THE INTERNATIONAL WELKLY JOURNAL OF SCIENCE

ATOMTRONICS REVISITED Electronics-style hysteresis in an ultracold quantum gas PAGES 166 & 200

STATISTICS

PROBABILITY PROBLEMS

Why P values must be handled with care PAGE 150

COSMOLOGY

WHAT'S THE

A new take on the standard model **PAGE 171**

ANTHROPOLOGY

GENES OF AMERICA

Clovis genome maps Native American ancestry PAGES 162 & 225

→ NATURE.COM/NATURE

13 February 2014 £10

Vol. 506, No. 7487



CONTENTS

13 February 2014 / Vol 506 / Issue No 7487

THIS WEEK

EDITORIALS

131 PUBLIC HEALTH

Suicide watch

A greater emphasis needs to be put on work to understand and prevent suicide

131 STATISTICS

Number crunch

Researchers must do more to ensure their results are really relevant

132 ECOLOGY

Lone wolves

Human hands can shape ecology for good and ill



WORLD VIEW

133 Science at the sharp end of oppressive politics Andreas Kreiter How animal-rights extremists derailed a neuroscientist's research

RESEARCH HIGHLIGHTS

134 SELECTIONS FROM THE SCIENTIFIC LITERATURE

Gene editor / Pesticide hits pollen collection / Fish school hydrodynamics / The urban idyll / A nose for food / High-speed glacier

SEVEN DAYS

136 THE NEWS IN BRIEF

UK commits to reducing animal experiments / US sets up climate hubs / UK universities face funding cuts / Drug firms to share data with NIH

CAREERS

255 WEB DESIGN

Webcraft 101

There's no excuse these days for a lab website that doesn't look the part

257 COLUMN

Self-taught skills

Alexandra Lucs

How the Lean In online tool inspired a group of young researchers to hone their interpersonal skills

NEWS IN FOCUS

139 EMERGENCY RESPONSE

UK rolls out training programme to cope with bioterror attacks

140 ECOLOGY

Biologists rally to save wolf population in iconic island study



142 ANTHROPOLOGY

Clovis genome rekindles debate over ethical handling of remains

143 PHARMACEUTICALS

NIH researchers make cautious return to clinical trials in India

144 HEALTH CARE

US launches project to test power of personalized medicine

FEATURES

146 MEDICATION

The smart-pill oversell

Drugs used to treat attention deficit hyperactivity disorder may not offer long-term benefits



SCIENTIFIC METHOD

Statistical errors

The very real problem with P values PAGE 150

COMMENT

153 CARBON SEQUESTRATION

Managing forests in uncertain times Valentin Bellassen & Sebastiaan Luyssaert A cautionary approach to forestry and climate can buy time while we learn more about the carbon cycle

BOOKS & ARTS

ENVIRONMENTAL SCIENCES

The long goodbye

Bob Bloomfield looks at the slow decline of Earth's biodiversity PAGE 156



157 BOOKS IN BRIEF

158 Q&A

Acoustic archaeologist

There's more to Stonehenge than a Spinal Tap track — ask Rupert Till

CORRESPONDENCE

159 European ecosystem plan is lacking / Campus violence / We need leaders / Portuguese research base failing / Lab notes online



FUTURES 260 Howard loves Polly Martin Hayes

CONTENTS

13 February 2014 / Vol 506 / Issue No 7487

RESEARCH

NEW ONLINE

161 Papers published this week at nature.com

NEWS & VIEWS

162 PALAEOGENOMICS

Genetic roots of the first Americans Population-history insights from a Clovis genome Jennifer A Raff & Deborah A Bolnick

SEE LETTER P.225

163 COSMOLOGY

Cool start to hydrogen ionization New simulations of the cosmic epoch of reionization

Judd D Bowman SEE LETTER P.197

165 REMOTE SENSING

A green illusion

Amazon green-up in the dry season is an optical artefact Kamel Soudani & Christophe François SEE LETTER P.221

166 CONDENSED-MATTER PHYSICS

History matters for a stirred superfluid

Hysteresis in the superfluid flow of a Bose–Einstein condensate Matthew J Davis & Kristian Helmerson SEE LETTER P.200

167 CONSERVATION

Making marine protected areas work

Five factors needed for optimum conservation benefits

Benjamin S Halpern SEE LETTER P.216

168 OCEAN SCIENCE

Eddy effects on biogeochemistryDetailed studies of mesoscale ocean



Models suggest the Amazon 'green

up' was a trick of the light. PAGE 221

ON THE COVER

Atomtronics

This impression of hysteresis in a quantized superfluid atomtronic circuit features an image of a trapped ring-shaped Bose–Einstein condensate (BEC). Hysteresis is reported between quantized circulation states in a BEC ring obstructed by a rotating weak link. This bodes well for atomtronics, where ultracold atoms act like the electrons in electronics. PAGES 166 & 200

eddies off the coast of Peru Amala Mahadevan

REVIEW

171 COSMOLOGY Cold dark matter heats up A Pontzen & F Governato

ARTICLES

- 179 NEUROSCIENCE De novo mutations in schizophrenia implicate synaptic networks M Fromer et al.
- 185 NEUROSCIENCE A polygenic burden of rare disruptive mutations in schizophrenia S M Purcell et al.
- 191 DRUG DISCOVERY Molecular control of δ-opioid receptor signalling G Fenalti et al.

LETTERS

197 COSMOLOGY The observable signature of late heating of the Universe during cosmic reionization

A Fialkov, R Barkana & E Visbal SEE N&V P.163

200 ULTRACOLD GASES Hysteresis in a quantized superfluid 'atomtronic' circuit S Eckel et al. SEE N&V P.166

204 QUANTUM PHYSICS Quantum error correction in a solid-state hybrid spin register

G Waldherr et al.

208 MATERIALS SCIENCE Mosaic

two-lengthscale quasicrystals T Dotera, T Oshiro & P Ziherl

- 212 CLIMATE SCIENCE A two-fold increase of carbon cycle sensitivity to tropical temperature variations

 X Wang et al.
- 216 CONSERVATION Global conservation outcomes depend on marine protected areas with five key features G J Edgar et al. SEE N&V P.167
- 221 ECOLOGY Amazon forests maintain consistent canopy structure and greenness during the dry season D C Morton et al. SEE N&V P.165
- 225 PALAEOGENOMICS The genome of a
 Late Pleistocene human from a Clovis
 burial site in western Montana
 M Rasmussen et al. SEE N&V P.162
- 230 NEUROSCIENCE Intranasal epidermal growth factor treatment rescues neonatal brain injury

 J Scafidi et al.
- 235 STEM CELLS C/EBPα poises B cells for rapid reprogramming into induced pluripotent stem cells B Di Stefano et al.
- 240 CANCER Leukaemogenesis induced by an activating β-catenin mutation in osteoblasts A Kode et al.
- 245 IMMUNOLOGY RNA viruses can hijack vertebrate microRNAs to suppressinnate immunity D W Trobaugh et al.
- 249 BIOCHEMISTRY RecA bundles mediate homology pairing between distant sisters during DNA break repair C Lesterlin, G Ball, L Schermelleh & D J Sherratt
- 254 CORRIGENDUM IGFBP-4 is an inhibitor of canonical Wnt signalling required for cardiogenesis

 W Zhu et al.
- 254 ERRATUM Commensal microbe-derived butyrate induces the differentiation of colonic regulatory T cells Y Furusawa et al.
- 254 CORRIGENDUM The architecture of Tetrahymena telomerase holoenzyme J Jiang et al.