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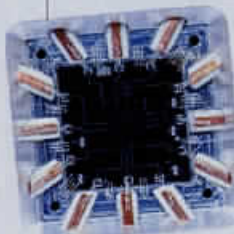
Fragmented nature of cancer moonshots raises concerns

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Europe plans a €1-billion quantum technologies project



#### 427 HEALTH CARE

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### NEW ONLINE

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### NEWS & VIEWS

#### 444 OCEAN SCIENCE

##### The rise of Rhizaria

The abundance of oceanic Rhizaria and their role in carbon cycling  
David A Caron

SEE ARTICLE P.465 & LETTER P.504

#### 445 MATERIALS SCIENCE

##### Cracks help membranes to stay hydrated

Membranes that have a humidity-responsive, cracked coating  
Jovan Kamcev & Benny D Freeman

SEE LETTER P.480

#### 447 PALAEOONTOLOGY

##### Getting the measure of a monster

The enigmatic fossil *Tullimonstrum* is revealed to be a vertebrate  
Shigeru Kuratani & Tatsuya Hirasawa

SEE LETTERS P.496 & P.500

#### 448 NUCLEAR PHYSICS

##### Four neutrons together momentarily

Evidence of the fleeting existence of the tetra-neutron system  
Carlos A Bertulani & Vladimir Zelevinsky

#### 449 NEUROSCIENCE

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Redundancy between hemispheres allows restoration of lost neural data  
Byron M Yu SEE ARTICLE P.459

#### 450 MATHEMATICAL PHYSICS

##### Glitches in time

A method that reveals the underlying temporal dynamics of data  
Charlotte A L Haley SEE LETTER P.471

### ARTICLES

#### 453 LANGUAGE Natural speech reveals the semantic maps that tile human cerebral cortex

A G Huth, W A de Heer, T L Griffiths, F E Theunissen & J L Gallant

#### 459 LEARNING AND MEMORY Robust neuronal dynamics in premotor cortex during motor planning

N Li, K Daie, K Svoboda & S Druckmann  
SEE N&V P.449

#### 465 MARINE MICROBIOLOGY Plankton networks driving carbon export



ON THE COVER

## In a word...

Voxel-based modelling of fMRI data has been used to map functional representations of semantic meaning in the human brain. The cover shows a subject's cortical surface, overlaid with words predicted to cause responses at the corresponding cortical location. Colours indicate semantic categories: green words are mostly visual and tactile concepts, red mostly social. White lines show known regions of interest. PAGE 453

in the oligotrophic ocean

L Guidi et al. SEE N&V P.444

### LETTERS

#### 471 OPTICAL PHYSICS Dynamics from noisy data with extreme timing uncertainty

R Fung et al. SEE N&V P.450

#### 476 QUANTUM PHYSICS Quantum phases from competing short- and long-range interactions in an optical lattice

R Landig et al.

#### 480 MATERIALS Nanocrack-regulated self-humidifying membranes

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#### 484 ORGANIC CHEMISTRY The pentadehydro-Diels-Alder reaction

T Wang, R R Naredla, S K Thompson & T R Hoyer

#### 489 ATMOSPHERIC CHEMISTRY Rapid cycling of reactive nitrogen in the marine boundary layer

C Ye et al.

#### 492 GEOLOGY Bubble accumulation and its role in the evolution of magma reservoirs in the upper crust

A Parmigiani, S Faroughi, C Huber, O Bachmann & Y Su

#### 496 PALAEOONTOLOGY The 'Tully monster' is a vertebrate

V E McCoy et al. SEE N&V P.447

#### 500 PALAEOONTOLOGY The eyes of *Tullimonstrum* reveal a vertebrate affinity

T Clements et al. SEE N&V P.447

#### 504 BIOCENOGRAPHY *In situ* imaging reveals the biomass of giant protists in the global ocean

T Biard et al. SEE N&V P.444

#### 508 STEM CELLS Musashi-2 attenuates AHR signalling to expand human haematopoietic stem cells

S Rentas et al.

#### 512 IMMUNOLOGY Normalizing the environment recapitulates adult human immune traits in laboratory mice

L K Beura et al.

#### 517 GENETIC ENGINEERING The CRISPR-associated DNA-cleaving enzyme Cpf1 also processes precursor CRISPR RNA

I Fonfara, H Richter, M Bratovič, A Le Rhun & E Charpentier

#### 522 GENETIC ENGINEERING The crystal structure of Cpf1 in complex with CRISPR RNA

D Dong et al.

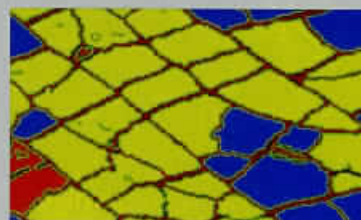
#### 527 STRUCTURAL BIOLOGY Crystal structure of the human $\alpha_1$ receptor

H R Schmidt et al.

### MATERIALS

## Good crack

How 'nanocrack' coatings keep critical membranes hydrated. PAGE 480



ALEX HUTH