

# CONTENTS

25 November 2010 / Vol 468 / Issue No 7323

## THIS WEEK

### EDITORIALS

#### 475 PUBLIC HEALTH

##### The party's over

There's more to tackling alcohol abuse than caffeinated drinks

#### 475 PHARMACEUTICALS

##### Treated fairly?

Drug pricing needs to reflect the expense of continued research

#### 476 FOSSIL FUELS

##### Citizen scientists

Researchers must be prepared to speak out on environmental issues

### WORLD VIEW



#### 477 Copenhagen shows we need caution in Cancún

Yvo de Boer

Climate negotiators should give up the 2°C target

### RESEARCH HIGHLIGHTS

#### 478 SELECTIONS FROM THE SCIENTIFIC LITERATURE

Neanderthals old beyond their years / Zooplankton lookalikes / As new as the hills / Using microRNAs in gene therapy / Preemptive de-icing

### SEVEN DAYS

#### 480 THE NEWS IN BRIEF

Antarctic fishery certified as sustainable / North Korea's nuclear ambitions exposed / Canadian Senate throws out climate bill / Austrian institute wins reprieve / New drug for lupus nears the clinic

## CAREERS

#### 589 NANOTECHNOLOGY

##### Small science yields big growth

Nanoscience has catalysed a growth in job opportunities for materials scientists

#### 591 TURNING POINT

Mary Gehring on the attractions of plant biology and epigenetics

#### 591 CAREER BRIEFS

### NATUREJOBS ADVERTISING FEATURE

Spotlight on nanotechnology

## NEWS IN FOCUS

### PUBLIC HEALTH

## Cholera

Health workers struggle to contain escalating outbreak in Haiti **PAGE 483**



#### 485 STEM CELLS

Unproven stem-cell therapies prove hard to police

#### 486 PHYSICS

Graphene researchers question deliberations of 2010 Nobel committee

#### 487 PHARMACEUTICALS

Big companies cautious over prospects for RNA interference therapies

#### 488 ENVIRONMENT

Negotiators target achievable goals ahead of Cancún climate talks

#### 490 CANCER

Tumour cells' evasive tactics offer key to beating drug resistance

### FEATURES

#### 492 MICROBIOLOGY

##### The new germ theory

What can researchers studying human bowels learn from those studying the bowels of the Earth?



#### 496

### ANCIENT HISTORY

##### Mechanical inspiration

Did clockwork computers shape the ancient Greeks' cosmology?

## COMMENT

#### 499 ENVIRONMENT

##### Tar sands need solid science

David Schindler

#### 502 CLIMATE POLICY

##### Call in the women

Susan Buckingham

### BOOKS & ARTS

#### 503 CONSERVATION

##### China's national treasure

Jane Qiu

#### 504 HISTORY

##### Catching up with the Sun

Douglas Gough

#### 505 BOOKS IN BRIEF

#### 507 INNOVATION

##### The ideas lab

Jascha Hoffman

### SCULPTURE

## Body image

Martin Kemp on leaf hoppers and other grotesques **PAGE 506**



### CORRESPONDENCE

508 IPCC neutral on geoengineering / An analysis of climate change denial / Space telescope is worth it

### FUTURES

#### 594 High on the hog

Sean Davidson



# CONTENTS

25 November 2010 / Vol 468 / Issue No 7323

## RESEARCH

### NEW ONLINE

509 Papers published this week at nature.com

### NEWS & VIEWS

#### 510 CELL BIOLOGY

##### Raiding the sweet shop

A family of proteins that export glucose from cells has been revealed

Nicholas J Talbot [SEE ARTICLE P.527](#)

#### 511 COSMOLOGY

##### Geometry of the Universe

The orientations of galaxy pairs offer a new test of the standard cosmological model

Alan Heavens [SEE LETTER P.539](#)

#### 512 PALAEOANTHROPOLOGY

##### Early *Homo sapiens* in China

Newly described modern-human fossils from China will prompt debate

Robin Dennell

#### 513 CELL BIOLOGY

##### Import and nuclear size

Cytoplasmic factors regulate nuclear size

Orna Cohen-Fix

#### 516 NANOTECHNOLOGY

##### Peptides as biological semiconductors

Simple peptides assemble into nanoscale structures known as quantum dots

Charlotte A E Hauser & Shuguang Zhang

#### 517 QUANTUM OPTICS

##### Particles of light

Bose–Einstein condensation of photons has been observed

James Anglin [SEE LETTER P.545](#)

#### 518 MECHANOREGULATION

##### Cellular seat belts

Tension enhances chromosome–microtubule attachment

Yuta Shimamoto & Tarun M Kapoor [SEE LETTER P.576](#)

#### 519 CANCER

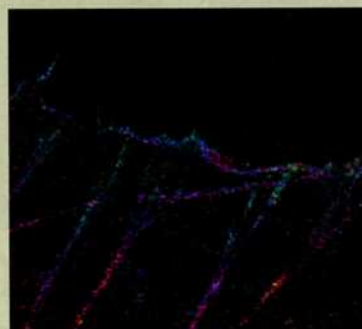
##### The blind spot of p53

Different tumour cells respond differently to p53

Anton Berns [SEE LETTERS PP.567 & 572](#)

### ARTICLES

521 **STEM CELLS** Direct conversion of



#### ON THE COVER

## Focal point

A super-resolution image of fluorescently labelled actin in U2OS osteosarcoma cells. From a study of the molecular architecture of focal adhesions, the physical link between a cell's extracellular matrix and actin cytoskeleton. [PAGE 580](#)

human fibroblasts to multilineage blood progenitors

E Szabo et al.

527 **CELL BIOLOGY** Sugar transporters for intercellular exchange and nutrition of pathogens

L-Q Chen et al. [SEE N&V P.510](#)

533 **CELL BIOLOGY** Structure and control of the actin regulatory WAVE complex

Z Chen et al.

### LETTERS

539 **ASTRONOMY** A geometric measure of dark energy with pairs of galaxies

C Marinoni & A Buzzi [SEE N&V P.511](#)

542 **ASTRONOMY** The dynamical mass of a classical Cepheid variable star in an eclipsing binary system

G Pietrzyński et al.

545 **PHYSICS** Bose–Einstein condensation of photons in an optical microcavity

J Klaers, J Schmitt, F Vewinger & M Weitz [SEE N&V P.517](#)

549 **MATERIALS SCIENCE** Growth of graphene from solid carbon sources

Z Sun et al.

553 **ECOLOGY** Bottom-up effects of plant diversity on multitrophic interactions in a biodiversity experiment

C Scherber et al.

557 **NEUROSCIENCE** Pericytes regulate the blood–brain barrier

A Armulik et al.

562 **NEUROSCIENCE** Pericytes are required for blood–brain barrier integrity during embryogenesis

R Daneman, L Zhou, A A Kebede & B A Barres

567 **CANCER** Selective activation of p53-mediated tumour suppression in high-grade tumours

M R Junttila et al. [SEE N&V P.519](#)

572 **CANCER** Stage-specific sensitivity to p53 restoration during lung cancer progression

D M Feldser et al. [SEE N&V P.519](#)

576 **CELL BIOLOGY** Tension directly stabilizes reconstituted kinetochore–microtubule attachments

B Akiyoshi et al. [SEE N&V P.518](#)

580 **CELL BIOLOGY** Nanoscale architecture of integrin-based cell adhesions

P Kanchanawong et al.

585 **STRUCTURAL BIOLOGY** The amino-terminal disease hotspot of ryanodine receptors forms a cytoplasmic vestibule

C-C Tung, P A Lobo, L Kimlicka & F Van Petegem

#### CELL BIOLOGY

## On SWEET

Newly discovered sugar transporters keep pollen alive, but are exploited by plant pathogens. [PAGES 510 & 527](#)

