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ONLINE COVER: A flexible circularly polarized luminescence display panel. Most displays available today are limited to rigid structures and 2D images, limiting applicability and depth details. Guo *et al.* created a 3D display using circularly polarized light that when viewed offers distinct patterns to each eye. When viewed through polarized glasses, the difference in photon spin...

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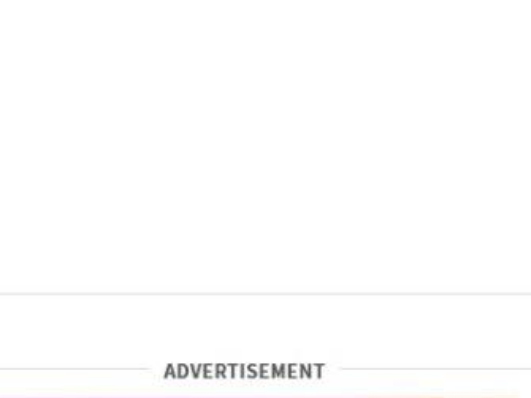

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FOCUS

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BY MATTHIAS BOCHTLER • 14 MAY 2025

ABSTRACT

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ABSTRACT

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SOCIAL AND INTERDISCIPLINARY SCIENCES AND PUBLIC HEALTH

Global disparities in indoor wildfire-$PM_{2.5}$ exposure and mitigation costs

BY DONGJIA HAN, YONGXUAN GUO, JIANGHAO WANG, BIN ZHAO • 14 MAY 2025

Wildfires lead to global disparities in indoor fire-$PM_{2.5}$ exposure and associated mitigation costs.

ABSTRACT

RELATED FOCUS
The cost of clean air: Global disparities in reducing indoor wildfire-related $PM_{2.5}$ exposure
BY JING LI, YIFANG ZHU • SCIENCE ADVANCES • 14 MAY 2025

Phalangeal cortical bone distribution reveals different dexterous and climbing behaviors in *Australopithecus sediba* and *Homo naledi*

BY SAMAR M. SYEDA, CHRISTOPHER J. DUNMORE, MATTHEW M. SKINNER, LEE R. BERGER, STEVEN E. CHURCHILL, BERNHARD ZIPFEL, TRACY L. KIVELL
14 MAY 2025

Phalangeal bone structure provides evidence for variable locomotor strategies across South African fossil hominins.

ABSTRACT

Emergent social conventions and collective bias in LLM populations

BY ARIEL FLINT ASHERY, LUCA MARIA AIELLO, ANDREA BARONCHELLI • 14 MAY 2025

Groups of AI agents can develop social conventions, generate societal bias, and undergo critical mass dynamics in norm adoption.

ABSTRACT

A roadmap for safe, regulation-compliant Living Labs for AI and digital health development

BY STEPHEN GILBERT, REBECCA MATHIAS, ANETT SCHÖNFELDER, MAGDALENA WEKENBORG, JULIA STEINIGEN-FUCHS, ANJA DILLENSEGER, TJALF ZIEMSSEN
14 MAY 2025

A Living Lab framework can support compliant development and evaluation of AI-enabled devices suited to clinical workflows.

ABSTRACT

NEUROSCIENCE

Optimal focused ultrasound lesion location in essential tremor

BY MELISSA M. J. CHUA, ALFREDO MORALES PINZON, CLEMENS NEUDORFER, PATRICK R. NG, SARAH E. BLITZ, GARANCE M. MEYER, KONSTANTIN BUTENKO, TILL A. DEMBEK, ALEXANDRE BOUTET, ANDREW Z. YANG, [...] ANDREAS HORN +10 authors • 14 MAY 2025

A brain target optimizes tremor relief and minimizes side effects in MRgFUS for essential tremor.

ABSTRACT

The role of dopaminergic medication and specific pathway alterations in idiopathic and *PRKN/PINK1*-mediated Parkinson's disease

BY ALEXANDER BALCK, MAX BORSCHE, PHILIP CAMPBELL, XI LUO, JOHN HARVEY, THERESA BRÜCKMANN, CHARLOTTE LUDWIG, AMY HARMS, KATJA LOHMANN, EMMELINE BROWN, [...] CHRISTINE KLEIN +5 authors • 14 MAY 2025

L-Dopa medication substantially affects the Parkinson's metabolome, while specific pathway alterations might be disease dependent.

ABSTRACT

State-dependent associative plasticity highlights function-specific premotor-motor pathways crucial for arbitrary visuomotor mapping

BY SONIA TURRINI, FRANCESCA FIORI, GIORGIO ARCARA, VINCENZO ROMEI, GIUSEPPE DI PELLEGRINO, ALESSIO AVENANTI • 14 MAY 2025

State-dependent neuroplasticity affects physiological and behavioral outputs of functionally specific premotor-motor projections.

ABSTRACT

Fibronectin in the olfactory mucus increases sensitivity of olfactory receptor response to odorants

BY STELLA CHAPMAN, KENJI KONDO, SAYOKO IHARA, CHIORI IJICHI, KOJI SATO, KAZUSHIGE TOUHARA • 14 MAY 2025

Real-time cAMP imaging reveals sensitivity enhancement of olfactory response by fibronectin, a component of olfactory mucus.

ABSTRACT

EARTH, ENVIRONMENTAL, ECOLOGICAL, AND SPACE SCIENCES

Single rhenium atoms on nanomagnetite: Probing the recharge process that controls the fate of rhenium in the environment

BY RONGRONG DING, CAROLINA GUIDA, CAROLYN I. PEARCE, ELKE ARENHOLZ, JEAN-MARC GRENÈCHE, ALEXANDRE GLOTER, ANDREAS C. SCHEINOST, KRISTINA O. KVASHNINA, KAIFENG WANG, ALEJANDRO FERNANDEZ-MARTINEZ, [...] LAURENT CHARLET +2 authors • 16 MAY 2025

Perrhenate is immobilized as single Re atoms or small polynuclear species on magnetite nanoparticles during recharging by Fe^{2+}.

ABSTRACT

Agulhas rings locally enhance dissipation of internal tides

BY YANG WANG, SONYA LEGG • 16 MAY 2025

Powerful oceanic eddies, such as Agulhas rings, act as hotspots for internal tide dissipation.

ABSTRACT

Decreasing importance of carbon-climate feedbacks in the Southern Ocean in a warming climate

BY TEREZA JARNÍKOVÁ, CORINNE LE QUÉRÉ, STEVEN RUMBOLD, COLIN JONES • 16 MAY 2025

Over the 21st century, ozone-driven circulation changes to the Southern Ocean carbon sink will be replaced by warming effects.

ABSTRACT

Detection of visible-wavelength aurora on Mars

BY ELISE W. KNUTSEN, TIMOTHY H. MCCONNOCHIE, MARK LEMMON, CHRIS DONALDSON, RAYMOND FRANCIS, CAREY LEGETT, SHAYLA B. VIET, LAURIANE SORET, DANIEL TOLEDO, VICTOR APÉSTIGUE, [...] ALI RAHMATI +17 authors • 14 MAY 2025

Green aurora lit up the martian sky following a solar storm eruption, captured by instruments on the Mars 2020 Perseverance rover.

ABSTRACT

Skillful multiyear prediction of flood frequency along the US Northeast Coast using a high-resolution modeling system

BY LIPING ZHANG, THOMAS L. DELWORTH, VIMAL KOUL, ANDREW ROSS, CHARLES STOCK, XIAOSONG YANG, FANRONG ZENG, ANDREW WITTENBERG, JIAN ZHAO, QINXUE GU, SHOUWEI LI • 16 MAY 2025

Flood frequency along the US Northeast Coast is predictable 3 years in advance due to AMOC variations.

ABSTRACT

A spectrum of tectonic processes at coronae on Venus revealed by gravity and topography

BY GAEL CASCIOLI, ANNA J. P. GÜLCHER, ERWAN MAZARICO, SUZANNE E. SMREKAR • 14 MAY 2025

Gravity and topography data reveal diverse mantle activity styles beneath Venus' coronae and potentially hidden signals.

ABSTRACT

Should we think of observationally constrained multidecade climate projections as predictions?

BY TONG LI, FRANCIS W. ZWIERS, XUEBIN ZHANG • 16 MAY 2025

Well-constrained simulations of future warming can be thought of as skillful predictions rather than just projections.

ABSTRACT

How marine cloud brightening could also affect stratospheric ozone

BY EWA M. BEDNARZ, JAMES M. HAYWOOD, DANIELE VISIONI, AMY H. BUTLER, ANDY JONES • 14 MAY 2025

Impacts of tropospheric climate intervention methods can also reach the stratosphere and affect the ozone layer.

ABSTRACT

The big impact of small quakes on tectonic tremor synchronization

BY GASPARD FARGE, EMILY E. BRODSKY • 14 MAY 2025

In all tremor regions, regional small earthquakes seem to disturb the spatial synchronization of tectonic tremor activity.

ABSTRACT

Crustal to mantle melt storage during the evolution of Hawaiian volcanoes

BY ESTEBAN GAZEL, KYLE DAYTON, WENWEI LIANG, JUNLIN HUA, KENDRA J. LYNN, JULIA E. HAMMER • 14 MAY 2025

Fluid inclusion measurements imply that magma storage depths deepen with the evolution of Hawaiian volcanoes.

ABSTRACT

Aboral cell types of *Clytia* and coral larvae have shared features and link taurine to the regulation of settlement

BY JULIA RAMON-MATEU, ANNA FERRAIOLI, NÚRIA TEIXIDÓ, ISABELLE DOMART-COULON, EVELYN HOULISTON, RICHARD R. COPLEY • 16 MAY 2025

Larvae of jellyfish and corals have specialized sensory cells with shared features potentially linked to settlement regulation.

ABSTRACT

PHYSICAL AND MATERIALS SCIENCES

Extreme nonlinearity by layered materials through inverse design

BY ZHI ZHAO, RAHUL DEV KUNDU, OLE SIGMUND, XIAOJIA SHELLY ZHANG • 16 MAY 2025

Mimicking seashell nacre, layered architected materials are created to unlock energy dissipation, wearables, and data encryption.

ABSTRACT

Observation of edge supercurrent in topological antiferromagnet $MnBi_2Te_4$-based Josephson junctions

BY ENZE ZHANG, ZI-TING SUN, ZEHAO JIA, JINSHAN YANG, JINGYI YAN, LINFENG AI, YING-MING XIE, YUDA ZHANG, XUE-JIAN GAO, XIAN XU, [...] FAXIAN XIU +8 authors • 14 MAY 2025

A Josephson diode with programmable polarity is realized in $MnBi_2Te_4$, enabled by edge supercurrent and magnetic field training.

ABSTRACT

Plant cell–inspired colon-targeted cargo delivery systems with dual-triggered release mechanisms

BY ANRAN MAO, ANNA C. GEBHARD, NAZANIN Z. EZAZI, ASEEM SALHOTRA, ANASTASIA V. RIAZANOVA, RAVI SHANKER, LARS WÅGBERG, LINE HAGNER NIELSEN, ANNA J. SVAGAN • 14 MAY 2025

Synthetic plant cells with cell wall and plasma membrane mimics are developed for multisite gastrointestinal cargo release.

ABSTRACT

Multistep skyrmion phase transition driven by light-induced uniaxial strain

BY BEI DING, YADONG WANG, JIAHUI MENG, XUEJIN WAN, QINGPING WANG, XINXING XU, YU ZHU, MINGHUI QIN, XINGSEN GAO, XIAOYAN ZHONG, [...] JUNMING LIU +5 authors • 14 MAY 2025

Light-induced uniaxial strain triggers multistep skyrmion phase transitions in a magnetic film/liquid crystal heterostructure.

ABSTRACT

Broadband and efficient third-harmonic generation from black phosphorus–hybrid plasmonic metasurfaces in the mid-infrared

BY SONG ZHU, WENDUO CHEN, TUGBA TEMEL, FAKUN WANG, XIAODONG XU, RUIHUAN DUAN, TINGTING WU, XUAN MAO, CONGLIAO YAN, JIANBO YU, [...] QI JIE WANG +8 authors • 14 MAY 2025

Mid-infrared third-harmonic generation is achieved from black phosphorus–based metasurfaces with high conversion efficiency.

ABSTRACT

Tunable chiral magneto-transport through band structure engineering in magnetic topological insulators $Mn(Bi_{1-x}Sb_x)_2Te_4$

BY PENG CHEN, PUYANG HUANG, ZEYU LI, JIEYI LIU, QI YAO, QIANG SUN, ANG LI, XINQI LIU, YIFAN ZHANG, XINYU CAI, [...] XUFENG KOU +9 authors
16 MAY 2025

Engineering Berry curvature and spin texture via band structure design opens an avenue for chiral spintronic applications.

ABSTRACT

Mid-infrared group IV nanowire laser

BY YOUNGMIN KIM, SIMONE ASSALI, JUNYU GE, SEBASTIAN KOELLING, MANLIN LUO, LU LUO, HYO-JUN JOO, JAMES TAN, XUNCHENG SHI, ZORAN IKONIC, [...] DONGUK NAM +2 authors • 16 MAY 2025

Mid-infrared lasing is achieved from a group IV nanowire, marking a milestone toward on-chip lasers for integrated photonics.

ABSTRACT

Accelerating ion transport in polycrystalline conductors: On pores and grain boundaries

BY ERICA TRUONG, SAWANKUMAR V. PATEL, HAOYU LIU, YUDAN CHEN, VALENTINA LACIVITA, CHI ZHANG, IFEOLUWA P. OYEKUNLE, ISLAMIYAT OJELADE, YONGKANG JIN, BRENDON T. JONES, [...] YAN-YAN HU +5 authors • 14 MAY 2025

Mesostructural and chemical tuning of $LiTa_2PO_8$ promotes pore uniformity and reduces chemical contrast, improving ion transport.

ABSTRACT

Unidirectional molecular rotary motor with remotely switchable rotation direction

BY KAMIL SZYCHTA, WOJCIECH DANOWSKI, JOANNA JANKOWSKA • 16 MAY 2025

A redesigned molecular motor can be switched with an electric field to change the rotation direction.

ABSTRACT

Helical coassembly enables full-color efficient circularly polarized light emission from carbon dots with high dissymmetry factors

BY JINSUI LI, QINGHUA TAN, JINYANG LI, WENDI QIN, CHENHAO LI, QIAN TENG, YUYUE YANG, YIFENG WANG, YE CAO, YUCHEN HU, [...] FANGLONG YUAN +1 authors • 16 MAY 2025

Full-color and efficient CPL from nontoxic carbon dots enables flexible luminous patterns and advanced anticounterfeiting.

ABSTRACT

Study of self-assembly behavior and ionic conductivity of conjugated liquid crystals with T-shaped facial-polyphilic structure

BY ZIWEI LIU, YANGYANG SUN, BAN XUAN DONG, SHRAYESH N. PATEL, PAUL F. NEALEY, FERNANDO A. ESCOBEDO, CHRISTOPHER K. OBER • 16 MAY 2025

Polyphilic LCs with varying structures show potential application as ionic conducting materials.

ABSTRACT

Engineered high endurance in WO_3-based resistive switching devices via a guided filament approach

BY ZIYI YUAN, BABAK BAKHIT, YI-XUAN LIU, ZHUOTONG SUN, GIULIO I. LAMPRONTI, XINJUAN LI, SIMON M. FAIRCLOUGH, BENSON K. TSAI, ABHIJEET CHOUDHURY, CATERINA DUCATI, [...] JUDITH L. MACMANUS-DRISCOLL +2 authors • 16 MAY 2025

A materials design greatly improves the endurance of WO_3 memory devices, advancing future computing technologies.

ABSTRACT

Oxide semiconductor in a neuromorphic chromaticity communication loop for extreme environment exploration

BY SHANGDA QU, QIANBO YU, CHENGPENG JIANG, TAOYU ZOU, HONGHUAN XU, LONGLONG ZHANG, MENGZE TAO, QINGSHAN ZHU, SONG ZHANG, CONG GENG, [...] WENTAO XU +2 authors • 16 MAY 2025

A neuromorphic chromaticity communication loop demonstrates potential for extreme environment exploration.

ABSTRACT

Pixelation of perovskite quantum wire thin films with 0.18-µm features and 63,500-ppi pixel density

BY QIANPENG ZHANG, XIAOFEI SUN, GUANYU CHEN, ZICHAO MA, DAQUAN ZHANG, YU ZHOU, XIAO QIU, BEITAO REN, YUCHENG DING, SWAPNADEEP PODDAR, [...] ZHIYONG FAN +3 authors • 14 MAY 2025

The feature size of 0.18 µ m is achieved, enabling high-density pixelation of perovskite materials for large-scale integration.

ABSTRACT

Stress-engineered ultra-broadband spectrometers

BY GONGYUAN ZHANG, TOM ALBROW-OWEN, WENJUN PENG, XIN LIANG, XIANMING ZHANG, PAN WANG, DAWEI DI, SHURONG DONG, JIKUI LUO, GUO WANG, [...] ZONGYIN YANG +5 authors • 14 MAY 2025

Stress-engineered plastic elements enable cost-effective, portable spectrometers that cover both the visible and SWIR ranges.

ABSTRACT

Design of nondeterministic architected structures via bioinspired distributed agents

BY JIAKUN LIU, XIAOHENG ZHU, WALKER GOSRICH, MARK YIM, JORDAN R. RANEY • 14 MAY 2025

Bioinspired swarms build nondeterministic structures.

ABSTRACT

Thermoforming 2D films into 3D electronics for high-performance, customizable tactile sensing

BY JUNGRAK CHOI, CHANKYU HAN, DONHO LEE, HYUNJIN KIM, GIHUN LEE, JI-HWAN HA, YONGROK JEONG, JUNSEONG AHN, HYUNKYU PARK, HYEONSEOK HAN, [...] INKYU PARK +2 authors • 14 MAY 2025

Thermoformed 3D electronics enable ultrawide modulus tunability for high-performance and customizable tactile sensing.

ABSTRACT

Giant room-temperature terahertz photothermoelectric response mediated by hot carriers at the metal-semimetal interfaces

BY MIAO CAI, JINHUA ZHANG, YUANBO CHEN, LIANG HONG, JINGJING FU, XINGGUO ZHENG, YIFAN YAO, SHICHEN ZHANG, YINJUN LIU, BOYU DONG, [...] SONGLIN ZHUANG +6 authors • 14 MAY 2025

A PtSe2 terahertz detector enables a giant terahertz PTE response mediated by hot carriers at the metal-PtSe2 interfaces.

ABSTRACT

Self-positioning microdevices enable adaptable spatial displaying

BY QI GUO, ZEYI LI, YAJIE ZHOU, SHANSHAN ZHAO, YAXIN WANG, MINGJIANG ZHANG, GUANGEN LI, ZHI TONG, TAOTAO ZHUANG, SHU-HONG YU • 14 MAY 2025

Self-positioning microdevices enable the real-time circularly polarized stereoscopic adaptable display.

ABSTRACT

Upgraded circular single-stranded DNA regulators for multiple-input multiple-output gene circuits in mammalian cells

BY LINLIN TANG, JINGHAO WANG, KAIQI XU, ZHEN LI, JIE SONG • 16 MAY 2025

Circular single-stranded DNA with bridge switches enables multiple gene regulation via endogenous signals in mammalian cells.

ABSTRACT

A skin-mimicking multifunctional hydrogel via hierarchical, reversible noncovalent interactions

BY XINGKUI GUO, SONGLIN ZHANG, SHUBHAM PATEL, XIAOLU SUN, YOU-LIANG ZHU, ZECHANG WEI, RONGGUO WANG, XIAODONG HE, ZUANKAI WANG, CUNJIANG YU, SWEE CHING TAN • 16 MAY 2025

A skin-like functional hydrogel enables stretchability, self-healing, and energy harvesting for advanced human-machine interfaces.

ABSTRACT

Achieving symmetric snap-through buckling via designed magnetic actuation

BY YINGCHAO ZHANG, WEICHENG HUANG, MINGCHAO LIU, JING YU, HUAJIAN GAO • 14 MAY 2025

Unlocking symmetric snap-through buckling via tailored magnetic actuation enables enhanced control and predictability.

ABSTRACT

Acoustofluidic spin control for 3D particle manipulation in droplets

BY CHUYI CHEN, YUYANG GU, JOSEPH RUFO, JINXIN ZHANG, KAICHUN YANG, YING CHEN, LUKE P. LEE, TONY JUN HUANG • 16 MAY 2025

Acoustofluidics creates a spinning wave-fluid system for 3D particle manipulation.

ABSTRACT

BIOMEDICINE AND LIFE SCIENCES

Dynamics of bacterial operons during genome-wide stresses is influenced by premature terminations and internal promoters

BY RAHUL JAGADEESAN, SUCHINTAK DASH, CRISTINA S. D. PALMA, INES S. C. BAPTISTA, VATSALA CHAUHAN, JARNO MÄKELÄ, ANDRE S. RIBEIRO • 16 MAY 2025

Internal promoters in operons are critical in genome-wide stress responses, compensating for frequent premature RNAP falloffs.

ABSTRACT

Ppp1r3b is a metabolic switch that shifts hepatic energy storage from lipid to glycogen

BY KATE TOWNSEND CREASY, MINAL B. MEHTA, CAROLIN V. SCHNEIDER, JOSEPH PARK, DAVID ZHANG, SWAPNIL V. SHEWALE, JOHN S. MILLAR, MARIJANA VUJKOVIC, NICHOLAS J. HAND, PAUL M. TITCHENELL, [...] DANIEL J. RADER +1 authors • 16 MAY 2025

PPP1R3B expression determines how hepatic energy is stored and changes contribute to liver damage and metabolic disease.

ABSTRACT

Interaction networks of SIM-binding groove mutants reveal alternate modes of SUMO binding and profound impact on SUMO conjugation

BY LAURA A. CLAESSENS, MATTY VERLAAN–DE VRIES, NIENKE BROEKMAN, MARTIJN S. LUIJSTERBURG, ALFRED C. O. VERTEGAAL • 14 MAY 2025

Many proteins, including a group of WD40 proteins, bind to SUMO independently of the classical SUMO-SIM mechanism.

ABSTRACT

Phosphorylation by Aurora kinase A facilitates cortical-cytoplasmic dynamics of Par-3 in asymmetric division of radial glia progenitors

BY JASON Q. GARCIA, VINCENT MOUILLEAU, HENRY NG, XIANG ZHAO, DAVID O. MORGAN, SU GUO • 14 MAY 2025

Aurora kinase A promotes cytoplasmic Par-3 to regulate asymmetric cell division, Notch signaling dynamics, and progenitor fate.

ABSTRACT

Endogenous/exogenous dual-responsive nanozyme for photothermally enhanced ferroptosis-immune reciprocal synergistic tumor therapy

BY HANXI ZHANG, JIAZHEN LV, HAO WU, YUHAN HE, MENGYUE LI, CHUNHUI WU, DONG LV, YIYAO LIU, HONG YANG • 14 MAY 2025

Responsive nanozyme-mediated multimodal/multipathway/multilevel reciprocal synergistic tumor therapy induces hybrid cell death.

ABSTRACT

Identification and characterization of the de novo methyltransferases for eukaryotic N^6-methyladenine (6mA)

BY TING CHENG, JIACHEN ZHANG, HAICHENG LI, JINGHAN DIAO, WENXIN ZHANG, JUNHUA NIU, TAKAYUKI KAWAGUCHI, JUN-ICHI NAKAYAMA, KENSUKE KATAOKA, SHAN GAO • 14 MAY 2025

AMT2 and AMT5, members of the MT-A70 family, catalyze the de novo establishment of DNA N^6-methyladenine (6mA) in eukaryotes.

ABSTRACT

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BY MATTHIAS BOCHTLER • SCIENCE ADVANCES • 14 MAY 2025

Nucleosomes represent a crucial target for the intra-S phase checkpoint in response to replication stress

BY XIAOQIN LIU, BO ZHANG, YU HUA, CHUANQI LI, XIZHOU LI, DAOCHUN KONG • 16 MAY 2025

ATR-dependent checkpoint plays a crucial role in the formation of compacted chromatin domains at replication fork stalling sites.

ABSTRACT

Low-cost robotic manipulation of live microtissues for cancer drug testing

BY IVAN STEPANOV, NOAH R. GOTTSHALL, ALIREZA AHMADIANYAZDI, DAKSH SINHA, ETHAN J. LOCKHART, TRAN N. H. NGUYEN, SARMAD HASSAN, LISA F. HOROWITZ, RAYMOND S. YEUNG, TARANJIT S. GUJRAL, ALBERT FOLCH • 14 MAY 2025

A low-cost robotic platform handles microtumors and catalyzes their use in cancer drug evaluation and personalized oncology.

ABSTRACT

Sheep serve as amplifying hosts of Japanese encephalitis virus, increasing the risk of human infection

BY HAILONG ZHANG, DAN LI, JIAYANG ZHENG, JINGYUE BAO, ZHILIANG WANG, YAFENG QIU, KE LIU, ZONGJIE LI, BEIBEI LI, DONGHUA SHAO, [...] JIANCHAO WEI +2 authors • 16 MAY 2025

Sheep serve as amplifying hosts for transmission cycle of JEV, increasing the public health risk of human infection.

ABSTRACT

Ancestral reconstruction of polyethylene terephthalate degrading cutinases reveals a rugged and unexplored sequence-fitness landscape

BY VANESSA VONGSOUTHI, ROSEMARY GEORGELIN, DANA S. MATTHEWS, JAKE SAUNDERS, BRENDON M. LEE, JENNIFER TON, ADAM M. DAMRY, REBECCA L. FRKIC, MATTHEW A. SPENCE, COLIN J. JACKSON • 14 MAY 2025

Ancestral sequence reconstruction reveals paths to PET-degrading activity in cutinases, expanding the enzyme fitness landscape.

ABSTRACT

Celluloepidemiology—A paradigm for quantifying infectious disease dynamics on a population level

BY MY K. HA, ANNA POSTOVSKAYA, MARIA KUZNETSOVA, PIETER MEYSMAN, VINCENT VAN DEUREN, SABRINA VAN IERSSEL, HANS DE REU, JOLIEN SCHIPPERS, KARIN PEETERS, HAJAR BESBASSI, [...] BENSON OGUNJIMI +13 authors • 16 MAY 2025

Celluloepidemiology offers cell-driven insights into human immunity against pathogens on a population level.

ABSTRACT

Interleukin-4 modulates type I interferon to augment antitumor immunity

BY HANNAH V. NEWNES, JESSE D. ARMITAGE, ANTHONY C. BUZZAI, EMMA DE JONG, KATHERINE M. AUDSLEY, SAMANTHA A. BARNES, SHAMINI SRINIVASAN, MICHAEL SERRALHA, VANESSA S. FEAR, BELINDA B. GUO, [...] JASON WAITHMAN +6 authors • 14 MAY 2025

A therapeutic strategy that harnesses the IL-4/IFN-I axis to improve antitumor T cell immunity.

ABSTRACT

Astrocytes-derived LCN2 triggers EV-A71–induced muscle soreness via accumulating lactate

BY QIAO YOU, JING WU, CHAOYONG WANG, DEYAN CHEN, SHIJI DENG, YURONG CAI, NAN ZHOU, RUINING LYU, YAJIE QIAN, YI XIE, [...] ZHIWEI WU +1 authors
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HMGB1 promotes LCN2 secretion from brain, leading to lactate accumulation in muscle, which causes EV-A71-induced muscle soreness.

ABSTRACT

Identification and targeting of regulators of SARS-CoV-2–host interactions in the airway epithelium

BY BROOKE DIRVIN, HEEJU NOH, LORENZO TOMASSONI, DANTING CAO, YIZHUO ZHOU, XIANGYI KE, JUN QIAN, SONIA JANGRA, MICHAEL SCHOTSAERT, ADOLFO GARCÍA-SASTRE, [...] WELLINGTON V. CARDOSO +2 authors • 16 MAY 2025

A network-based approach identifies master regulators of SARS-CoV-2 infection in airways and prioritizes drugs targeting.

ABSTRACT

Dual DNA demethylation mechanisms implement epigenetic memory driven by the pioneer factor PAX7

BY JULIETTE HARRIS, ALEXANDRE MAYRAN, ARTHUR GOUHIER, YVES GAUTHIER, NAWAL HAJJ SLEIMAN, SAMIR MERABET, MICHAEL DUKATZ, PAVEL BASHTRYKOV, ALBERT JELTSCH, HAIG DJAMBAZIAN, [...] JACQUES DROUIN +2 authors • 16 MAY 2025

Pioneer factor PAX7 highjacks control of DNA methylation maintenance, leading to enhancer demethylation and epigenetic memory.

ABSTRACT

The microRNA OsmiR393 regulates rice brown planthopper resistance by modulating the auxin–ROS signaling cross-talk

BY LIN ZHU, HAICHAO LI, ZHIHUAN TAO, FEILONG MA, SHUJUN WU, XUEXIA MIAO, LIMING CAO, ZHENYING SHI • 16 MAY 2025

Auxin and ROS cross-talk to mediate resistance to a kind of piercing-sucking insect in rice.

ABSTRACT

Capturing structural intermediates in an animal-like cryptochrome photoreceptor by time-resolved crystallography

BY MANUEL MAESTRE-REYNA, YUHEI HOSOKAWA, PO-HSUN WANG, MARTIN SAFT, NICOLAS CARAMELLO, SYLVAIN ENGILBERGE, SOPHIE FRANZ-BADUR, EKA PUTRA GUSTI NGURAH PUTU, MAI NAKAMURA, WEN-JIN WU, [...] LARS-OLIVER ESSEN +30 authors • 16 MAY 2025

Time-resolved crystallography unveils how light-driven chromophore reduction sparks dramatic structural change in a photoreceptor.

ABSTRACT

Hsc70-4: An unanticipated mediator of dsRNA internalization in *Drosophila*

BY SABRINA J. FLETCHER, EUGENIA S. BARDOSSY, LORENA TOMÉ-PODERTI, THOMAS MOSS, VANESA MONGELLI, LIONEL FRANGEUL, HERVÉ BLANC, YANN VERDIER, JOELLE VINH, SHAERI MUKHERJEE, MARIA-CARLA SALEH • 16 MAY 2025

Hsc70-4 localizes to the cell surface of *Drosophila* cells, binds to exogenous dsRNA, and mediates its internalization.

ABSTRACT

Structure of a photosystem I supercomplex from *Galdieria sulphuraria* close to an ancestral red alga

BY KOJI KATO, MINORU KUMAZAWA, YOSHIKI NAKAJIMA, TAKEHIRO SUZUKI, NAOSHI DOHMAE, JIAN-REN SHEN, KENTARO IFUKU, RYO NAGAO • 16 MAY 2025

Structure of *Galdieria sulphuraria* PSI-LHCI unveils ancestral traits, including different quinones and LHCI organizations.

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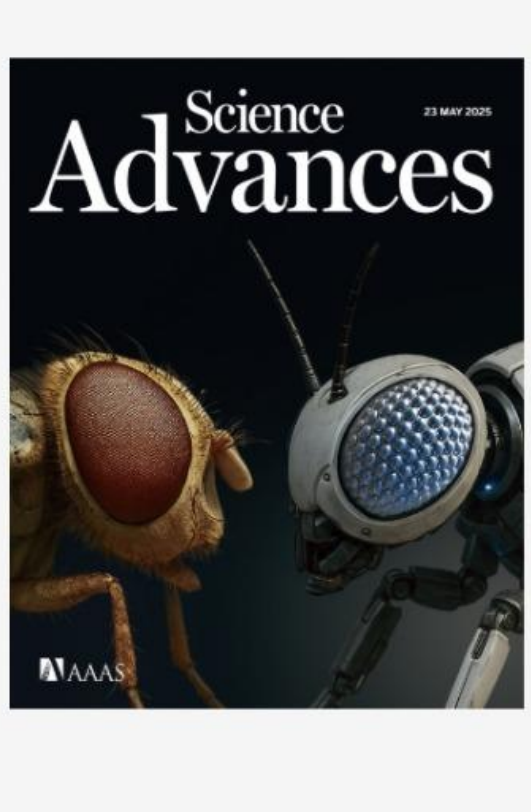

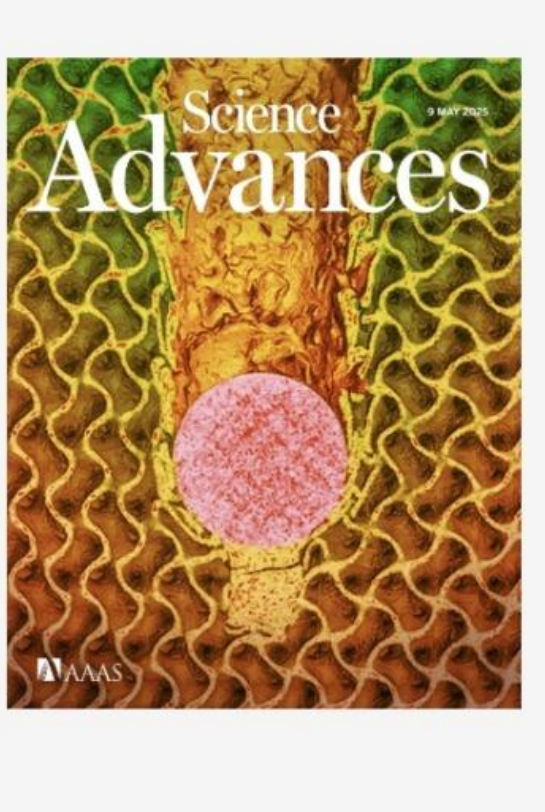

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