# CONTENTS ansithorit

9 May 2013 / Vol 497 / Issue No 7448

# for scientists.

# THIS WEEK

# **EDITORIALS**

157 FUNDING

Right to remain silent

The US should not put words in the mouths of those it funds

157 BIOFUELS

The cleaner state

California offers regulators positive lessons on renewable fuels

158 ANIMAL RESEARCH

Voice of Pro-Test

Scientists should be encouraged to defend animal research

# **WORLD VIEW**

159 China's citizens must act to save their environment

Qiang Wang

Public pressure is helping to tackle air pollution in Beijing and beyond



# RESEARCH HIGHLIGHTS

160 SELECTIONS FROM THE SCIENTIFIC LITERATURE

Activating the C-H bond / Written in glass / Volcanoes reclassified / Putting off Alzheimer's / Bees need honey / Archerfish on target

# **SEVEN DAYS**

162 THE NEWS IN BRIEF

Age limit lifted on emergency contraceptive / The toll of Somalia's famine / Coronavirus continues to spread

#### CAREERS

277 COLUMN

On my way to being a scientist

Thomas M Schofield

The career path for a research scientist can be winding — and rewarding

**278 CAREER BRIEFS** 

279 TURNING POINT

There's life in long-lost species and Ben Novak intends to prove it

NATUREJOBS ADVERTISING FEATURE

Spotlight on women in science

# NEWS IN FOCUS



### 165 NUCLEAR WEAPONS

US energy labs get cash boost to modify stockpiled weapons

167 OCEANOGRAPHY

Funding agencies ponder plan to monitor Atlantic currents

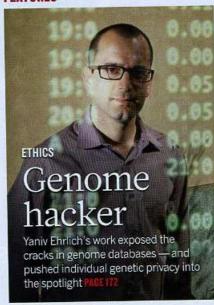
168 RESOURCES

Price hike spurs Russia and Qatar to develop new helium reserves

170 RESEARCH ETHICS

Questions raised over motion-capture data in Jamaican dance study

# **FEATURES**



# 176 PROSTHETICS

Once more, with feeling

The challenges of developing artificial limbs with a sense of touch

# COMMENT

179 POLICY

A call for peace on climate and conflict

Andrew R Solow

We need new ways to work on the link between climate and conflict

181 SUSTAINABLE MOBILITY

A vision of our transport future

Lawrence D Burns

It's time to reinvent the automobile — we already have the technology

183 PALAEONTOLOGY

Free digital scans of human fossils

Jean-Jacques Hublin

Open access to virtual palaeontology would transform evolutionary studies

# **BOOKS & ARTS**

184 PHILOSOPHY

Deepities, cranes and skyhooks Melvin Konner

185 BOOKS IN BRIEF

186 DATA

VISUALIZATION

Drawing out the meaning

meaning Felice Frankel

187 ARTS

Framing change Daniel Cressey



188 Tested on bees / Geoengineering safety/ Dangers of palm oil / Right on ncRNA



FUTURES 282 The front line Sylvia Spruck Wrigley

9 MAY 2013 | VOL 497 | NATURE | 153

# BD Honzon

# CONTENTS

9 May 2013 / Vol 497 / Issue No 7448

# RESEARCH

#### **NEW ONLINE**

189 Papers published this week at nature.com

# **NEWS & VIEWS**

190 FORUM: NUCLEAR PHYSICS

Exotic pear-shaped nuclei

What the shapes of atomic nuclei mean to nuclear and particle physicists CJ (Kim) Lister; Jonathan Butterworth SEE ARTICLE P.199

#### 191 GALAXY FORMATION

The cosmic web in focus

Discrete clouds of neutral hydrogen gas between Andromeda and Triangulum Robert Braun SEE LETTER P.224

193 STRUCTURAL BIOLOGY

Security measures of a master regulator

Crystal structure of the catalytically active mTOR kinase Dario R Alessi & Yogesh Kulathu SEE ARTICLE P.217

# 194 IMMUNOLOGY

Memory cells sound the alarm

Resident memory T cells secrete IFNy to recruit additional memory cells Jennifer E Smith-Garvin & Luis J Sigal

# 196 CELL BIOLOGY

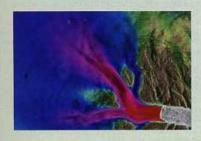
Death brings new life to muscle

Apoptotic myoblasts may aid muscle development, regeneration and repair Shannon F Yu & Mary K Baylies SEE LETTER P.263

CLIMATE SCIENCE

# On the level

A new model of Greenland ice loss lessens the sea level rise. PAGE 235





197 PHYSIOLOGY

Inflammation links ageing to the brain Hypothalamic NF-kB signalling and the regulation of systemic ageing Dana Gabuzda & Bruce A Yankner SEE ARTICLE P.211

# ARTICLES

- 199 PHYSICS Studies of pear-shaped nuclei using accelerated radioactive beams

  L P Gaffney et al. SEE N&V P.190
- 205 NEUROSCIENCE Hierarchy of orofacial rhythms revealed through whisking and breathing J D Moore et al.
- 211 AGEING Hypothalamic programming of systemic ageing involving IKK-β, NF-κB and GnRH

G Zhang et al. SEE N&V P.197

217 STRUCTURAL BIOLOGY mTOR kinase structure, mechanism and regulation H Yang et al. SEE N&V P.193

#### LETTERS

224 ASTRONOMY Discrete clouds of neutral gas between the galaxies M31 and M33 S A Wolfe, D J Pisano, F J Lockman, S S McGaugh & E J Shaya SEE N&V P.191

- 227 PHYSICS Bell violation using entangled photons without the fair-sampling assumption M Giustina et al.
- 231 PHYSICS Formation of a topological non-Fermi liquid in MnSi R Ritz et al.
- 235 CLIMATE SCIENCE Future sea-level rise from Greenland's main outlet glaciers in a warming climate FM Nick et al.
- 239 STEM CELLS M-CSF instructs myeloid lineage fate in single haematopoietic stem cells N Mossadegh-Keller et al.
- 244 MOLECULAR BIOLOGY A role for the Perlman syndrome exonuclease Dis312 in the Lin28-let-7 pathway H-M Chang, R Triboulet, J E Thornton & R I Gregory
- 249 CARDIOVASCULAR BIOLOGY Meis1 regulates postnatal cardiomyocyte cell cycle arrest A I Mahmoud et al.
- 254 BACTERIAL GENETICS A CRISPR/Cas system mediates bacterial innate immune evasion and virulence TR Sampson, SD Saroj, A C Llewellyn, Y-L Tzeng & D S Weiss
- 258 IMMUNOLOGY Thymus-derived regulatory T cells contribute to tolerance to commensal microbiota A Cebula et al.
- 263 CELL BIOLOGY Phosphatidylserine receptor BAI1 and apoptotic cells as new promoters of myoblast fusion A E Hochreiter-Hufford et al. SEE N&V P.196
- 268 STRUCTURAL BIOLOGY Crystal structure of a folate energy-coupling factor transporter from Lactobacillus brevis KXu et al.
- 272 STRUCTURAL BIOLOGY Structure of a bacterial energy-coupling factor transporter T Wang et al.