NATURE

CONTENIDO

VOLUME 480 No.7375, DECEMBER 1 2011

THIS WEEK

EDITORIALS

5 Research Funding.

Half way there.

Governments are right to invest in science in an economic downturn.

5 Policy.

False economy.

Denmark's proposal to axe technology assessment is a step too far.

6 Climate Change.

A poor sequel.

The muted response to more leaked climate its lessons well.

WORLD VIEW

7 Psychology must learn a lesson from fraud case.

Jelte M Wicherts.

Data sharing could help to prevent scientific misconduct.

RESEARCH HIGHLIGHTS

8 Selections from the scientific literature.

Beating radiation sickness / Magnetic switch / Low lightning / Flexible grapheme / Calming effects of sleep / Serotonin receptors in liver pathology.

SEVEN DAYS

10 The news in brief.

Curiosity heads for Mars / Global Fund faces financial pain / Google pulls out of renewable-energy initiative / Europe's carbon market takes a plunge.

CAREERS

139 Single-cell Analysis.

Imaging is everything.

High-end microcopy techniques are creating opening for experts in the field.

141 Turning Point.

Solar physicist Jonathan Cirtain has a new space telescope in his sights.

Naturejobs advertising feature.

Spotlight on cell biology.

NEWS IN FOCUS

Research.

XMRV scientist faces lawsuit from former employer.

14 Environment.

Australia's strategy for Coral Sea protection inadequate, say critics.

Business.

US science agencies teach scientists to be entrepreneurs.

Drug Discovery.

Pharmaceutical giants peer over the edge of the patent cliff.

Policy.

Big science projects in jeopardy as European Union rebalances the books.

FEATURES

26 Cell Biology.

The new anatomy.

New and rediscovered structures are queuing for a place in the textbooks.

Environment.

Roadless warrior.

Bruce Babbitt's plan for ecofriendly development in the Amazon.

TECHNOLOGY.

133 Single-cell Analysis.

The deepest differences.

A raft of new techniques is illuminating the inner workings of individual cells.

COMMENT

32 Soil Carbon.

High risk of permafrost thaw.

Edward A G Schuur, Benjamin Abbot et al.

Global warming will melt the northern soils and release greenhouse gases faster than models predict.

34 Cell Biology.

Beyond HeLa cells.

Anthony H Hyman & Aki Simons.

It is time to renounce popular cell lines.

BOOKS & ARTS

35 Physics.

Atomic secrets.

Sharon Weinberger.

Museums.

Stripped assets.

Paolo Mazzarello.

- Books in Brief.
- 38 Chemistry.

An elemental heroine.

Stefan Michalowski & Georgia Smith.

CORRESPONDENCE

Arab spring buoys scientists / Pre-review publication / The human eggs market / Food security.

OBITUARY

40 John McCarthy (1927-2011)

Vladimir Lifschitz.

FUTURES

144 Gifts of the Magi.

Anatoly Belilovsky.

RESEARCH

NEW ONLINE

41 Papers publishing this week at nature.com.

NEWS & VIEWS

42 Forum: Optics.

Perfect lenses in focus.

On positive refraction and super-resolution imaging. *Tomáš Tyc and Xiang Zhang*.

Evolution.

Big brains explained.

Refuting the expansive-tissue hypothesis.

Richard Potts.

See Letter p. 91

44 Regenerative Medicine.

Organ recital in a dish.

In vitro generation of pituitary gland from embryonic stem cells.

Karine Rizzoti & Robin Lovell-Badge.

See Letter p. 57

46 Physiology.

Immune cells fuel the fire.

Regulation of thermogenesis by macrophages.

Andrew J Whitte & Antonio Vidal-Puig.

See Letter p. 104

47 Astrophysics.

A Pussling γ -ray burst.

Two different models for the 'Christmas' burst.

Enrico Costa.

See Letter p. 69 & p. 72

48 Earth Science.

Redox, state of early magmas.

Earth's mantle oxidized sooner than was thought.

Bruno Scaillet & Fabrice Gaillard.

See Letter p. 79

REVIEW

51 Climate Science.

The case against climate regulation via oceanic phytoplankton sulphur emissions.

P K Quinn & T S Bates.

ARTICLES

57 Development Biology.

Self-formation of functional adenohypophysis in three-dimensional culture.

H Suga et al.

See N&V p. 44

Neuroscience.

Mutations causing syndromic autism define an axis of synaptic pathophysiology.

BD Auerbach, EK Osterweil & MF Bear.

ON THE COVER

Well grown.

Mouse anterior pituitary expressing Pitx1 (red) at embryonic day 13, in contact with the neurohypophysis extending from the Rx+ hypothalamus

(green). The production of functional pituitary tissue in cell culture promises much for regenerative therapies for pituitary defects. Page 44 & 57.

LETTERS

69 Astronomy.

The unusual gamma-ray burst GRB 101225A explained as a minor body falling onto a neutron star.

S Campana et al.

See N&V p. 47

Astronomy.

The unusual γ -ray burst GRB 101225A from a hemium star/neutron star merger at redshift 0.33.

C C Thöne et al.

See N&V p.47

75 Physics.

Observation of a pairing pseudogap in a two-dimensional Fermi gas.

M Feld, B Fröhlich, E Vogt, M Koschorreck & M Köhl.

See N&V p. 47

Earth Science.

The oxidation state of Hadean magmas and implications dor early Earth's atmosphere.

D Trail, E B Watson & N D Tailby.

See N&V p. 48

83 Geophysics.

Subduction dynamics and the origen of Andean orogeny and the Bolivian orocline.

F A Capitanio, C Faccenna, S Zlotnik & D R Stegman.

87 Geophysics.

Correlation between deep fluids, tremor and creep along the central San Andreas fault.

M Becken, O Ritter, P A Bedrosian & U Weckmann.

91 Evolution.

Energetics and the evolution of human brain size.

A Navarrete, C P van Schaik & K Isler.

See N&V p. 43

94 Cancer Genetics.

A SUMOylation-defective MITF germile mutation predisposes to melanoma and renal carcinoma.

C Bertolotto et al.

99 Cancer Genetics.

A novel recurrent mutation in MITF predisposes to familial and sporadic

melanoma.

S Yokoyama et al.

104 Immunology.

Alternatively activated macrophages produce catecholamines to sustain adaptive thermogenesis.

KD Nguyen et al.

See N&V p. 46

109 Cell Biology.

Lyn is a redox sensor that mediates leukocyte wound attraction *in vivo*. *S K Yoo*, *T W Starnes*, *Q Deng & A Hutternlocher*.

113 Cell Biology.

Image-based genome-wide siRNA screen identifies selective autophagy factors.

A Orvendahl et al.

Cancer.

Nuclear PKM2 regulates β -catenin transactivation upon EGFR ectivation. *W Yang et al.*

123 Cell Biology.

Control of Drosophila endocycles by E2F and CRL4.

N Zielke et al.

128 Cell Biology.

Cascades of multisite phosphorylation control Sic1 destruction at the onset of S phase.

M Kõivomägi et al.

132 Corrigendum.

DNA demethylation for hormone-induced transcriptional derepression.

M-S Kim et al.