CONTENTS

12 April 2012 / Vol 484 / Issue No 7393

THIS WEEK

EDITORIALS

141 STEM CELLS

Buyer beware

The proliferation of dubious stem-cell treatments must be addressed

141 HUNGARY

Honest work

The honour of the PhD, defended

WORLD VIEW

143 Scientists and bankers — a new model army

John Liechty

We have the technology to understand the banking system better

RESEARCH HIGHLIGHTS

144 SELECTIONS FROM THE SCIENTIFIC LITERATURE

Backyard biodiversity blues / How ants deter fungi / Tuff in Naples / MicroRNAs add variety / Seeing through graphene / Light sensing in sponge larvae



SEVEN DAYS

146 THE NEWS IN BRIEF

North Korea prepares to launch controversial rocket / Diagnostic test for Alzheimer's secures approval / GM pigs put on hold / Drug resistance in malaria on the rise / Austere times for Spanish research

CAREERS

277 INNOVATION

The big idea of technology transfer

Bringing the fruits of research to market can be a rewarding experience

279 COLUMN

Rating research risk

Abraham Loeb
It pays to choose your field of research scientifically

NEWS IN FOCUS



REGENERATIVE Medicine

China's laws on stem-cell therapies prove ineffectual

150 BIOSAFETY

Mutantflu papers emphasize need for global 4 biosafety controls

151 CLIMATE CHANGE

China readies demonstration of coal gasification plant

152 BUSINESS

Roche turns up the heat on Illumina

153 ASTRONOMY

Water on Mars proves to be a washout

154 ASTRONOMY

Two homes proposed for SKA telescope

FEATURES



MEDICAL RESEARCH

Coming of age

The children of the 'Children of the 90s' birth cohort take a bow PAGE 155

TECHNOLOGY

271 PROTEOMICS

. The interaction map

The study of protein–protein interactions is beginning to pay dividends in the shape of drug targets

COMMENT

159 INDIA

Bold strategies for Indian science Gautam R Desiraju

More enlightened — and honest — leadership is the key to future success

161 POLLUTION

Cleaning China's air

Qiang Zhang, Kebin He & Hong Huo Capping coal use is the first step in reducing fine-particle emission levels

BOOKS & ARTS

163 Q&A

The playful dramatist

Copenhagen writer Michael Frayn on the parallels between farce and physics



164 IN RETROSPECT

The Structure of Scientific Revolutions David Kaiser

165 BOOKS IN BRIEF

CORRESPONDENCE

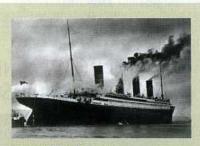
167 Opposition to use of primates in research / In support of the name Higgs / Indian science

OBITUARY

168 F Sherwood Rowland (1927–2012) Michael J Prather & Donald R Blake

FUTURES

282 Nor custom stale Anatoly Belilovsky



100 YEARS AGO

Titanicsinks

Reflections on the tragedy from the pages of Nature PAGE 174

CONTENTS

12 April 2012 / Vol 484 / Issue No 7393

RESEARCH

NEW ONLINE

169 Papers published this week at nature.com

NEWS & VIEWS

YTE

MMA

NAS

TOR

EB)

B

SF

RO

170 CLIMATE SCIENCE

Aerosols and Atlantic aberrations
Pollution aerosols linked to the Atlantic
multidecadal oscillation
Amato Evan SEE LETTER P.228

171 GENE EXPRESSION
Running to stand still
How DNA-binding kinetics determines
transcription factors' functions
Tommy Kaplan & Nir Friedman

172 ASTROPHYSICS

Fresh light on stardust

Discovery of large dust grains in the vicinity of cool giant stars

SEE LETTER P.251

Susanne Höfner SEE LETTER P.220

173 MICROBIOLOGY

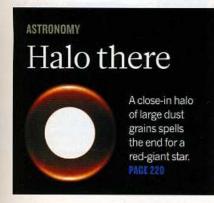
Adaptation by target remodelling
Changes at the flagellar motor help to
control bacterial chemotaxis
Gerald L Hazelbauer SEE LETTER P.233

REVIEWS

- 177 CHEMISTRY High-valent organometallic copper and palladium in catalysis A J Hickman & M S Sanford
- 186 ECOLOGY Emerging fungal threats to animal, plant and ecosystem health M C Fisher et al.

ARTICLES

195 PHYSICS An elementary quantum network of single





ON THE COVER

Killer fungi

One of the last southern mountain yellow-legged frogs in Kings Canyon National Park, California, where chytrid fungus has all but wiped them out. A Review this week urges immediate action if we are to avoid continued ecosystem degradation and threats to food security from the emergence of new pathogenic fungi. (Photo: Joel Sartore/joelsartore.com) PAGE 186

atoms in optical cavities S Ritter et al.

- 201 NEUROSCIENCE Teneurins instruct synaptic partner matching in an olfactory map W Hong, T J Mosca & L Luo
- 208 STRUCTURAL BIOLOGY Structure of the mitotic checkpoint complex W C H Chao et al.
- 214 PLANT SCIENCES Structural basis of ultraviolet-B perception by UVR8 D Wu et al.

LETTERS

- 220 ASTRONOMY A close halo of large transparent grains around extreme red giant stars BRM Norris et al. SEE N&V P.172
- 223 MATERIALS SCIENCE Layered boron nitride as a release layer for mechanical transfer of GaN-based devices Y Kobayashi, K Kumakura, T Akasaka & T Makimoto
- 228 SLIMATE SCIENCE Aerosols implicated as a prime driver of twentieth-century North Atlantic climate variability BBBBooth et al. SEE N&V P.170

- 233 MOLECULAR BIOLOGY Adaptation at the output of the chemotaxis signalling pathway J Yuan, R W Branch, B G Hosu & H C Berg SEE N&V P.173
- 237 NEUROSCIENCE Trans-synaptic Teneurin signalling in neuromuscular synapse organization and target choice TJ Mosca et al.
- 242 PLANT SCIENCES Transcription factor PIF4 controls the thermosensory activation of flowering SV Kumar et al.
- 246 PHYSIOLOGY Role of corin in trophoblast invasion and uterine spiral artery remodelling in pregnancy Y Cui et al.
- 251 BIOCHEMISTRY Genome-wide protein-DNA binding dynamics suggest a molecular clutch for transcription factor function CR Lickwar et al. SEE N&V P.171
- 256 BIOCHEMISTRY A new understanding of the decoding principle on the ribosome N Demeshkina et al.
- 260 MOLECULAR BIOLOGY Telomerase RNA biogenesis involves sequential binding by Sm and Lsm complexes W Tang, R Kannan, M Blanchette & P Baumann
- 265 BIOCHEMISTRY Visualizing molecular juggling within a B₁₂-dependent methyltransferase complex Y Kung et al.

