

CONTENTS

3 November 2011 / Vol 479 / Issue No 7371

THE AUTISM ENIGMA



nature.com/autism

EDITORIAL

- 5 The mind's tangled web**
Efforts to understand the role of environment and genes in autism have made progress, but more still needs to be done

FEATURES

- 21 The autism enigma**
Misinformation and half-truths muddy the world of autism: *Nature* separates the fact from fiction
- 22 Autism counts**
More people are being diagnosed with autism — but assessing the true prevalence is far from easy

- 25 When geeks meet**
Are two technically minded people more likely to have a child with autism?

- 28 A voice for science**
Dismayed by the way the debunked link between vaccines and autism still attracts research funding, Alison Singer started a foundation to put science first

COMMENT

- 33 The power of autism**
Laurent Mottron
Autism can be an advantage in some settings — including science

THIS WEEK

EDITORIALS

- 5 ENVIRONMENT**
More in Montreal
The Montreal Protocol should extend to HFCs
- 6 PHYSICS**
Collision course
What if there is no Higgs boson?



WORLD VIEW

- 7 Science and the media must give a balanced view**
James Shelton
Reports on a link between HIV and contraception deserved closer scrutiny

RESEARCH HIGHLIGHTS

- 8 SELECTIONS FROM THE SCIENTIFIC LITERATURE**
Nuclear test sighted / Lung repair with stem cells / Filovirus in Europe / *Archaeopteryx*'s avian credentials / Scanner-induced vertigo

SEVEN DAYS

- 10 THE NEWS IN BRIEF**
Hudson volcano wakes up / UK cuts solar-power incentives / Royal Society opens up its archives / Inappropriate authorship dogs science papers

NEWS IN FOCUS

- 13 POLITICS**
Mississippi vote seeks rights for embryos
- 14 MENTAL HEALTH**
Row erupts over diagnostic handbook
- 15 MISCONDUCT**
Psychologist found to have faked results
- 16 SEISMOLOGY**
Drilling ship to examine Japan fault
- 17 GENOMICS**
Downturn hits sequencing firms
- 18 ASTRONOMY**
US mega-scopes face financial woes

CAREERS

- 139 LIFE SCIENCES**
Biomarkers on the brain
The hunt for diagnostic tools for neurodegenerative disease
- 141 COLUMN**
Time to tweet
Gaston Small
Scientists should embrace social media
- 141 CAREER BRIEFS**

NATUREJOBS ADVERTISING FEATURE

Spotlight on neuroscience

COMMENT

- 36 FORENSICS**
Improve statistics in court
Norman Fenton
Experts should agree standards for assessing probabilities in legal cases

BOOKS & ARTS

- 38 MATHEMATICS**
Alice in time
Gillian Beer
- 40 Q&A**
The outsider insider
Margaret Wertheim asks what drives physicists who work on the fringe



CORRESPONDENCE

- 41** Europe's stem-cell ruling raises concern / In support of Greek reforms / The much-debated history of Easter Island / Dengue fever in Pakistan

OBITUARY

- 42 Steve Jobs (1955–2011)**
Tim O'Reilly

FUTURES

- 144 Ovoids**
Deborah Walker

CONTENTS

3 November 2011 / Vol 479 / Issue No 7371

RESEARCH

NEW ONLINE

- 43 Papers published this week at nature.com

NEWS & VIEWS

- 44 **FORUM: SOCIETAL COLLAPSE**
Drought and the Maya
Drought was not the only cause of Maya decline
James Aimers & David Hodell
- 46 **NEUROSCIENCE**
Periodicity without rhythmicity
Grid-cell responses independent of theta-frequency rhythms
Laura Lee Colgin **SEE LETTER P.103**
- 47 **QUANTUM COMPUTING**
Diamond and silicon converge
Demonstration of spin qubits in silicon carbide
Andrew Dzurak **SEE LETTER P.84**
- 48 **IMMUNOLOGY**
A heavyweight knocked out
Role of caspase-11 in sepsis
Douglas R Green **SEE LETTER P.117**
- 50 **CLIMATE CHANGE**
Man-made cyclones
Anthropogenic air pollution and intense tropical cyclones
Ryan L. Sriver **SEE LETTER P.94**
- 51 **PALAEONTOLOGY**
Fresh light on southern early mammals
Discovery of a Mesozoic mammal from

South America
Christian de Muizon **SEE LETTER P.98**

REVIEW

- 53 **PLANETARY SCIENCES** Subsurface water and clay mineral formation during the early history of Mars
B L Ehlmann et al.

ARTICLES

- 61 **NEUROSCIENCE** Motor antagonism exposed by spatial segregation and timing of neurogenesis
M Tripodi, A E Stepien & S Arber
- 67 **NEUROSCIENCE** Melanopsin signalling in mammalian iris and retina
T Xue et al.
- 74 **MOLECULAR BIOLOGY** CTCF-promoted RNA polymerase II pausing links DNA methylation to splicing
S Shukla et al.

LETTERS

- 80 **ASTRONOMY** Mixed aromatic-aliphatic organic nanoparticles as carriers of unidentified infrared emission features
S Kwok & Y Zhang
- 84 **PHYSICS** Room temperature coherent control of defect spin qubits in silicon carbide
W F Koehl, B B Buckley, F J Heremans, G Calusine & D D Awschalom
SEE N&V P.47
- 88 **ORGANIC CHEMISTRY** Synthesis of macrocyclic natural products by catalyst-controlled stereoselective ring-closing metathesis
M Yu et al.
- 94 **CLIMATE SCIENCE** Arabian Sea tropical cyclones intensified by emissions of black carbon and other aerosols
A T Evan, J P Kossin, C E Chung & V Ramanathan **SEE N&V P.50**
- 98 **PALAEONTOLOGY** Highly specialized mammalian skulls from the Late Cretaceous of South America
G W Rougier, S Apesteguía & L C Gaetano **SEE N&V P.51**
- 103 **NEUROSCIENCE** Grid cells without theta oscillations in the entorhinal cortex of bats

M M Yartsev, M P Witter & N Ulanovsky
SEE N&V P.46

- 108 **NEUROSCIENCE** Feedback from rhodopsin controls rhodopsin exclusion in *Drosophila* photoreceptors
D Vasilaitis et al.
- 113 **NEUROSCIENCE** Verbal and non-verbal intelligence changes in the teenage brain
S Ramsden et al.
- 117 **IMMUNOLOGY** Non-canonical inflammasome activation targets caspase-11
N Kayagaki et al. **SEE N&V P.48**
- 122 **MEDICAL RESEARCH** Macrophage skewing by *Phd2* haploinsufficiency prevents ischaemia by inducing arteriogenesis
Y Takeda et al.
- 127 **MICROBIOLOGY** Molecular mechanism of anaerobic ammonium oxidation
B Kartal et al.
- 131 **STEM CELLS** Derivation of haploid embryonic stem cells from mouse embryos
M Leeb & A Wutz
- 135 **MOLECULAR BIOLOGY** RNAi promotes heterochromatic silencing through replication-coupled release of RNA Pol II
M Zaraty et al.

PLANETARY SCIENCES

Red tide

Warm waters run — or at least ran — deep on Mars. **PAGE 53**



EVOLUTION

Nut cracker

A South American mammal not unlike fiction's sabre-toothed squirrel. **PAGE 98**

