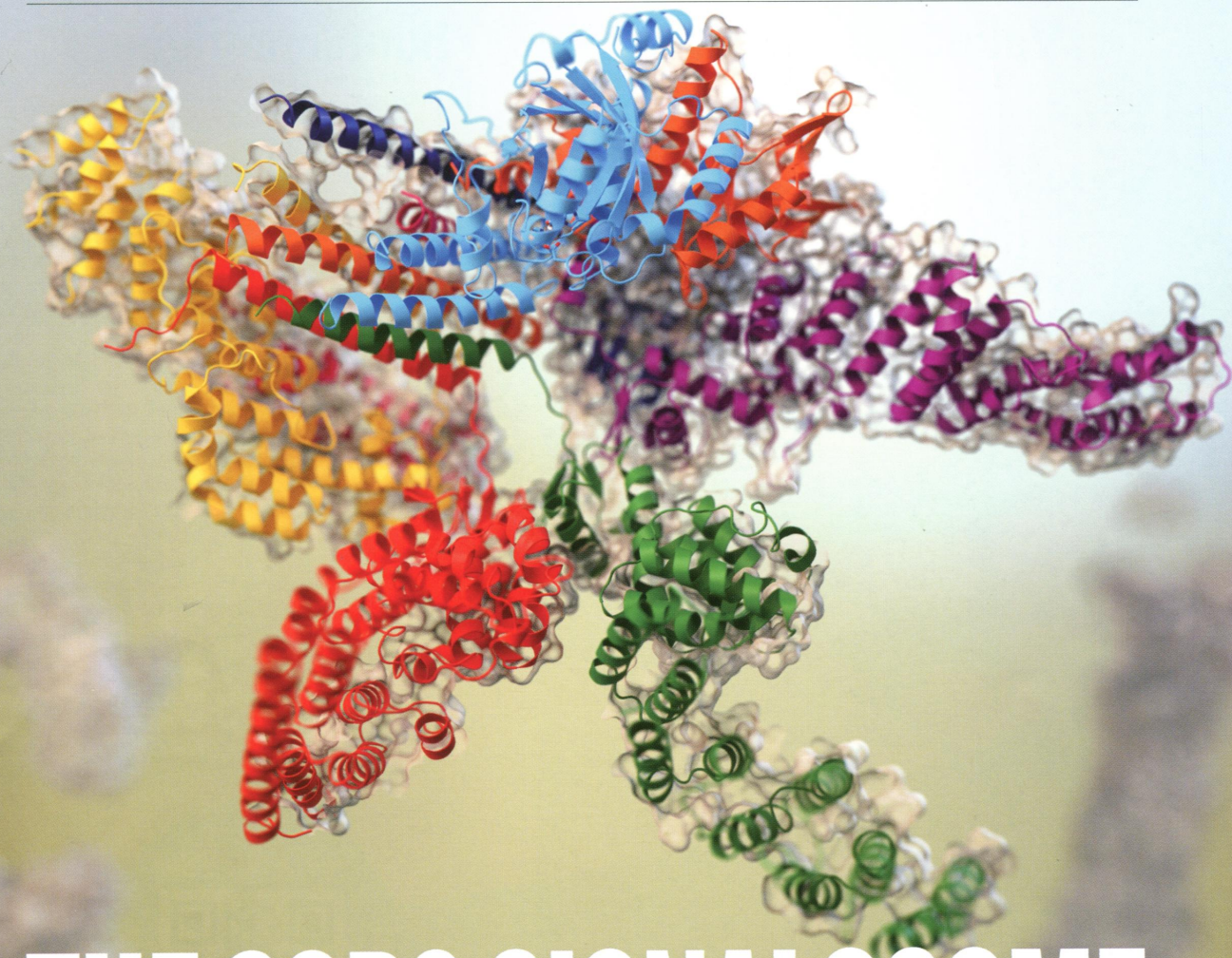


ПВ
№ 28/е

nature

THE INTERNATIONAL WEEKLY JOURNAL OF SCIENCE



THE COP9 SIGNALOSOME

Structure of the multisubunit complex that regulates intracellular protein degradation **PAGES 145 & 161**

SOCIAL MEDIA

NETWORK VIEWS

A survey of online scientific communities

PAGE 126

POPULAR SCIENCE

EPIGENETICS BLAME GAME

The dangers of a simplistic approach to research results

PAGE 131

COMPUTING

WHERE WILL IT ALL END?

Probing the physical limits to computational power

PAGE 147

NATURE.COM/NATURE

14 August 2014 £10

Vol. 512, No. 7513



CONTENTS

14 August 2014 / Vol 512 / Issue No 7513

THIS WEEK

EDITORIALS

113 MENTAL HEALTH

Save the children

The mental effects on the young caused by war require urgent attention

113 COMPUTER SCIENCE

Future computing

The route to faster computers will be found by pushing the boundaries

WORLD VIEW

115 China should aim for a total cap on emissions

Qiang Wang

It is possible to break the link between economic growth and greenhouse-gas emissions

RESEARCH HIGHLIGHTS



116 SELECTIONS FROM THE SCIENTIFIC LITERATURE

CRISPR-Cas9 fixes thalassaemia / Super-Earth for Gliese 832 / Arctic snow decline / Replacing the Haber-Bosch process / Not the Kardashians / Mouse skull illuminated / Tar lake life / Earthquake to icequake

SEVEN DAYS

118 THE NEWS IN BRIEF

Rosetta probe reaches comet / Power cut stalls research at South Pole / Obama backs US-Africa summit / Suez canal to get upgrade



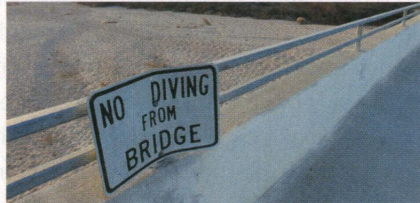
CAREERS

223 MENTAL HEALTH

Stressed students reach out for help

Too often, students and researchers with mental health problems try to battle on, but asking for help can be liberating

NEWS IN FOCUS



121 CLIMATE

California drought offers glimpse of climate-change future

122 MARINE SCIENCE

European project checks the effects of deep-sea mining on ecosystems

123 NEUROSCIENCE

US launches massive review of teenage drug use

124 INFECTIOUS DISEASE

Model assesses risk of chikungunya hitting the Americas

FEATURES

ONLINE COLLABORATION

SCIENTISTS AND THE SOCIAL NETWORK

A *Nature* survey digs deep into the world of academic networks

PAGE 126

ADVERTISEMENT

EPPENDORF AWARD FOR YOUNG EUROPEAN INVESTIGATORS



Presented in partnership with *Nature*

Turn to the pages following this week's Contents for an interview with the 2014 winner, Madeline Lancaster.

COMMENT



SOCIETY

Mother blame

Over-simplification of epigenetic studies can do more harm than good

PAGE 131

BOOKS & ARTS

134 HISTORY OF ENGINEERING

Wonder maker

Andrew Robinson

135 BOOKS IN BRIEF

CORRESPONDENCE

136 Yakov Zel'dovich, man of letters / Rare possum feeling the heat / Negotiating a Mexican maize / Tackling sexual violence

FUTURES

226 The death of immortality

Kyle L Wilson & Andrew B Barbour



CONTENTS

14 August 2014 / Vol 512 / Issue No 7513

RESEARCH

NEW ONLINE

137 Papers published this week at nature.com

NEWS & VIEWS

138 NEUROSCIENCE

What females really want

Neural circuits involved in copulation decisions in female fruit flies

Leslie C Griffith

139 SOLAR SYSTEM

Sandcastles in space

The weak cohesive strength of a kilometre-sized, near-Earth asteroid

Daniel J Scheeres [SEE LETTER P.174](#)

140 AGEING

Old blood stem cells feel the stress

Replication stress impairs function in aged haematopoietic stem cells

Jiri Bartek & Zdenek Hodny

[SEE LETTER P.198](#)

142 CONDENSED-MATTER PHYSICS

Glasses made from pure metals

Amorphous pure metals formed by ultra-rapid cooling of their liquids

Jan Schroers [SEE LETTER P.177](#)

143 CANCER

One cell at a time

A new method for single-cell genome sequencing

Edward J Fox & Lawrence A Loeb

[SEE ARTICLE P.155](#)

144 ASTRONOMICAL INSTRUMENTATION

Atmospheric blurring has a new enemy

A robotic adaptive optics system to observe exoplanet candidate stars

Brent Ellerbroek

145 STRUCTURAL BIOLOGY

Corralling a protein-degradation regulator

The crystal structure of the COP9 signalosome

Raymond J Deshaies [SEE ARTICLE P.161](#)

REVIEW

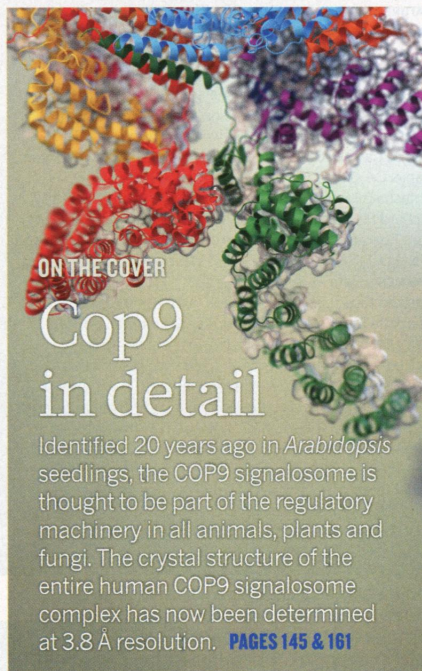
147 COMPUTER SCIENCE Limits on fundamental limits to computation

I L Markov

ARTICLES

155 CANCER Clonal evolution in breast cancer revealed by single nucleus genome sequencing

Y Wang et al. [SEE N&V P.143](#)



Identified 20 years ago in *Arabidopsis* seedlings, the COP9 signalosome is thought to be part of the regulatory machinery in all animals, plants and fungi. The crystal structure of the entire human COP9 signalosome complex has now been determined at 3.8 Å resolution. [PAGES 145 & 161](#)

161 STRUCTURAL BIOLOGY Crystal structure of the human COP9 signalosome

G M Lingaraju et al. [SEE N&V P.145](#)

166 STRUCTURAL BIOLOGY Three-dimensional structure of human γ -secretase

P Lu et al.

LETTERS

171 ASTROPHYSICS The origin of the local 1/4-keV X-ray flux in both charge exchange and a hot bubble

M Galeazzi et al.

174 SOLAR SYSTEM Cohesive forces prevent the rotational breakup of rubble-pile asteroid (29075) 1950DA

B Rozitis, E MacLennan & J P Emery

[SEE N&V P.139](#)

177 MATERIALS SCIENCE Formation of monatomic metallic glasses through ultrafast liquid quenching

L Zhong, J Wang, H Sheng, Z Zhang

& S X Mao [SEE N&V P.142](#)

181 PLANETARY SCIENCE The tidal-rotational shape of the Moon and evidence for polar wander

I Garrick-Bethell, V Perera, F Nimmo

& M T Zuber

185 NEUROSCIENCE Neuropsychosocial profiles of current and future adolescent alcohol misusers

R Whelan et al.

190 MEDICAL GENETICS A common Greenlandic *TBC1D4* variant confers muscle insulin resistance and type 2 diabetes

I Moltke et al.

194 EVOLUTION Altitude adaptation in Tibetans caused by introgression of Denisovan-like DNA

E Huerta-Sánchez et al.

198 AGEING Replication stress is a potent driver of functional decline in ageing haematopoietic stem cells

J Flach et al. [SEE N&V P.140](#)

203 MOLECULAR BIOPHYSICS Historical contingency and its biophysical basis in glucocorticoid receptor evolution

M J Harms & J W Thornton

208 MOLECULAR BIOLOGY DENR-MCT-1 promotes translation re-initiation downstream of uORFs to control tissue growth

S Schleich et al.

213 MOLECULAR BIOLOGY Histone H4 tail mediates allosteric regulation of nucleosome remodelling by linker DNA

W L Hwang, S Deindl, B T Harada

& X Zhuang

218 STRUCTURAL BIOLOGY Visualization of arrestin recruitment by a G-protein-coupled receptor

A K Shukla et al.

MATERIALS SCIENCE

Glass act

Metallic liquids can become glass — when the cooling is right. [PAGE 177](#)

