SOCIAL AND INTERDISCIPLINARY SCIENCES AND PUBLIC HEALTH Epilogue to the war: Afghanistan reports the lowest well-being in recorded history BY LEVI D. STUTZMAN, PHYLLIS LUN, MEI YANG, KENITH CHAN, FELIX CHEUNG • 28 MAY 2025 Analyses reveal that after the War in Afghanistan, Afghans reported the lowest subjective well-being in recorded history. ABSTRACT ~ A 6000-year-long genomic transect from the Bogotá Altiplano reveals multiple genetic shifts in the demographic history of Colombia BY KIM-LOUISE KRETTEK, ANDREA CASAS-VARGAS, ALEX MAS-SANDOVAL, LEONARDO ARIAS ALVIS, ELLA REITER, JULIE MONCADA MADERO, MATTHIAS URBAN, JUAN CAMILO NIÑO VARGAS, WILLIAM USAQUÉN, JOSE VICENTE RODRÍGUEZ CUENCA, COSIMO POSTH · 28 MAY 2025 The hunter-gatherer gene pool of the Bogotá Altiplano was replaced by Central American ancestry at least 2000 years ago. ABSTRACT V Environmental change and globalization dynamics in Roman Anatolia: Stabilizing an accelerating system BY MUSTAFA DOĞAN, SABINA FIOŁNA, BAHADIR DUMAN, WARREN EASTWOOD, JOHN HALDON, ADAM IZDEBSKI, ÇETIN ŞENKUL • 28 MAY 2025 Analysis of coinage and fossil pollen data reveal how accelerated socioeconomic growth stabilized in Roman Anatolia. ABSTRACT V NEUROSCIENCE Direct and indirect striatal projecting neurons exert strategy-dependent effects on decision-making BY ELENA CHAVES RODRIGUEZ, JÉRÉMIE NAUDÉ, DANIEL RIAL, ALBAN DE KERCHOVE D'EXAERDE • 28 MAY 2025 In the dorsomedial striatum, d-SPNs increase risk seeking, while iSPNs amplify the value of large gains in decision making. ABSTRACT V Dynamic regulation of vesicle pools in a detailed spatial model of the complete synaptic vesicle cycle BY ANDREW R. GALLIMORE, IAIN HEPBURN, SVILEN V. GEORGIEV, SILVIO O. RIZZOLI, ERIK DE SCHUTTER • 28 MAY 2025 A spatial model of the synaptic vesicle cycle reveals how vesicle pools are maintained and used in synaptic transmission. ABSTRACT ~ A robust expression system reveals distinct gating mechanisms and calmodulin regulation of Na<sub>V</sub>1.9 channels BY MARGAUX THEYS, JOLIEN DE WAELE, SHARANG GARUD, KATRIEN WILLEGEMS, FILIP VAN PETEGEM, FRANK BOSMANS • 28 MAY 2025 An expression system enables detailed study of Na<sub>V</sub>1.9 channel gating and its regulation by calmodulin. ABSTRACT V Inactivation of the PHD3-FOXO3 axis blunts the type I interferon response in microglia and ameliorates Alzheimer's disease progression BY MANUEL A. SANCHEZ-GARCIA, NIEVES LARA-UREÑA, ROSANA MARCH-DIAZ, CLARA ORTEGA-DE SAN LUIS, SILVIA QUIÑONES-CAÑETE, BELLA MORA-ROMERO, JUAN M. BARBA-REYES, DANIEL CABELLO-RIVERA, CARMEN ROMERO-MOLINA, ANTONIO HERAS-GARVIN, [...] ALBERTO PASCUAL +8 authors • 28 MAY 2025 PHD3 inhibition slows down the pathology and behavioral decline of an Alzheimer's disease mouse model. ABSTRACT ~ Neuronal potassium channel activity triggers initiation of mRNA translation through binding of translation regulators BY TAYLOR J. MALONE, JING WU, YALAN ZHANG, PAWEL LICZNERSKI, RONGMIN CHEN, SHEIKH NAHIYAN, MAYSAM PEDRAM, ELIZABETH A. JONAS, LEONARD K. KACZMAREK · 28 MAY 2025 Activated Slack potassium channels bind translation regulators to stimulate translation of cortical  $\beta$  -actin mRNA. ABSTRACT ~ Coding principles of dopaminergic transmission modes BY LIMENG HUANG, YUANYU CHANG, ZHIPENG YANG, WENDY J. LYNCH, B. JILL VENTON • 28 MAY 2025 Dopaminergic transmission modes, coding principles, and their underlying mechanisms are illuminated. ABSTRACT ~ EARTH, ENVIRONMENTAL, ECOLOGICAL, AND SPACE SCIENCES The efficiency of EURO 6d car particulate filters is compromised by atmospheric aging: In vitro toxicity of gasoline car exhaust BY MATHILDE N. DELAVAL, HENDRYK CZECH, MOHAMMAD ALMASALEEKH, SVENJA OFFER, JANA PANTZKE, MIKA IHALAINEN, PASI YLI-PIRILÄ, MARKUS SOMERO, MIIKA KORTELAINEN, NADINE GAWLITTA, [...] RALF ZIMMERMANN +27 authors - 28 MAY 2025 Atmospheric processing substantially toxifies tailpipe emissions from a EURO 6d gasoline car with a particulate filter. ABSTRACT ~ Identifying wastewater chemicals in coastal aerosols BY ADAM COOPER, LUCIA CANCELADA, RALPH RILEY TORRES, KATHRYN BELCHER, MALLORY SMALL, PEDRO BELDA-FERRE, CLARE MORRIS, BROCK MITTS, JULIE DINASQUET, ROB KNIGHT, [...] KIMBERLY A. PRATHER +1 authors • 28 MAY 2025 Wastewater-derived chemicals entering riverine and coastal waters contribute to airborne pollutants within coastal aerosols. ABSTRACT ~ First direct observations of atmospheric sputtering at Mars BY SHANNON M. CURRY, TAKUYA HARA, JANET G. LUHMANN, FRANCOIS LEBLANC, REBECCA JOLITZ, DAVID MITCHELL, RONAN MODOLO, DAVID A. BRAIN, JARED ESPLEY, MEHDI BENNA, JASPER HALEKAS • 28 MAY 2025 Mars Atmosphere and Volatile Evolution (MAVEN) made the first direct observations of atmospheric sputtering in Mars' atmosphere. ABSTRACT ~ PHYSICAL AND MATERIALS SCIENCES Continuous-time digital twin with analog memristive neural ordinary differential equation solver BY HEGAN CHEN, JICHANG YANG, JIA CHEN, SONGQI WANG, SHAOCONG WANG, DINGCHEN WANG, XINYU TIAN, YIFEI YU, XI CHEN, YINAN LIN, [...] MING LIU +15 authors • 28 MAY 2025 Memristive neural ODE solver enables energy-efficient, continuous-time digital twins, accelerating solutions for Industry ABSTRACT ~ A photo-mechanically inactive tough gel exhibits multimodal, light-guided underwater navigation BY GUODONG HOU, XUNING WANG, FEIYU ZHANG, WEI LU, XIN CHEN, TIANNAN YANG, GUANG MENG, XIAOSHI QIAN • 28 MAY 2025 Tough hydrogel robot navigates 3D underwater paths using light-triggered fluid dynamics. ABSTRACT ~ In situ tunable, room-temperature polariton condensation in individual states of a 1D topological lattice RY IOANNIS GEORGAKILAS, RAFAL MIREK, DARIUS URBONAS, MICHAEL FORSTER, ULL RICH SCHERE, RAINER E MAHRT, THU O STÖFERLE • 28 MAY 2025 Exciton-polaritons allow for taking accurate pictures of the wave function of quantum fluids in tunable topological ABSTRACT ~ Active control of excitonic strong coupling and electroluminescence in electrically driven plasmonic nanocavities BY JUNSHENG ZHENG, ALEXEY V. KRASAVIN, RUOXUE YANG, ZHENXIN WANG, YUANJIA FENG, LONGHUA TANG, LINJUN LI, XIN GUO, DAOXIN DAI, ANATOLY V. ZAYATS, [...] PAN WANG +1 authors • 28 MAY 2025 Active control of atomic-scale light-matter interactions is demonstrated in electrically driven functional plasmonic ABSTRACT ~ Tumor microenvironment-activated Zn//MnO<sub>2</sub> battery for sustained and local electrochemical immunotherapy BY XIAORAN DING, XIAOTENG JIA, HONGMING YUAN, DAXIN PANG, HUALU ZHAO, PENG SUN, FANGMENG LIU, DANMING CHAO, MEIYING XIN, CAIYUN WANG, [...] GORDON WALLACE +1 authors + 28 MAY 2025 An implantable battery effectively delivers metal ion agonists and activates immune responses. ABSTRACT ~ A universal strategy toward two-component organic-inorganic metal halide luminescent glasses and glass-crystal composites BY ZI-LIN HE, JIAN-BIN LUO, JING-HUA CHEN, JUN-HUA WEI, XIAO-HE MIAO, ZHI-ZHONG ZHANG, QING-PENG PENG, XIU-XIAN GUO, DAI-BIN KUANG • 28 MAY 2025 3 A universal co-melting strategy broadens the exploration of highly luminescent organic-inorganic metal halide glasses. ABSTRACT ~ Interlayer phononic energy dissipation in the friction of graphene layers BY HAOLEI DAI, YUJIN WANG, ZIBO LIU, YONGHUI LIU, YUZHENG GUO, DAMENG LIU · 28 MAY 2025 Experimental evidence for the correlation between nanofriction and atomic vibrations. ABSTRACT ~ Efficient perovskite solar modules enabled by a UV-stable and high-conductivity hole transport material BY TIANXIAO LIU, ZHIJUN REN, YANGYANG LIU, YAOYAO ZHANG, JING LIANG, FANGWEN CHENG, YIRAN LI, XIAOYU SHI, YUNJIE DOU, XIAODONG HU, [...] SHANGSHANG CHEN +8 authors • 28 MAY 2025 A polymeric and UV-stable hole-transport material enables high-performance air-processed perovskite solar cells and modules. ABSTRACT ~ Reconfigurable non-Hermitian soliton combs using dissipative couplings and topological windings BY SEYED DANIAL HASHEMI, SUNIL MITTAL • 28 MAY 2025 Non-Hermitian dissipative couplings are used in a ring resonator array to generate reconfigurable soliton combs. ABSTRACT ~

CAREERS

**EDITORIAL** 

BUTLER, MANGESH KULKARNI, [...] TZAHI COHEN-KARNI +3 authors • 28 MAY 2025 MERLIN allows real-time spatial mapping of the NO across the wound bed, which can be used to provide diagnostic information. ABSTRACT ~ Predicting three-component reaction outcomes from ~40,000 miniaturized reactant combinations BY JULIAN GÖTZ, EUAN RICHARDS, IAIN A. STEPEK, YU TAKAHASHI, YI-LIN HUANG, LOUIS BERTSCHI, BERTRAN RUBI, JEFFREY W. BODE • 28 MAY 2025 Miniaturized, high-throughput execution of 50,000 multicomponent reactions enables reaction outcome prediction at scale. ABSTRACT ~ **BIOMEDICINE AND LIFE SCIENCES** Serial-femtosecond crystallography reveals how a phytochrome variant couples chromophore and protein structural changes BY LUISA SAUTHOF, MICHAL SZCZEPEK, ANDREA SCHMIDT, ASMIT BHOWMICK, MEDHANJALI DASGUPTA, MEGAN J. MACKINTOSH, SHERAZ GUL, FRANKLIN D. FULLER, RUCHIRA CHATTERJEE, IRIS D. YOUNG, [...] PATRICK SCHEERER +33 authors • 28 MAY 2025

Serial-femtosecond x-ray crystallography reveals coupling of chromophore and protein structural changes in a

BY HAO HUANG, XINLU LI, JINLIAN LUO, CHUAN GAO, MENGJIE YANG, JIN XU, TING XIE, ZHI CHEN, DONGHAI WANG, YUAN WANG, [...] HUDAN LIU +7 authors

FTO regulates ELK3-mediated metabolic rewiring and represents a unique

The RNA m<sup>6</sup>A demethylase FTO represents a promising therapeutic target in T cell leukemia.

Geography-guided industrial-level upcycling of polyethylene terephthalate

Reconstructive spectrometer using double-layer disordered metasurfaces

Wound state monitoring by multiplexed, electrochemical, real-time,

localized, inflammation-tracking nitric oxide sensor (MERLIN)

BY ZEHAO XIAO, HONGYU GUO, FAN LV, ZHENG LIN, ZONGQIANG SUN, CHENGLONG SUN, YINGJUN TAN, QIZHENG HUANG, MINGCHUAN LUO, SHAOJUN GUO

Double-layer disordered metasurfaces predictably encode visible spectrum into speckle patterns with 1-nm spectral

BY LIYANG WANG, YINGQIAO WANG, MABEL BARTLETT, DANIEL SAN ROMAN, GAURAV BALAKRISHNAN, SAMUEL GERSHANOK, REEM KHAN, CLINT SKILLEN, SHANAE

Geography-guided integration of alkaline seawater hydrolysis and electrolysis upgrades waste PET plastics at an industrial

plastics through alkaline seawater-based processes

BY DONG-GU LEE, GOOKHO SONG, CHUNGHYUNG LEE, CHANSEOK LEE, MOOSEOK JANG • 28 MAY 2025

ABSTRACT ~

resolution. ABSTRACT ~

phytochrome.

28 MAY 2025

ABSTRACT ~

toxicity.

ABSTRACT V

ABSTRACT ~

ABSTRACT ~

Science

Subscribe to News from Science

CAREERS

Find Jobs

NEWS

All News

News Features

ABSTRACT ~

Exploration of structure-activity relationships for the SARS-CoV-2 macrodomain from shape-based fragment linking and active learning BY GALEN J. CORREY, MOIRA M. RACHMAN, TAKAYA TOGO, STEFAN GAHBAUER, YAGMUR U. DORUK, MAISIE G. V. STEVENS, PRIYADARSHINI JAISHANKAR, BRIAN KELLEY, BRIAN GOLDMAN, MOLLY SCHMIDT, [...] JAMES S. FRASER +8 authors • 28 MAY 2025

follicle stem cells to promote quiescence

SOEDARSONO SOEDARSONO, JAE-GOOK SHIN, YONG-SOON CHO . 28 MAY 2025

therapeutic target in T cell leukemia

A scalable shape-based virtual screening pipeline—FrankenROCS—identifies inhibitors of the SARS-CoV-2 Mac1 from fragments. ABSTRACT ~ Kinetic modules are sources of concentration robustness in biochemical networks BY DAMOUN LANGARY, ANIKA KÜKEN, ZORAN NIKOLOSKI • 28 MAY 2025 Kinetic modules link network structure and dynamics and allow identification of metabolite concentration robustness. ABSTRACT ~

BY JINGJING WANG, CHAOYU FU, SOPHIE CHANG, CHRISTOPHER STEPHENS, HAIMIN LI, DONGMEI WANG, YUHENG C. FU, KATHLEEN J. GREEN, JIE YAN, RUI YI 28 MAY 2025 PIEZO1 senses mechanical forces between epithelial cells and controls stem cell behavior in hair follicles. ABSTRACT ~ Deciphering linezolid-induced hematologic toxicity: Targeting TOP2A and TOP2B via its primary metabolite PNU142586 BY VO THUY ANH THU, NGUYEN QUYNH NHU, NGUYEN THI VAN ANH, SO-AN LIM, HYEON-JEONG SEONG, JONY MD RASHEDUZZAMAN, UIJIN KIM, HYUN-SOO CHO,

PNU142586, the major linezolid metabolite, predominantly targets TOP2A and TOP2B, leading to linezolid-induced severe

PIEZO1-mediated calcium signaling reinforces mechanical properties of hair 🗮 📙 📮

Mitochondrial calcium signaling regulates branched-chain amino acid catabolism in fibrolamellar carcinoma BY NICOLE M. MARSH, MELISSA J. S. MACEWEN, JANE CHEA, HEIDI L. KENERSON, ALBERT A. KWONG, TIMOTHY M. LOCKE, FRANCISCO JAVIER MIRALLES, TANMAY SAPRE, NATASHA GOZALI, MADELEINE L. HART, [...] YASEMIN SANCAK +7 authors • 28 MAY 2025 Mitochondrial Ca<sup>2+</sup> signaling regulates branched-chain amino acid catabolism in an adolescent liver cancer.

Dual mechanism of inflammation sensing by the hematopoietic progenitor genome BY VU L. TRAN, PENG LIU, KOICHI R. KATSUMURA, ALEXANDRA A. SOUKUP, AUDREY KOPP, ZAMAAN S. AHMAD. ASHLEY E. MATTINA. MARJORIE BRAND. KIRBY D. JOHNSON, EMERY H. BRESNICK • 28 MAY 2025 Leukemia predisposition-linked hematopoietic transcription factors mediate inflammation sensing by a progenitor cell genome.

< PREVIOUS ISSUE NEXT ISSUE >

RECENT ISSUES Vol. 11 No. 22 Vol. 11 No. 21

Vol. 11 No. 20

Robotics

**JOURNALS** 

**FOLLOW US AUTHORS & REVIEWERS** 0

VIEW ARCHIVE >

Science Translational

Medicine

Vol. 11 No. 19

Signaling

Information for Authors

Information for Reviewers

News from Science FAQ Science Signaling Science Translational Medicine **GET OUR NEWSLETTER** Science Partner Journals Donate to News LIBRARIANS **ADVERTISERS** RELATED SITES **ABOUT US** HELP Manage Your Institutional Advertising Kits Subscription Custom Publishing Info **AAAS** Communities © 2025 American Association Post a Job EurekAlert! Prizes and Awards Order a Single Issue for the Advancement of Science. Request a Quote All rights reserved. AAAS is a Science in the Classroom Reprints and Permissions partner of HINARI, AGORA, TOC Alerts and RSS Feeds OARE, CHORUS, CLOCKSS, CrossRef and COUNTER. Science Contact Us Advances eISSN 2375-2548.

Immunology

COMMENTARY