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ONLINE COVER: 3D reconstruction of a Pacinian corpuscle, a sensory receptor in the skin that detects transient touch and vibration in vertebrates. Corpuscles are composed of a mechanoreceptor afferent (red), a neuron that senses mechanical pressure, surrounded by lamellar Schwann cells (teal), enclosed by a multilayered outer core. Ziolkowski *et al*. present the 3D architectur...

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SOCIAL AND INTERDISCIPLINARY SCIENCES AND PUBLIC HEALTH

Ambient outdoor heat and accelerated epigenetic aging among older adults in the US

BY EUN YOUNG CHOI, JENNIFER A. AILSHIRE • **26 FEB 2025**

Ambient outdoor heat, especially long term, may accelerate epigenetic aging in a diverse national cohort of older adults.

ABSTRACT

NEUROSCIENCE

Chemogenetic activation of microglial Gi signaling decreases microglial surveillance and impairs neuronal synchronization

BY SHUNYI ZHAO, LINGXIAO WANG, DIMITRIOS KLEIDONAS, FANGFANG QI, YUE LIANG, JIAYING ZHENG, ANTHONY D. UMPIERRE, LONG-JUN WU • **28 FEB 2025**

Microglial Gi signaling inhibits process dynamics, reduces microglia-neuron soma interactions, and decreases neuronal activity.

ABSTRACT

A long-lived pool of PINK1 imparts a molecular memory of depolarization-induced activity

BY LIAM POLLOCK, IOANNA CH. GEORGIOU, EMMA V. RUSILOWICZ-JONES, MICHAEL J. CLAGUE, SYLVIE URBÉ • **28 FEB 2025**

Mitochondrial stress activates a long-lived pool of PINK1 that retains activity long after mitochondria have recovered.

ABSTRACT

An endogenous GLP-1 circuit engages VTA GABA neurons to regulate mesolimbic dopamine neurons and attenuate cocaine seeking

BY RILEY MERKEL, NICOLE S. HERNANDEZ, VANESSA WEIR, YAFANG ZHANG, ANTONIA CAFFREY, MATTHEW T. RICH, RICHARD C. CRIST, BENJAMIN C. REINER, HEATH D. SCHMIDT • **26 FEB 2025**

Central GLP-1–expressing circuits modulate dopamine activity and reduce cocaine seeking in rats.

ABSTRACT

Cystic fibrosis alters the structure of the olfactory epithelium and the expression of olfactory receptors affecting odor perception

BY IGNACIO CABALLERO, YVON MBOUAMBOUA, SUSANNE WEISE, RAQUEL LÓPEZ-GÁLVEZ, MARIE COURALET, ISABELLE FLEUROT, NICOLAS PONS, MARTA BARRERA-CONDE, NAYIMA QUÍLEZ-PLAYÁN, MATTHIEU KELLER, [...] PABLO CHAMERO +4 authors • **28 FEB 2025**

Cystic fibrosis alters olfactory structures and olfactory receptor expression, causing smell loss beyond chronic inflammation.

ABSTRACT

Benchmarking macaque brain gene expression for horizontal and vertical translation

BY ANDREA I. LUPPI, ZHEN-QI LIU, JUSTINE Y. HANSEN, RODRIGO COFRE, MEIQI NIU, ELENA KUZMIN, SEÁN FROUDIST-WALSH, NICOLA PALOMERO-GALLAGHER, BRATISLAV MISIC • **28 FEB 2025**

Macaque cortical gene expression recapitulates human gene expression and macaque receptor density and microarchitecture.

ABSTRACT

The inner core enables transient touch detection in the Pacinian corpuscle

BY LUKE H. ZIOLKOWSKI, YURY A. NIKOLAEV, AKITOSHI CHIKAMOTO, MAI ODA, VIKTOR V. FEKETA, DAVID MONEDERO-ALONSO, SERAFIMA A. ARDASHEVA, SAMUEL S.

THIS WEEK'S PODCAST

27 FEB 2025 | BY SARAH CRESPI, KATA KARÁTH

Keeping transgenic corn sustainable, and sending shrunken heads home

00:00 | 33:28

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BAE, C. SHAN XU, SONG PANG, [...] SVIATOSLAV N. BAGRIANTSEV +1 authors • 26 FEB 2025

Structure-functional study of Pacinian corpuscle reveals that vibration sensitivity is enabled by the inner core, not the outer.

ABSTRACT

EARTH, ENVIRONMENTAL, ECOLOGICAL, AND SPACE SCIENCES

When the wild things are: Defining mammalian diel activity and plasticity

BY KADAMBARI DEVARAJAN, MASON FIDINO, ZACH J. FARRIS, SOLNY A. ADALSTEINSSON, GABRIEL ANDRADE-PONCE, JULIA L. ANGSTMANN, WHITNEY ANTHONYSAMY, JESICA AQUINO, ADDISU ASEFA, BELEN AVILA, [...] BRIAN D. GERBER +206 authors • 26 FEB 2025

Many species of mammals worldwide are highly plastic in their timing of diel activity, which has unknown fitness consequences.

ABSTRACT

Sea ice pattern effect on Earth's energy budget is characterized by hemispheric asymmetry

BY CHEN ZHOU, QINGMING WANG, IVY TAN, LUJUN ZHANG, MARK D. ZELINKA, MINGHUAI WANG, JONAH BLOCH-JOHNSON • 28 FEB 2025

Effect of sea ice loss on Earth's energy budget at the top of atmosphere depends on its spatial pattern.

ABSTRACT

Constraining the entire Earth system projections for more reliable climate change adaptation planning

BY CHAO LI, FRANCIS W. ZWIERS, XUEBIN ZHANG, ERICH M. FISCHER, FUJUN DU, JIEYU LIU, JIANYU WANG, YONGXIAO LIANG, TONG LI, LINA YUAN • 26 FEB 2025

Observationally constrained time-oriented Earth system projections better support climate change adaptation.

ABSTRACT

Fault material heterogeneity controls deep interplate earthquakes

BY YIHE HUANG, SATOSHI IDE, AITARO KATO, KEISUKE YOSHIDA, CHENGXIN JIANG, PENG ZHAI • 26 FEB 2025

Heterogeneous kilometer-scale structures on the subduction zone plate interface control where deep interplate earthquakes occur.

ABSTRACT

Anthropogenic intensification of Arctic anticyclonic circulation

BY ZHONGFANG LIU, CAMILLE RISI, FRANCIS CODRON, GUILLAUME GASTINEAU, XIAOHE HUAN, HAIMAO LAN, WANLING XU, GABRIEL J. BOWEN • 26 FEB 2025

Recent changes in Arctic winter atmospheric circulation can be attributed to anthropogenic greenhouse gas and aerosol emissions.

ABSTRACT

Multidisciplinary evidence for synchroneity between Ontong Java Nui volcanism and early Aptian oceanic anoxic event 1a

BY HIRONAO MATSUMOTO, KOTARO SHIRAI, AKIRA ISHIKAWA, NAOHIKO OHKOUCHI, NANAKO O. OGAWA, MARIA LUISA G. TEJADA, ATSUSHI ANDO, JUNICHIRO KURODA, KATSUHIKO SUZUKI • 26 FEB 2025

Geochemical data from Pacific tuffaceous sediments strengthen linkage between Ontong Java volcanism and oceanic anoxic event 1a.

ABSTRACT

Direct measurement of fluorocarbon radicals in the thermal destruction of perfluorohexanoic acid using photoionization mass spectrometry

BY MING-GAO XU, CHEN HUANG, LONG ZHAO, ANTHONY K. RAPPÉ, ERIC M. KENNEDY, MICHAEL STOCKENHUBER, JOHN C. MACKIE, NATHAN H. WEBER, JOHN A. LUCAS, MUSAHID AHMED, [...] WENCHAO LU +1 authors • 28 FEB 2025

Transient intermediates were identified during the incineration of PFAS, elucidating how incineration will work to destroy PFAS.

ABSTRACT

Formation of free-floating planetary mass objects via circumstellar disk encounters

BY ZHIHAO FU, HONGPING DENG, DOUGLAS N. C. LIN, LUCIO MAYER • 26 FEB 2025

Free-floating planetary mass objects have their own formation channel, neither star-like nor planet-like.

ABSTRACT

PHYSICAL AND MATERIALS SCIENCES

Terahertz broadband one-way transparency with spontaneous magnon decay

BY MITSURU AKAKI, MASASHIGE MATSUMOTO, YASUO NARUMI, SUSUMU OKUBO, HITOSHI OHTA, MASAYUKI HAGIWARA • 26 FEB 2025

We find terahertz broadband one-way transparency through extremely high-field experiments and clarify it by theoretical analysis.

ABSTRACT

^{13}C hyperpolarization with nitrogen-vacancy centers in micro- and nanodiamonds for sensitive magnetic resonance applications

BY RÉMI BLINDER, YULIYA MINDARAVA, MARTIN KORZECZEK, ALASTAIR MARSHALL, FELIX GLÖCKLER, STEFFEN NOTHELFER, ALWIN KIENLE, CHRISTIAN LAUBE, WOLFGANG KNOLLE, CHRISTIAN JENTGENS, [...] FEDOR JELEZKO +1 authors • 28 FEB 2025

Nuclear hyperpolarization of ^{13}C spins is performed at ambient conditions in micro- and nanodiamonds.

ABSTRACT

Approaching infinite selectivity in membrane-based aqueous lithium extraction via solid-state ion transport

BY SOHUM K. PATEL, ARPITA IDDYA, WEIYI PAN, JIANHAO QIAN, MENACHEM ELIMELECH • **28 FEB 2025**

Solid-state transport enables near-perfect lithium ion selectivity, inspiring next-generation ion-selective membrane design.

ABSTRACT

Robust and optimal control of open quantum systems

BY ZI-JIE CHEN, HONGWEI HUANG, LIDA SUN, QING-XUAN JIE, JIE ZHOU, ZIYUE HUA, YIFANG XU, WEITING WANG, GUANG-CAN GUO, CHANG-LING ZOU, [...] XU-BO ZOU **+1 authors** • **26 FEB 2025**

An efficient quantum optimal control algorithm for open quantum systems is developed and tested in superconducting circuits.

ABSTRACT

HfZrO-based synaptic resistor circuit for a Super-Turing intelligent system

BY JUNGMIN LEE, RAHUL SHENOY, ATHARVA DEO, SUIN YI, DAWEI GAO, DAVID QIAO, MINGJIE XU, SHIVA ASAPU, ZIXUAN RONG, DHRUVA NATHAN, [...] YONG CHEN **+6 authors** • **28 FEB 2025**

Synaptic resistor circuits for Super-Turing AI systems feature low power consumption, fast learning, and agile adaptability.

ABSTRACT

A sensor-actuator–coupled gustatory interface chemically connecting virtual and real environments for remote tasting

BY SHULIN CHEN, YIZHEN JIA, BOWEN DUAN, TZU-LI LIU, QI WANG, XIAO XIAO, PRASAD NITHIANANDAM, XI TIAN, CHUNYU YANG, CHANGSHENG WU, [...] JINGHUA LI **+1 authors** • **28 FEB 2025**

A bio-integrated gustatory interface enables chemical connections between virtual and real environments for remote tasting.

ABSTRACT

Solid-state spin coherence time approaching the physical limit

BY SHUO HAN, XIANGYU YE, XU ZHOU, ZHAOXIN LIU, YUHANG GUO, MENGQI WANG, WENTAO JI, YA WANG, JIANGFENG DU • **28 FEB 2025**

The long-standing empirical limit on electronic spin coherence time in solids is surpassed by identifying its physical origin.

ABSTRACT

A photovoltaic-electrolysis system with high solar-to-hydrogen efficiency under practical current densities

BY QINGRAN ZHANG, YIHAO SHAN, JIAN PAN, PRIYANK KUMAR, MARK J. KEEVERS, JOHN LASICH, GURPREET KOUR, RAHMAN DAIYAN, IVAN PEREZ-WURF, LARS THOMSEN, [...] XUNYU LU **+7 authors** • **26 FEB 2025**

The photovoltaic electrolysis system, using a Fe_2O_3-NiO_xH_y catalyst, has enabled a solar-to-hydrogen efficiency up to 29.1%.

ABSTRACT

On-surface synthesis of Heisenberg spin-1/2 antiferromagnetic molecular chains

BY KEWEI SUN, NAN CAO, ORLANDO J. SILVEIRA, ADOLFO O. FUMEGA, FIONA HANINDITA, SHINGO ITO, JOSE L. LADO, PETER LILJEROTH, ADAM S. FOSTER, SHIGEKI KAWAI • **28 FEB 2025**

Unique quantum spin behaviors were discovered in molecular chains on gold surfaces.

ABSTRACT

Correlated nanoimaging of structure and dynamics of cation-polaron coupling in hybrid perovskites

BY ROLAND WILCKEN, BRANDEN L. ESSES, RACHITH S. NITHYANANDA KUMAR, LAUREN A. HURLEY, SEAN E. SHAHEEN, MARKUS B. RASCHKE • **26 FEB 2025**

Nanoscale heterogeneity in perovskites for photovoltaics influences the photoinduced coupled carrier and polaron-lattice dynamics.

ABSTRACT

Manipulating perovskite structural asymmetry for high-performing self-powered full-stokes polarimetry

BY QUANLIN CHEN, MINGWEI GE, CONG GENG, JIA ZHANG, LINYUE GAO, ZHUANZHUAN HUANG, SAIKE WANG, YANXING FENG, XINXIN YUE, SAIF M. H. QAID, [...] MINGJIAN YUAN **+3 authors** • **28 FEB 2025**

Chiral perovskite materials improve design, characterization, and performance enhancement strategies for optoelectronics.

ABSTRACT

Thermal diffusivity microscope: Zooming in on anisotropic heat transport

BY NEETU LAMBA, BRAULIO BELTRÁN-PITARCH, TIANBO YU, MUHAMED DAWOD, ALEX BERNER, BENNY GURALNIK, ANDREY OREKHOV, NICOLAS GAUQUELIN, YARON AMOUYAL, JOHAN VERBEECK, [...] DIRCH HJORTH PETERSEN **+2 authors** • **26 FEB 2025**

A calibration- and preparation-free method for high-resolution anisotropic thermal diffusivity mapping is presented.

ABSTRACT

Manipulating the coordination dice: Alkali metals directed synthesis of Co-N-C catalysts with CoN_4 sites

BY MENGXUE HUANG, XUYA ZHU, WENWEN SHI, QIANQIAN QIN, JIE YANG, SHANSHAN LIU, LIFANG CHEN, RUIMIN DING, LIN GAN, XI YIN • **26 FEB 2025**

Precise formation of MN_4 sites was achieved through a theory-guided coordination strategy.

ABSTRACT

Cavity QED in a high NA resonator

BY DANIAL SHADMANY, AISHWARYA KUMAR, ANNA SOPER, LUKAS PALM, CHUAN YIN, HENRY ANDO, BOWEN LI, LAVANYA TANEJA, MATT JAFFE, SCHUSTER DAVID, JON SIMON • **26 FEB 2025**

By engineering a multiple-pass standing wave of light <1 μm size at the center, single atoms can be trapped and read out fast.

ABSTRACT

Unveiling the importance of nonshortest paths in quantum networks

BY XINQI HU, GAOGAO DONG, KIM CHRISTENSEN, HANLIN SUN, JINGFANG FAN, ZIHAO TIAN, JIANXI GAO, SHLOMO HAVLIN, RENAUD LAMBIOTTE, XIANGYI MENG
26 FEB 2025

Contrary to classical expectation in network theory, quantum networks can be boosted by exploiting nonshortest path connectivity.

ABSTRACT

Implantable wireless suture sensor for in situ tendon and ligament strain monitoring

BY GUANGMIN YANG, RONGZAN LIN, HAOJIE LI, YUQIU CHEN, MEILING LIU, ZIYANG LUO, KEWEI WANG, JINYING TU, YUE XU, ZIXIAO FAN, [...] RAN LIU
+3 authors • **28 FEB 2025**

An implantable strain sensor made of surgical sutures can provide wirelessly strain monitoring of tendon and ligament in situ.

ABSTRACT

Adaptive cold-atom magnetometry mitigating the trade-off between sensitivity and dynamic range

BY ZHU MA, CHENGYIN HAN, ZHI TAN, HAIHUA HE, SHENZHEN SHI, XIN KANG, JIATAO WU, JIAHAO HUANG, BO LU, CHAOHONG LEE • **28 FEB 2025**

Cold-atom magnetometry achieves sensitivity surpassing the optimal frequentist level while maintaining a high dynamic range.

ABSTRACT

Atomic to nanoscale chemical fluctuations: The catalyst for enhanced thermoelectric performance in high-entropy materials

BY JINGYI WANG, HAOTIAN GAO, KUNPENG ZHAO, HEXIGE WULIJI, BINRU ZHAO, JIE MA, XINGYU CHEN, JIAWEI ZHANG, YANPING SUI, TIAN-RAN WEI, [...] XUN SHI
+1 authors • **28 FEB 2025**

Atomic to nanoscale chemical fluctuations are the catalyst for enhanced thermoelectric performance in high-entropy materials.

ABSTRACT

Pixel-level metal blackbody microcavities via hierarchical laser writing

BY CHONG-KUONG NG, TIANLE CHEN, BING-FENG JU, YUAN-LIU CHEN, YUNGUI MA • **28 FEB 2025**

Compact blackbody microcavities exhibit high emissivity and stability, enabling advanced thermal IR applications.

ABSTRACT

Textured lithium ceramics prepared by gas-solid reactive sintering

BY XINSHUI ZHANG, YIHANG YANG, RUIXIN HAO, YUE ZHANG, XIANGCHEN HU, HONGSHENG SHI, ZHEYU YANG, JIAMENG YU, XIN CHEN, CHANG ZHANG, [...] WEI LIU
+5 authors • **26 FEB 2025**

A gas-solid reactive sintering method was developed to prepare textured lithium ceramics with large columnar grains.

ABSTRACT

Postselection shifts the transition frequency of helium in an atomic beam

BY JIN-LU WEN, JIA-DONG TANG, YA-NAN LV, YU R. SUN, CHANG-LING ZOU, JUN-FENG DONG, SHUI-MING HU • **28 FEB 2025**

An unexpected postselection shift revealed in atomic helium spectroscopy yields a different nuclear charge radius.

ABSTRACT

BIOMEDICINE AND LIFE SCIENCES

Coordinating interleukin-2 encoding circRNA with immunomodulatory lipid nanoparticles to potentiate cancer immunotherapy

BY KAI YANG, BING BAI, XIAOMEI LI, WEI ROU, CHENG HUANG, MEIXIN LU, XUEYAN ZHANG, CHUNBO DONG, SHAOLONG QI, ZHIDA LIU, GUOCAN YU • **26 FEB 2025**

A circRNA–based IL-2 therapy features prolonged IL-2 half-life, low T_{reg} activation, and high safety for cancer immunotherapy.

ABSTRACT

Organoid drug profiling identifies methotrexate as a therapy for SCCOHT, a rare pediatric cancer

BY SEOK-YOUNG KIM, TAMAR A. E. DE WEERT, MARIJN VERMEULEN, FEMKE RINGNALDA, LENNART KESTER, JOZSEF ZSIROS, SELMA EISING, JAN J. MOLENAAR, KARIN SANDERS, MARC VAN DE WETERING, HANS CLEVERS • **26 FEB 2025**

Organoid modeling of a rare and aggressive cancer to identify an effective anticancer therapy.

ABSTRACT

Rapid and sustained degradation of the essential centrosome protein CEP192 in live mice using the AID2 system

BY VALENTINA C. SLADKY, MARGARET A. STRONG, DANIEL TAPIAS-GOMEZ, CAYLA E. JEWETT, CHELSEA G. DROWN, PHILLIP M. SCOTT, ANDREW J. HOLLAND

28 FEB 2025

AID2-mediated degradation of CEP192 in live mice reveals a critical role in mitosis but not centriole duplication or ciliogenesis.

ABSTRACT

Local soft niches in mechanically heterogeneous primary tumors promote brain metastasis via mechanotransduction-mediated HDAC3 activity

BY KAI TANG, YUFAN ZHENG, GUANSHUO HU, YING XIN, KEMING LI, CUNYU ZHANG, XI CHEN, BAI ZHANG, XUEYI LI, BING HU, [...] YOUHUA TAN +3 authors
26 FEB 2025

Soft niches in primary tumor microenvironment promote brain metastasis.

ABSTRACT

DET1 dynamics underlie cooperative ubiquitination by CRL4$^{\text{DET1-COP1}}$ complexes

BY ABIGAIL E. BURGESS, TARREN A. LOUGHRAN, LIAM S. TURK, HUNTER G. NYVALL, JESSICA L. DUNLOP, SAM A. JAMIESON, JACK R. CURRY, JOHN E. BURKE, PAVEL FILIPCIK, SIMON H. J. BROWN, PETER D. MACE • 26 FEB 2025

A dynamic substrate adapter (DET1) recruits COP1 to Cullin ubiquitin ligase complexes assisted by a noncatalytic E2 enzyme.

ABSTRACT

Modulation of blood-tumor barrier transcriptional programs improves intratumoral drug delivery and potentiates chemotherapy in GBM

BY JORGE L. JIMENEZ-MACIAS, PHILIPPA VAUGHN-BEAUCAIRE, AYUSH BHARATI, ZHEYUN XU, MEGAN FORREST, JASON HONG, MICHAEL SUN, ANDREA SCHMIDT, JASMINE CLARK, WILLIAM HAWKINS, [...] SEAN E. LAWLER +15 authors • 26 FEB 2025

Small-molecule inhibitor modulates the biology of the blood-tumor barrier to improve drug delivery in glioblastoma.

ABSTRACT

Rapid and high-sensitivity screening of pregnancy complications by profiling circulating placental extracellular vesicles

BY CARLOS PALMA, MOSTAFA KAMAL MASUD, DOMINIC GUANZON, ANDREW LAI, MELISSA RAZO, ANGELA NAKAHARA, SOUMYALEKSHMI NAIR, ALEXIS SALAS-BURGOS, MD SHAHRIAR A. HOSSAIN, FLAVIO CARRION, [...] CARLOS SALOMON +5 authors • 26 FEB 2025

Superparamagnetic nanoflower–based sensor advances early pregnancy care by quantifying placental EV biomarkers with >90% accuracy.

ABSTRACT

A plant virus manipulates both its host plant and the insect that facilitates its transmission

BY PENG LIANG, YANG ZENG, JIE NING, XIAOJIE WU, WENLU WANG, JUN REN, QINGJUN WU, XIN YANG, SHAOLI WANG, ZHAOJIANG GUO, [...] YOUJUN ZHANG +4 authors • 28 FEB 2025

A major plant virus may enhance its spread by modulating the attractiveness of host plants and the odor perception of its vector.

ABSTRACT

DOG1 controls dormancy independently of ABA core signaling kinases regulation by preventing AFP dephosphorylation through AHG1

BY THORBEN KRÜGER, DENNIS BRANDT, JOHANNA SODENKAMP, MICHAEL GASPER, MAIDA ROMERA-BRANCHAT, FLORIAN AHLOUMESSOU, ELENA GEHRING, JULIA DROTLEFF, CHRISTOPHER BELL, KATHARINA KRAMER, [...] GUILLAUME NÉE +3 authors • 28 FEB 2025

DOG1’s autonomous signaling pathway allows seeds to regulate dormancy and stress traits independently.

ABSTRACT

Dimeric assembly of F_1-like ATPase for the gliding motility of *Mycoplasma*

BY TAKUMA TOYONAGA, TAKAYUKI KATO, AKIHIRO KAWAMOTO, TOMOKO MIYATA, KEISUKE KAWAKAMI, JUNSO FUJITA, TASUKU HAMAGUCHI, KEIICHI NAMBA, MAKOTO MIYATA • 26 FEB 2025

A unique motor complex for motility of a parasitic bacterium was determined by cryo-EM, suggesting its mechanism and evolution.

ABSTRACT

TFIIH kinase CDK7 drives cell proliferation through a common core transcription factor network

BY TAYLOR JONES, JUNJIE FENG, OLIVIA LUYTIES, KIRA COZZOLINO, LYNN SANFORD, JENNA K. RIMEL, CHRISTOPHER C. EBMEIER, GRACE S. SHELBY, LOTTE P. WATTS, JESSICA RODINO, [...] DYLAN J. TAATJES +19 authors • 28 FEB 2025

CDK7 kinase activity is found to control RNAPII transcription through a cohort of TFs that drive cell cycle and proliferation.

ABSTRACT

Ca^{2+}/calmodulin and protein kinase C (PKC) reverse the vesicle fusion arrest by unmasking PIP_2

BY HOUDA YASMINE ALI MOUSSA, KYUNG CHUL SHIN, YONGSOO PARK • 26 FEB 2025

By lowering the hydration energy barrier, PIP_2 is the lipid catalyst for vesicle fusion.

ABSTRACT

Increased SARS-CoV-2 IgG4 has variable consequences dependent upon Fc function, Fc receptor polymorphism, and viral variant

BY L. CARISSA AURELIA, RUTH A. PURCELL, ROBERT M. THEISEN, ANDREW KELLY, ROBYN ESTERBAUER, PRADHIPA RAMANATHAN, WEN SHI LEE, BRUCE D. WINES, P. MARK HOGARTH, JENNIFER A. JUNO, [...] AMY W. CHUNG +11 authors • 26 FEB 2025

Elevated SARS-CoV-2–specific IgG4 titers decrease ADCC but can increase ADCP when spike-specific antibody titers are low.

ABSTRACT

Leveraging nature's nanocarriers: Translating insights from extracellular vesicles to biomimetic synthetic vesicles for biomedical applications

BY YUNXI CHEN, NOÉLIE DOUANNE, TAD WU, ISHMAN KAUR, THUPTEN TSERING, ARMEN ERZINGATZIAN, AMÉLIE NADEAU, DAVID JUNCKER, VAHÉ NERGUIZIAN, JULIA V. BURNIER • **26 FEB 2025**

Biomimetic synthetic vesicles bridge biology and engineering to tackle therapeutic challenges in biomedical applications.

ABSTRACT

Transformation of flg22 perception into electrical signals decoded in vasculature leads to sieve tube blockage and pathogen resistance

BY ALEXANDRA C. U. FURCH, MATTHIAS R. ZIMMERMANN, GUNDULA A. NOLL, LISA S. WROBEL, SANDRA S. SCHOLZ, STEFANIE V. BUXA-KLEEBERG, JENS B. HAFKE, JUDITH FLIEGMANN, AXEL MITHÖFER, KATRIN EHLERS, [...] AART J. E. VAN BEL **+10 authors** • **26 FEB 2025**

Flg22-triggered dual electric signals are crucial for generation of local and systemic defense responses.

ABSTRACT

Composition and function of AChR chimeric autoantibody receptor T cells for antigen-specific B cell depletion in myasthenia gravis

BY SANGWOOK OH, FATEMEH KHANI-HABIBABADI, KEVIN C. O'CONNOR, AIMEE S. PAYNE • **28 FEB 2025**

A precision cellular immunotherapy shows potential to deplete only autoimmune B cells in AChR-seropositive myasthenia gravis.

ABSTRACT

Optogenetic quantification of cardiac excitability and electrical coupling in intact hearts to explain cardiac arrhythmia initiation

BY JUDITH S. LANGEN, PATRICK M. BOYLE, DANIELA MALAN, PHILIPP SASSE • **28 FEB 2025**

Combining optogenetic current injection with simulations allows for quantification of arrhythmia mechanisms in intact hearts.

ABSTRACT

The synaptonemal complex aligns meiotic chromosomes by wetting

BY SPENCER G. GORDON, ALYSSA A. RODRIGUEZ, YAJIE GU, KEVIN D. CORBETT, CHIU FAN LEE, OFER ROG • **26 FEB 2025**

During sexual reproduction, the synaptonemal complex aligns the maternal and paternal chromosomes by wetting.

ABSTRACT

MSB2-activated pheromone pathway regulates fungal plasma membrane integrity in response to herbicide adjuvant

BY JIANWEI PU, XIUJU LONG, YIFAN LI, JIAN ZHANG, FEI QI, JIANGTAO GAO, QIRONG SHEN, ZHENZHONG YU • **28 FEB 2025**

Pheromone pathway regulates fungal plasma membrane integrity by ergosterol biosynthesis in response to herbicide adjuvant.

ABSTRACT

Cryo-EM structure of the bacterial intramembrane metalloprotease RseP in the substrate-bound state

BY KIKUKO ASAHI, MIKA HIROSE, RIE ARUGA, YOSUKE SHIMIZU, MICHIKO TAJIRI, TSUBASA TANAKA, YURIKO ADACHI, YUKARI TANAKA, MIKA K. KANEKO, YUKINARI KATO, [...] TERUKAZU NOGI **+4 authors** • **26 FEB 2025**

Cryo-EM analysis suggests that bacterial group I site-2 proteases accommodate substrates into an occluded transmembrane cavity.

ABSTRACT

Increased levels of lagging strand polymerase α in an adult stem cell lineage affect replication-coupled histone incorporation

BY BRENDON E. M. DAVIS, JONATHAN SNEDEKER, RAJESH RANJAN, MATTHEW WOOTEN, SAVANNAH SÁDE BARTON, JOSHUA BLUNDON, XIN CHEN • **28 FEB 2025**

Replication-coupled histone incorporation is regulated by DNA polymerase levels.

ABSTRACT

Norovirus co-opts NINJ1 for selective protein secretion

BY JAEWON SONG, LI ZHANG, SEOKOH MOON, ARIANA FANG, GUOXUN WANG, NEWSHA GHESHM, SKYLAR A. LOEB, PAUL CAO, JOSELYNN R. WALLACE, MIA MADEL ALFAJARO, [...] SANGHYUN LEE **+9 authors** • **28 FEB 2025**

NINJ1-mediated plasma membrane rupture enables the selective release of an intracellular viral protein.

ABSTRACT

Mining coral-derived terpene synthases and mechanistic studies of the coral biflorane synthase

BY BAO CHEN, JINGJING MAO, KANGWEI XU, LIJUN LIU, WEI LIN, YUE-WEI GUO, RUIBO WU, CHENGYUAN WANG, BAOFU XU • **26 FEB 2025**

Researchers used genome mining to find a coral-derived biforane terpene synthase and conducted an in-depth mechanism study.

ABSTRACT

Cell type–specific 3D-genome organization and transcription regulation in the brain

BY SHIWEI LIU, COSMOS YUQI WANG, PU ZHENG, BOJING BLAIR JIA, NATHAN R. ZEMKE, PETER REN, HANNAH L. PARK, BING REN, XIAOWEI ZHUANG • **26 FEB 2025**

Genome-scale imaging reveals 3D-genome and transcription regulation across brain cell types and MeCP2 mutations.

ABSTRACT

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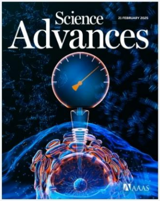

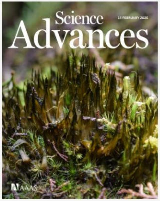

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