

CONTENTS

14 July 2016 / Vol 535 / Issue No 7611

THIS WEEK

EDITORIALS

199 GM CROPS

Closing the label door

The US needs to get to grips with more than just labelling in the GM debate

199 MUSIC

Lend me your ears

Music strikes the right note in different ways for different cultures

200 MEDICAL RESEARCH

Fifty shades of pain

Inflicting hurt is a lot easier than measuring it

WORLD VIEW

201 Watch out for cheats in citation game

Mario Biagioli

A focus on impact means the publication record is open to abuse

RESEARCH HIGHLIGHTS

202 SELECTIONS FROM THE SCIENTIFIC LITERATURE



One planet, three suns / Arctic ice blowing in the wind / Synthetic vaccine / Fish-like robot / Tool use by capuchin monkeys

SEVEN DAYS

204 THE NEWS IN BRIEF

Mangrove die-off linked to climate change / Dwarf planet found past Neptune / Brexit woes continue / Wellcome Trust launches open-access publishing venture

CAREERS

313 GLOBAL JOBS

A taste for travel

Many scientists move abroad to pursue a career; here are a few dos and don'ts

315 CAREER BRIEFS

NEWS IN FOCUS



207 RESEARCH AND SOCIETY

Political turmoil puts South Africa's universities in jeopardy

208 METEOROLOGY

US satellite data under threat from mobile-phone interference

209 NEUROSCIENCE

Data from brain project could help reveal how neurons compute

210 BIBLIOMETRICS

Journal impact factors come under fire from science publishers

212 RESEARCH COMMUNITY

Men tend to cite their own research more than women do

212 RENEWABLE ENERGY

Germany seeks to predict energy demand for green power

FEATURES



AIDS

A new era for HIV

South Africa's huge treatment programme offers a chance to explore the effects of antiretroviral drugs

PAGE 214

218 PALAEOLOGY

The forgotten continent

How China is quietly rewriting the book on human evolution

COMMENT



POLICY

Economic sense

Five ways bio-industry can help meet the sustainable-development goals, say Beate El-Chichakli, Joachim von Braun, Christine Lang, Daniel Barben & Jim Philp [PAGE 221](#)

224 POLICY

Marine biodiversity needs more than protection

Ray Hilborn

Advocates of protected areas and fisheries managers must work together

BOOKS & ARTS

228 HOLIDAY READING

Summer books

Nature's regular reviewers share their getaway picks

CORRESPONDENCE

231 Plea for release of Imad Ahmad Barghouthi / Fighting fire / Science for Africa / Ecosystem restoration / Chinese river clean-up

OBITUARY

232 Jerome Bruner (1915–2016)

Patricia Marks Greenfield

FUTURES

318 The Department of Correction

Ninan Tan



CONTENTS

14 July 2016 / Vol 535 / Issue No 7611

RESEARCH

NEW ONLINE

- 233 Papers published AOP this week at nature.com

NEWS & VIEWS

234 CELL DIVISION

A sticky problem for chromosomes

The protein Ki-67 separates chromosomes during mitosis

Clifford P Brangwynne & John F Marko

SEE LETTERS P.308

235 MATERIALS SCIENCE

Magnetic nanoparticles line up

A method for making magnetic chains, inspired by bacteria

Damien Faivre & Mathieu Bennet

236 PHENOLOGY

Interactions of climate change and species

Phenology has shifted at unequal rates in different trophic groups

Marcel E Visser

SEE ARTICLE P.241

237 ASTROPHYSICS

Variable snow lines affect planet formation

Observation of the water snow line around a protostar

Brenda Matthews

SEE LETTER P.258

238 METROLOGY

Schrödinger's cat beats a quantum limit

Quantum superposition can boost the sensitivity of electrometers

Charles S Adams

SEE LETTER P.262

ARTICLES

241 CLIMATE-CHANGE ECOLOGY Phenological sensitivity to climate across taxa and trophic levels

S J Thackeray et al. SEE N&V P.236

246 CANCER Multiple mechanisms disrupt the let-7 microRNA family in neuroblastoma

J T Powers et al.

252 DRUG DISCOVERY A novel cereblon modulator recruits GSPT1 to the CRL4^{CRBN} ubiquitin ligase

M E Matyskiela et al.

ON THE COVER

Graphene 3D

The cover illustrates parallel self-assembly of three ribbons from a single-layer graphene sheet. James Annett and Graham Cross describe a system in which single-layer graphene can spontaneously reorganize itself into a three-dimensional architecture through a process of folding, sliding and tearing. **PAGE 271**



LETTERS

258 PLANETARY SCIENCE Imaging the water snow-line during a protostellar outburst

L A Cieza et al. SEE N&V P.237

262 QUANTUM METROLOGY A sensitive electrometer based on a Rydberg atom in a Schrödinger-cat state

A Facon et al. SEE N&V P.238

266 CONDENSED-MATTER PHYSICS Transport evidence for Fermi-arc-mediated chirality transfer in the Dirac semimetal Cd₃As₂

P J W Moll et al.

271 NANOSCALE MATERIALS Self-assembly of graphene ribbons by spontaneous self-tearing and peeling from a substrate

J Annett & G L W Cross

276 GEOPHYSICS Mid-ocean ridge seismicity reveals extreme types of ocean lithosphere

V Schindwein & F Schmid

280 DEVELOPMENTAL NEUROGENESIS

Molecular logic behind the three-way stochastic choices that expand butterfly colour vision

M Perry et al.

285 COGNITIVE NEUROSCIENCE Dissociated functional significance of decision-related activity in the primate dorsal stream

L N Katz, J L Yates, J W Pillow & A C Huk

289 DEVELOPMENTAL BIOLOGY Resolving early mesoderm diversification through single-cell expression profiling

A Scialdone et al.

294 DEVELOPMENTAL BIOLOGY Cloche is a bHLH-PAS transcription factor that drives haemato-vascular specification

S Reischauer et al.

299 STEM CELLS Early myeloid lineage choice is not initiated by random PU.1 to GATA1 protein ratios

P S Hoppe et al.

303 MOLECULAR BIOLOGY TTC39B deficiency stabilizes LXR reducing both atherosclerosis and steatohepatitis

J Hsieh et al.

308 CELL BIOLOGY Ki-67 acts as a biological surfactant to disperse mitotic chromosomes

S Cuylen et al. SEE N&V P.234



DEVELOPMENTAL NEUROGENESIS

Colour coded

Colour vision in butterflies involves three unitary eye types that combine to give added diversity of developmental outcomes. **PAGE 280**

DOMINIC MALONE