Inhibiting sperm maturation

CONTENTS
23 OCTOBER 2015 • VOLUME 350 • ISSUE 6259

NEWS

IN BRIEF
360 Roundup of the week's news

IN DEPTH
363 U.S. TARGETS MATTER-ANTIMATTER FRONTIER
Search for rare nuclear decay would test whether the neutrino is its own antiparticle By A. Cho

364 SHINING A LIGHT ON SEXUAL HARASSMENT IN ASTRONOMY
Astronomer Joan Schmelz talks about what needs to change in the wake of the Marcy case By D. Clery

365 SECOND BID FOR BRAIN OBSERVATORY
Workshop explores facilities to give neuroscience access to high-tech tools By E. Underwood

366 PROTEIN ‘DROPS’ MAY SEED DISEASE
Cellular droplets promote vital biochemistry—but may dangerously solidify By K. Garber

368 EUROPE’S FOOD WATCHDOG EMBRACES TRANSPARENCY
Industry uneasy at European Food Safety Authority pledge to make data underlying its decisions public By T. Rabesandratana

FEATURES

369 TWISTED LOGIC
Germany completes the epic construction of the reactor designed in hell. Its tortuous shape may point the way forward for fusion By D. Clery

372 OUT OF THE DARKNESS
Defying expectations, cataract surgery in Indian children is endowing them with vision—and shedding light on how the brain learns to see By R. Chatterjee

PODCAST; SLIDESHOW

INSIGHTS

PERSPECTIVES
376 ASSEMBLING THE WHEEL OF DEATH
A single ligand-activated protein triggers the assembly of an entire inflammasome By Z. Liu and T. S. Xiao

REPORT P. 399; RESEARCH ARTICLE P. 404

378 CHIRAL ANOMALY WITHOUT RELATIVITY
A condensed matter system exhibits an effect usually associated with particle physics By A. Burkov

REPORT P. 413

379 THE UNKNOWNS OF COGNITIVE ENHANCEMENT
Can science and policy catch up with practice? By M. J. Farah

381 SNAPSHTOS OF A PROTEIN QUAKE
Release of CO induces ultrafast collective motions in myoglobin By R. Neutze

REPORT P. 445

382 MAKING WAVES: THE SCIENCE AND POLITICS OF OCEAN PROTECTION
Mature science reveals opportunities for policy progress By J. Lubchenco and K. Grorud-Colvert

384 BEYOND KNOWN METHANOGENS
DNA sequences from a coal-bed reservoir show that methane can be generated by unexpected microbes By K. Lloyd

REPORT P. 434

385 TOWARD A RAPID AND REVERSIBLE MALE PILL
Sperm-specific calcineurin is a novel fertility and contraceptive target By J. Castaneda and M. M. Matzuk

REPORT P. 442

386 SYSTEMS BIOLOGY (UN)CERTAINTIES
How can modelers restore confidence in systems and computational biology? By P. D. W. Kirk et al.

388 HOW SAFE ARE NANOMATERIALS?
There is still no consensus on the toxicity of nanomaterials By E. Valsami-Jones and I. Lynch

BOOKS ET AL.
390 DARK MATTER AND THE DINOSAURS
By L. Randall, reviewed by J. Smit and R. Smit

391 HOUSTON, WE HAVE A NARRATIVE
By R. Olson, reviewed by R. E. Luna

381 382 383 384 385 386 387 388 389 390 391
381 & 445
Visualizing ultrafast protein motion

LETTERS

392 IRAN’S ENVIRONMENT UNDER SIEGE
By H. Akhani

392 IRAN’S EDUCATION AND RESEARCH POTENTIAL
By D. N. Rahni

393 WITH MORALIZING GODS, EXCLUSION REIGNS
By R. Blanton and L. Fargher

RESEARCH

IN BRIEF

394 From Science and other journals

RESEARCH ARTICLES

398 CLATHRIN ADAPTORS
HIV-1 Nef hijacks clathrin coats by stabilizing AP-1:Arf1 polygons
Q.-T. Shen et al.
Research Article Summary: For full text: dx.doi.org/10.1126/science.aac5137

399 INNATE IMMUNITY
Structural and biochemical basis for induced self-propagation of NLRC4
Z. Hu et al.
Perspective P. 376; Report P. 404

REPORTS

404 INNATE IMMUNITY
Cryo-EM structure of the activated NAI2p-NLRC4 inflammasome reveals nucleated polymerization L. Zhang et al.
Perspective P. 376; Research Article P. 399

409 SUPERCONDUTIVITY
Metallic ground state in an ion-gated two-dimensional superconductor Y. Saito et al.

413 TOPOLOGICAL MATTER
Evidence for the chiral anomaly in the Dirac semimetal Na3Bi X. Xiong et al.
Perspective P. 378

417 MAGNETIC RESONANCE
Electron paramagnetic resonance of individual atoms on a surface S. Baumann et al.

420 QUANTUM OPTICS
Direct sampling of electric-field vacuum fluctuations C. Riek et al.

423 ASTEROSEISMOLOGY
Asteroseismology can reveal strong internal magnetic fields in red giant stars J. Fuller et al.

426 PLANT DEVELOPMENT
Transcriptional control of tissue formation throughout root development M. A. Moreno-Risueno et al.

438 ALZHEIMER’S DISEASE
Reduced grid-cell–like representations in adults at genetic risk for Alzheimer’s disease L. Kunz et al.
Perspective P. 384

439 MICROBIAL METABOLISM
Methane metabolism in the archaeal phylum Bathyarchaeota revealed by genome-centric metagenomics P. N. Evans et al.
Perspective P. 385

442 REPRODUCTIVE BIOLOGY
Sperm calcineurin inhibition prevents mouse fertility with implications for male contraceptive H. Miyata et al.
Perspective P. 385

445 PROTEIN DYNAMICS
Direct observation of ultrafast collective motions in CO myoglobin upon ligand dissociation T. R. M. Barends et al.
Perspective P. 385

450 CHLOROPLASTS
Ubiquitin facilitates a quality-control pathway that removes damaged chloroplasts J. D. Woodson et al.

455 AUTOIMMUNITY
The Ro60 autoantigen binds endogenous retroelements and regulates inflammatory gene expression T. Hung et al.

DEPARTMENTS

359 EDITORIAL
Smart villages
By John Holmes et al.

478 WORKING LIFE
The power of mentoring
By Carol Lynn Curchoe

ON THE COVER

Since 2003, Project Prakash has restored vision in hundreds of Indian children who were blind from birth and thought to be beyond medical help, including 14-year-old Dilip Kumar Yadav (pictured) and his brother, Manoj. The project is revealing new insights into how the brain interprets the visual world. See page 372. Photo: Graham Crouch/AP