOLECULAR BIOLOGY Required enhancer-matrin-3 network interactions for a homeodomain transcription program D Skowronska-Krawczyk et al.

262 CORRIGENDUM A global strategy for road building WF Laurance et al.

262 CORRIGENDUM Comprehensive molecular profiling of lung adenocarcinoma The Cancer Genome Atlas Research Network

262 ERRATUM Haematopoietic stem cells and early lymphoid progenitors occupy distinct bone marrow niches L Ding & S J Morrison