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#### 508 FLUID DYNAMICS

##### Turbulence spreads like wildfire

A new model describes the transition from laminar to turbulent pipe flow  
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#### 509 IMMUNOLOGY

##### Chronic effects of acute infections

Intestinal inflammation can persist long after bacterial infection  
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#### 510 CLIMATE SCIENCE

##### Small glacier has big effect on sea-level rise

Substantial ice loss predicted from West Antarctica in the next 300 years  
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#### 512 BIOLOGICAL TECHNIQUES

##### Kidney tissue grown from induced stem cells

Generation of human kidney organoids from induced pluripotent stem cells  
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#### 513 MICROBIOLOGY

##### Conductive consortia

Direct electron transfer postulated in methane-oxidizing microbial consortia  
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#### 515 ECOLOGY

##### Mangrove maintenance

Sediment accretion key to survival of Indo-Pacific mangrove forests  
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#### 515 EXOPLANETS

##### A glimpse of Earth's fate

Observations of disintegrating minor planets orbiting a white dwarf  
*Francesca Faedi* [SEE LETTER P.546](#)

#### 516 EVOLUTION

##### An avian explosion

An alternative phylogeny based on the genomes of 198 bird species  
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### ARTICLES

- 519 **CANCER** Non-coding recurrent mutations in chronic lymphocytic leukaemia  
*X S Puente et al.*



Tile-scan immunofluorescence of a 5.7 × 6.4 mm human kidney organoid displaying structural complexity. Grown from pluripotent stem cells, this mini-kidney could be used for drug screening, as a disease model or to supply specific cell types.  
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- 525 **CANCER** Mutations driving CLL and their evolution in progression and relapse  
*D A Landau et al.*

- 531 **MICROBIOLOGY** Single cell activity reveals direct electron transfer in methanotrophic consortia  
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- 536 **STRUCTURAL BIOLOGY** Structural basis for gene regulation by a B<sub>12</sub>-dependent photoreceptor  
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### LETTERS

- 542 **HIGH-ENERGY ASTROPHYSICS** Flows of X-ray gas reveal the disruption of a star by a massive black hole  
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- 546 **EXOPLANETS** A disintegrating minor planet transiting a white dwarf  
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- 550 **FLUID DYNAMICS** The rise of fully turbulent flow  
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- 554 **QUANTUM PHYSICS** Observation of non-Hermitian degeneracies in a chaotic exciton-polariton billiard  
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- 559 **BIOGEOCHEMISTRY** The vulnerability of Indo-Pacific mangrove forests to sea-level rise  
*C E Lovelock et al.* [SEE N&V P.515](#)

- 564 **STEM CELLS** Kidney organoids from human iPSCs contain multiple lineages and model human nephrogenesis  
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- 569 **EVOLUTION** A comprehensive phylogeny of birds (Aves) using targeted next-generation DNA sequencing  
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- 574 **ECOLOGY** Biodiversity increases the resistance of ecosystem productivity to climate extremes  
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- 578 **CELL BIOLOGY** Hedgehog actively maintains adult lung quiescence and regulates repair and regeneration  
*T Peng et al.*

- 583 **CANCER** RAF inhibitors that evade paradoxical MAPK pathway activation  
*C Zhang et al.*

- 587 **MICROBIOLOGY** Intercellular wiring enables electron transfer between methanotrophic archaea and bacteria  
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- 591 **GENETICS** Dynamic m<sup>6</sup>A mRNA methylation directs translational control of heat shock response  
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- 595 **CORRIGENDUM** Lanosterol reverses protein aggregation in cataracts  
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- 595 **ERRATUM** Evidence for human transmission of amyloid- $\beta$  pathology and cerebral amyloid angiopathy  
*Z Jaunmuktane et al.*

- 595 **ERRATUM** Genetic diversity and evolutionary dynamics of Ebola virus in Sierra Leone  
*Y-G Tong et al.*

- 596 **CORRIGENDUM** Selective killing of cancer cells by a small molecule targeting the stress response to ROS  
*L Raj et al.*

MINORU TAKASATO