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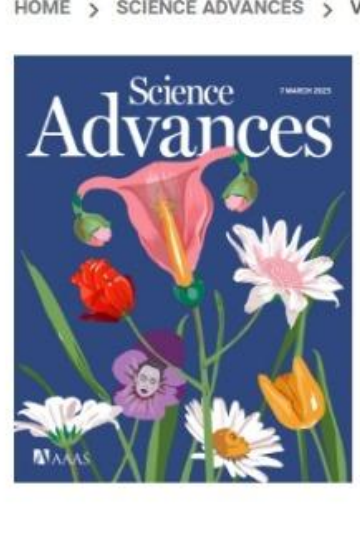

SCIENCE ADVANCES

VOLUME 11 | ISSUE 10 | 7 MAR 2025

ONLINE COVER: *Science Advances*' special issue on women's health highlights a growing wave of research focusing on women's unique biological and psychological experiences. Articles cover a range of studies from the interplay between menopause and Alzheimer's risk to the menstrual cycle's influence on the brain-heart connection. It also describes the opportunities pregnancy provides to research aspects of both physical and mental health. By prioritizing women's unique physiological and psychological experiences, research can expand the frontiers of knowledge in ways that benefit everyone. Credit: Susanna Gentili/agoodson.com

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SPECIAL ISSUE

Advancing the science of women's health

INTRODUCTION TO SPECIAL ISSUE

Advancing the science of women's health

BY TALI SHAROT • 05 MAR 2025

FOCUS

The power—and complexity—of policy to drive advances in women's health

BY BRONWYN M. GRAHAM, CARA TANNENBAUM, ALICE WITT, KEZIAH BENNETT-BROOK, SUE HAUPT, KATE WOMERSLEY, SÉVERINE LAMON, ROBYN NORTON • 05 MAR 2025

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Perinatal intrusions: A window into perinatal anxiety disorders

BY SUSANNE SCHWEIZER, BRONWYN GRAHAM • 05 MAR 2025

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Toward personalized clinical interventions for perinatal depression: Leveraging precision functional mapping

BY LAURA PRITSCHET, EMILY BEYDLER, SHEILA SHANMUGAN • 05 MAR 2025

ABSTRACT

The monthly rhythm of the brain-heart connection

BY JELLINA PRINSEN, ARNO VILLRINGER, JULIA SACHER • 05 MAR 2025

ABSTRACT

Pregnancy as an opportunity to explore brain-immune connections in mental health

BY SERENA B. GUMUSOGLU, INA A. STELZER • 05 MAR 2025

ABSTRACT

NEUROSCIENCE

Two paradoxes in women's well-being

BY CASPAR KAISER, NAOMI MUGGLETON, EDIKA QUISPE-TORREBLANCA, JAN-EMMANUEL DE NEVE • 05 MAR 2025

Inconsistent gender well-being gaps challenge long-held assumptions about global patterns in women's well-being and mental health.

ABSTRACT

Sex differences in age-associated neurological diseases—A roadmap for reliable and high-yield research

BY ANNA K. BONKHOFF, GILLIAN COUGHLAN, VALENTINA PEROSA, KENDA ALHADID, MARKUS D. SCHIRMER, ROBERT W. REGENHARDT, SUSANNE VAN VELUW, RACHEL BUCKLEY, MICHAEL D. FOX, NATALIA S. ROST • 05 MAR 2025

Considering effects of sex on brain disease may enhance the understanding of brain health and facilitate precision medicine.

ABSTRACT

Linking birth experience and perinatal depression symptoms to neuroanatomical changes in hippocampus and amygdala

BY CRISTINA BALLESTEROS, MARÍA PATERNINA-DIE, MAGDALENA MARTÍNEZ-GARCÍA, GONZALO LÓPEZ-MONTOYA, INÉS NOGUERO, MANUEL DESCO, OSCAR VILARROYA, DANIEL MARTÍN DE BLAS, SUSANA CARMONA • 05 MAR 2025

Peripartum volume changes in hippocampus and amygdala are related to birth experience and increases in depression symptoms.

ABSTRACT

Oxytocin induces embryonic diapause

BY JESSICA L. MINDER, SARAH B. WINOKUR, JANAYE STEPHENS, JIE TONG, NAOMI L. CASSEL, LUISA SCHUSTER, HABON A. ISSA, MICHAEL CAMMER, LATIKA KHATRI, GAIA MOISAN, [...] ROBERT C. FROEMKE +7 authors • 05 MAR 2025

Oxytocin induces diapause, a temporary developmental delay, in pre-implantation mouse embryos to help ensure their survival.

ABSTRACT

Kir7.1 is the physiological target for hormones and steroids that regulate uteroplacental function

BY MONIKA HAOUI, CITLALLI VERGARA, LINA KENZLER, JEROME SCHRÖER, GERALDINE ZIMMER-BENSCH, DAVID FLECK, CHRISTOPHER WIESBROCK, MARC SPEHR, POLINA V. LISHKO • 05 MAR 2025

Progesterone and progestins activate Kir7.1 to control uterine excitability, offering insights for preterm birth therapy.

ABSTRACT

Associations between hormone therapy use and tau accumulation in brain regions vulnerable to Alzheimer's disease

BY GILLIAN T. COUGHLAN, ZOE RUBINSTEIN, HANNAH KLINGER, KELLY A. LOPEZ, STEPHAINE HSIEH, RORY BOYLE, MABEL SETO, DIANA TOWNSEND, DANIELLE MAYBLYUM, EMMA THIBAULT, [...] RACHEL F. BUCKLEY +13 authors • 05 MAR 2025

Hormone therapy use in older women affects the pathological progression of tauopathy, with implications for cognitive decline.

ABSTRACT

The interplay between age at menopause and synaptic integrity on Alzheimer's disease risk in women

BY MADELINE WOOD ALEXANDER, WILLIAM G. HONER, ROWAN SALONER, LIISA A. M. GALEA, DAVID A. BENNETT, JENNIFER S. RABIN, KAITLIN B. CASALETTO • 05 MAR 2025

Earlier age at menopause exacerbates synapse-related vulnerability to cognitive decline and tau tangles.

ABSTRACT

Aging activates escape of the silent X chromosome in the female mouse hippocampus

BY MARGARET GADEK, CAYCE K. SHAW, SAMIRA ABDULAI-SAIKU, ROWAN SALONER, FRANCESCA MARINO, DAN WANG, LUKE W. BONHAM, JENNIFER S. YOKOYAMA, BARBARA PANNING, BÉRÉNICE A. BENAYOUN, [...] DENA B. DUBAL +2 authors • 05 MAR 2025

Aging activates the silent X chromosome, increasing escape expression, and potentially cognitive resilience, in the female mouse.

ABSTRACT

THIS WEEK'S PODCAST

6 MAR 2025 | BY SARAH CRESPI, ANDREW CURRY, DAVID MALAKOFF

Intrusive thoughts during pregnancy, paternity detectives, and updates from the Trump Tracker

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SOCIAL AND INTERDISCIPLINARY SCIENCES AND PUBLIC HEALTH

Direct hydroxyproline radiocarbon dating of the Lapedo child (Abrigo do Lagar Velho, Leiria, Portugal)

BY BETHAN LINSCOTT, THIBAUT DEVIÈSE, CIDÁLIA DUARTE, ERIK TRINKAUS, JOÃO ZILHÃO • 07 MAR 2025

The Lapedo child is now firmly dated to 27,780 to 28,550 cal B.P.

ABSTRACT

NEUROSCIENCE

An antidepressant mechanism underlying the allosteric inhibition of GluN2D-incorporated NMDA receptors at GABAergic interneurons

BY JILIN ZHANG, JINJIN DUAN, WEI LI, XIAN WANG, SHIMIN REN, LUYU YE, FANG LIU, XIAOTING TIAN, YANG XIE, YIMING HUANG, [...] FEI GUO +9 authors • 05 MAR 2025

A compound targeting the GluN2D subunit in GABAergic interneurons offers a unique approach for antidepressant treatment.

ABSTRACT

Contrasting genetic predisposition and diagnosis in psychiatric disorders: A multi-omic single-nucleus analysis of the human OFC

BY NATHALIE GERSTNER, ANNA S. FRÖHLICH, NATALIE MATOSIN, MIRIAM GAGLIARDI, CRISTIANA CRUCEANU, MAIK KÖDEL, MONIKA REX-HAFFNER, XINMING TU, SARA MOSTAFAVI, MICHAEL J. ZILLER, [...] JANINE KNAUER-ARLOTH +1 authors • 07 MAR 2025

Genetic risk and diagnosis for psychiatric disorders influence gene expression and chromatin accessibility in brain cells.

ABSTRACT

The conductance of KCNQ2 and its pathogenic variants is determined by individual subunit gating

BY ANDY HINOJO-PEREZ, JODENE ELDSTROM, YING DOU, ALLAN MARINHO-ALCARA, MICHAELA A. EDMOND, ALICIA DE LA CRUZ, MARTA E. PEREZ RODRIGUEZ, MAYKELIS DIAZ-SOLARES, DEREK M. DYKXHOORN, DAVID FEDIDA, RENE BARRO-SORIA • 05 MAR 2025

Individual subunits open KCNQ2 channels, set gate diameter, and allow pathogenic variants to have outsized effects on activation.

ABSTRACT

Age and cognitive skills: Use it or lose it

BY ERIC A. HANUSHEK, LAVINIA KINNE, FRAUKE WITTHÖFT, LUDGER WOESSMANN • 05 MAR 2025

Cognitive skills do not decline with age for those who use math and reading throughout their life.

ABSTRACT

Perirhinal cortex abnormalities impair hippocampal plasticity and learning in *Scn2a*, *Fmr1*, and *Cdkl5* autism mouse models

BY RACHEL E. KEITH, YIMING SHEN, JORDAN A. JANZEN-MEZA, JOSEPH ABRAMOVITZ, PRISCILA C. ANTONELLO, AYSHA HAMEED, BASKAR MOHANA KRISHNAN, MICHELLE W. ANTOINE • 07 MAR 2025

In autism, dysfunction of the perirhinal cortex can impair learning, memory, and the ability to navigate unfamiliar environments.

ABSTRACT

Paralemmin-1 controls the nanoarchitecture of the neuronal submembrane cytoskeleton

BY VICTOR MACARRÓN-PALACIOS, JASMINE HUBRICH, MARIA AUGUSTA DO REGO BARROS FERNANDES LIMA, NICOLE G. METZENDORF, SIMON KNEILMANN, MARLEEN TRAPP, CLAUDIO ACUNA, ANNARITA PATRIZI, ELISA D'ESTE, MANFRED W. KILIMANN • 07 MAR 2025

Paralemmin-1 organizes the submembrane cytoskeleton at the nanoscale.

ABSTRACT

EARTH, ENVIRONMENTAL, ECOLOGICAL, AND SPACE SCIENCES

Lessened projections of Arctic warming and wetting after correcting for model errors in global warming and sea ice cover

BY ZIYI CAI, QINGLONG YOU, JAMES A. SCREEN, HANS W. CHEN, RUONAN ZHANG, ZHIYAN ZUO, DELIANG CHEN, JUDAH COHEN, SHICHANG KANG, RENHE ZHANG • 05 MAR 2025

Constraints from historical global warming and sea ice cover reveal that Arctic warming and wetting projections may be overstated.

ABSTRACT

Earth orbital rhythms links timing of Deccan trap volcanism phases and global climate change

BY THOMAS WESTERHOLD, EDOARDO DALLANAVE, DONALD PENMAN, BLAIR SCHOENE, URSULA RÖHL, NIKOLAUS GUSSONE, JUNICHIRO KURODA • 07 MAR 2025

Different phases in end of the Cretaceous massive flood basalt volcanism had a differential impact on the global climate system.

ABSTRACT

Key role of *Desulfobacteraceae* in C/S cycles of marine sediments is based on congeneric catabolic-regulatory networks

BY LARS WÖHLBRAND, MARVIN DÖRRIES, ROBERTO SIANI, ARTURO MEDRANO-SOTO, VANESSA SCHNAARS, JULIAN SCHUMACHER, CHRISTINA HILBERS, DANIELA THIES, MICHAEL KUBE, RICHARD REINHARDT, [...] RALF RABUS +3 authors • 07 MAR 2025

Comparative proteogenomics reveal ecophysiological feats of *Desulfobacteraceae* for carbon and sulfur cycling in marine sediments.

ABSTRACT

PHYSICAL AND MATERIALS SCIENCES

Evidence of ferroelectricity in an antiferromagnetic vanadium trichloride monolayer

BY JINGHAO DENG, DEPING GUO, YAO WEN, SHUANGZAN LU, HUI ZHANG, ZHENGBO CHENG, ZEMIN PAN, TAO JIAN, DONGYU LI, HAO WANG, [...] CHENDONG ZHANG +4 authors • 05 MAR 2025

The coexistence of the ferroelectric and magnetic orders was realized in a vdW single layer through interface engineering.

ABSTRACT

Quantifying Stern layer water alignment before and during the oxygen evolution reaction

BY RAIDEN SPEELMAN, EZRA J. MARKER, FRANZ M. GEIGER • 05 MAR 2025

Water flipping occurs before the oxygen evolution reaction starts.

ABSTRACT

Charting the envelope of mechanical properties of synthetic silk fibers through predictive modeling of the drawing process

BY JACOB J. GRAHAM, SHRI V. SUBRAMANI, XINYAN YANG, TIMOTHY M. RUSSELL, FUZHONG ZHANG, SINAN KETEN • 07 MAR 2025

Drawing-induced forces can enhance the strength of protein fibers by manipulating underlying molecular features.

ABSTRACT

A natural biomimetic prosthetic hand with neuromorphic tactile sensing for precise and compliant grasping

BY SRIRAMANA SANKAR, WEN-YU CHENG, JINGHUA ZHANG, ARIEL SLEPYAN, MARK M. ISKAROUS, REBECCA J. GREENE, RENE DEBRABANDER, JUNJUN CHEN, ARNAV GUPTA, NITISH V. THAKOR • 05 MAR 2025

Biomimetic hybrid robotic prosthetic hand with tactile sensing precisely detects textures and compliantly grasps objects.

ABSTRACT

In-plane hierarchical assembly of two-dimensional molecular crystals toward on-chip multimode optical waveguides

BY TIAN-ZHE FENG, QIANG LV, ZHAO-JI LV, CHAO-FEI XU, JIA-HAO JIANG, XUE-DONG WANG • 05 MAR 2025

Two-dimensional molecular crystals with trichromatic emissions can create multimode optical waveguides.

ABSTRACT

Creation of a macrolide antibiotic against non-tuberculous *Mycobacterium* using late-stage boron-mediated aglycon delivery

BY YUKA ISOZAKI, TAKUMI MAKIKAWA, KOSUKE KIMURA, DAIKI NISHIHARA, MAHO FUJINO, YOSHIKAZU TANAKA, CHIGUSA HAYASHI, YOSHIMASA ISHIZAKI, MASAYUKI IGARASHI, TAKESHI YOKOYAMA, [...] DAISUKE TAKAHASHI +1 authors • 05 MAR 2025

BMAD strategy for late-stage modification of azithromycin provided a potent derivative against non-tuberculous mycobacteria.

ABSTRACT

Interfacial metal–coordinated bifunctional PtCo for practical fuel cells

BY ZHONGLIANG HUANG, QI XIAO, TIANYI DING, JING XIA, CHANGHONG ZHAN, XIANGMIN MENG, CHIH-WEN PAO, ZHIWEI HU, WEI-HSIANG HUANG, YINGRU WANG, [...] XIAOQING HUANG +2 authors • 07 MAR 2025

A class of PtCo bifunctional fuel cell catalysts with exceptional CO tolerance and ORR activity has been developed.

ABSTRACT

Scalable acoustic virtual stirrer for enhanced interfacial enzymatic nucleic acid reactions

BY DAYANG LI, KUNJIE LI, JIANQUAN LI, DONGFANG LI, HENG CHEN, SEN-SEN LI, CHAOYONG YANG, HUIMIN ZHANG, LU-JIAN CHEN, XUEJIA HU • 05 MAR 2025

Scalable acoustofluidic virtual stirrer enhances the efficiency of enzymatic nucleic acid reactions.

ABSTRACT

Stretchable [2]rotaxane-bridged MXene films applicable for electroluminescent devices

BY CHUNYU WANG, BOYUE GAO, KAI XUE, WENBIN WANG, JUN ZHAO, RUIXUE BAI, TINGHAO YUN, ZHIWEI FAN, MENGLING YANG, ZHAOMING ZHANG, [...] XUZHOU YAN +1 authors • 07 MAR 2025

The intramolecular sliding of [2]rotaxane enables MXene films to function as stretchable electrodes.

ABSTRACT

Reconfiguring hot-hole flux via polarity modulation of p-GaN in plasmonic Schottky architectures

BY HYUNHWA LEE, YUJIN PARK, SANGHEE NAH, MINCHEOL KANG, MOONSANG LEE, JEONG YOUNG PARK • 07 MAR 2025

Polarity modulation in the Au/p-GaN Schottky structure boosts hot-hole flux by enhancing its generation and injection rates.

ABSTRACT

All-microwave spectroscopy and polarization of individual nuclear spins in a solid

BY JAIME TRAVESEDO, JAMES O'SULLIVAN, LOUIS PALLEGOIX, ZHIYUAN W. HUANG, PATRICK HOGAN, PHILIPPE GOLDNER, THIERRY CHANELIERE, SYLVAIN BERTAINA, DANIEL ESTÈVE, PATRICK ABGRALL, [...] PATRICE BERTET +2 authors • 07 MAR 2025

The method promises enhanced spectral resolution for probing the structure of matter in a large class of samples.

ABSTRACT

On-chip reconfigurable transmission in spatially chirped Floquet parity-time symmetric photonics

BY WENBO MAO, FU LI, QIAN ZHANG, WEIJIE XU, KASHIF MASUD AWAN, LAN YANG • 07 MAR 2025

Chirp-modulated non-Hermitian photonic chips realize switchable asymmetric transmission.

ABSTRACT

Operando unveiling the activity origin via preferential structural evolution in Ni-Fe (oxy)phosphides for efficient oxygen evolution

BY ZHI-PENG WU, SHOUWEI ZUO, ZHIHAO PEI, JING ZHANG, LIRONG ZHENG, DEYAN LUAN, HUABIN ZHANG, XIONG WEN (DAVID) LOU • 07 MAR 2025

Preferential structural transformation at the Fe sites enables highly active NiFe-based oxygen evolution electrocatalysts.

ABSTRACT

BIOMEDICINE AND LIFE SCIENCES

Hyperammonemia induces programmed liver cell death

BY ANNAREIN J. C. KERBERT, CORNELIUS ENGELMANN, ABEBA HABTESION, PAVITRA KUMAR, MOHSIN HASSAN, TINGTING QI, INES VOLKERT, TOBIAS OTTO, ANDREW HALL, VARUN U. KHETAN, [...] RAJIV JALAN +13 authors • 07 MAR 2025

Hyperammonemia induces liver injury, which can be prevented by inhibiting the Toll-like receptor 4 and RIPK1 pathway.

ABSTRACT

TBK1 and IKKε prevent premature cell death by limiting the activity of both RIPK1 and NLRP3 death pathways

BY FABIAN A. FISCHER, BENJAMIN DEMARCO, FELICIA CHAN HUI MIN, HUI WEN YEAP, DOMINIC DE NARDO, KAIWEN W. CHEN, JELENA S. BEZBRADICA • 07 MAR 2025

TBK1 and IKKe prevent premature cell death by limiting the activity of multiple death pathways in myeloid cells.

ABSTRACT

Isocyanic acid–mediated NLRP3 carbamoylation reduces NLRP3-NEK7 interaction and limits inflammasome activation

BY ZHENXING ZHANG, CHAO CHEN, CAIYUN LIU, PENGKAI SUN, PING LIU, SHU FANG, XINJIAN LI • 07 MAR 2025

Isocyanic acid is an immunoregulatory metabolite that limits NLRP3 inflammasome activation via carbamoylation of NLRP3.

ABSTRACT

Immunomodulatory role of the stem cell circadian clock in muscle repair

BY PEI ZHU, ERIC M. PFRENDER, ADAM W. T. STEFFECK, COLLEEN R. RECZEK, YALU ZHOU, ABHISHEK VIJAY THAKKAR, NEHA R. GUPTA, ARIANA KUPAI, AMBER WILLBANKS, RICHARD L. LIEBER, [...] CLARA B. PEEK +2 authors • 05 MAR 2025

The stem cell circadian clock orchestrates metabolic and immune signaling to time muscle regeneration following injury.

ABSTRACT

Origin and cell type specificity of mitochondrial DNA mutations in *C9ORF72* ALS-FTLD human brain organoids

BY YU NIE, KORNÉLIA SZEBÉNYI, LEA M. D. WENGER, ANDRÁS LAKATOS, PATRICK F. CHINNERY • 07 MAR 2025

Cells in ALS-FTLD brain organoids show distinct mtDNA mutation landscape indicating mitochondrial dysfunction.

ABSTRACT

Pseudomonas aeruginosa assembles H1-T6SS in response to physical and chemical damage of the outer membrane

BY MITCHELL BRÜDERLIN, MAXIM KOLESNIKOV, FLORIAN RÖTHLIN, RODERICK Y. H. LIM, MAREK BASLER • 05 MAR 2025

The assembly of the *P. aeruginosa* H1-T6SS is triggered by outer-membrane damage induced chemically or mechanically by an AFM tip.

ABSTRACT

Differential regulation of BAX and BAK apoptotic activity revealed by small molecules

BY KAIMING LI, YU Q. YAP, DONIA M. MOUJALLED, FRANSISCA SUMARDY, YELENA KHAKHAM, ANGELA GEORGIOU, MICHELLE JAHJA, THOMAS E. LEW, MELANIE DE SILVA, MENG-XIAO LUO, [...] GUILLAUME LESSENE +10 authors • 05 MAR 2025

Opposing regulation of BAX and BAK by VDAC2 dictates their role as executioners of apoptosis and their therapeutic targeting.

ABSTRACT

GPR132 regulates the function of NK cells through the Gαs/CSK/ZAP70/NF-κB signaling pathway as a potential immune checkpoint

BY XINHUI HUI, MIN XUE, YAOJUN REN, YIRAN CHEN, XUENAN CHEN, MUHAMMAD ASAD FAROOQ, YUZHOU JI, WEIRONG ZHAN, YUNHE HUANG, BINGTAN DU, [...] WENZHENG JIANG +2 authors • 05 MAR 2025

GPR132 exhibits an inhibitory effect on the antitumor capabilities of NK cells via the CSK/ZAP70/NF- κ B signaling axis.

ABSTRACT

Trained immunity causes myeloid cell hypercoagulability

BY AISLING M. REHILL, SEÁN MCCLUSKEY, ANNA E. LEDWITH, TRISTRAM A. J. RYAN, BETÜL ÜNLÜ, GEMMA LEON, HUGO CHARLES-MESSANCE, EDMUND H. GILBERT, PAULA KLAVINA, EMILY A. DAY, [...] ROGER J. S. PRESTON +7 authors • 07 MAR 2025

Enhanced myeloid cell hypercoagulability is a maladaptive consequence of trained immunity.

ABSTRACT

Long-lasting comfort ocular surface drug delivery by in situ formation of an adhesive lubricative Janus nanocoating

BY CHUHAN WANG, XIAOBING LIU, WENYAN LV, XIAO KUANG, FENG WU, XIANQUN FAN, YAN PANG • 07 MAR 2025

Adhesive lubricative Janus nanocoating enables long-lasting comfort ocular surface drug delivery for treating ocular diseases.

ABSTRACT

Rewilding catalyzes maturation of the humoral immune system

BY YING-HAN CHEN, KIMBERLY ZALDANA, FRANK YEUNG, IVAN VUJKOVIC-CVIJIN, ALEXANDER E. DOWNIE, JIAN-DA LIN, YI YANG, CHRISTIN HERRMANN, OYEBOLA OYESOLA, FELIX ROZENBERG, [...] KEN CADWELL +7 authors • 07 MAR 2025

Releasing laboratory mice into the natural environment enhanced maturation and activation of the humoral immune system.

ABSTRACT

Genetically encoded tension heterogeneity sculpts cardiac trabeculation

BY JINXIU LIANG, PEIJUN JIANG, SHUAIFANG YAN, TAO CHENG, SHUO CHEN, KEXIN XIAN, PENGFEI XU, JING-WEI XIONG, AIBIN HE, JIA LI, PEIDONG HAN • 07 MAR 2025

Variations in *erbb2* expression activate the PI3K-Arp2/3 pathway, promoting tension heterogeneity essential for heart development.

ABSTRACT

Citrulline regulates macrophage metabolism and inflammation to counter aging in mice

BY ZHANGDAN XIE, MOUBIN LIN, BEIZI XING, HONGMIAO WANG, HAOSONG ZHANG, ZIMU CAI, XINYU MEI, ZHENG-JIANG ZHU • 07 MAR 2025

Citrulline acts as an endogenous metabolite antagonist to aging and inflammation by regulating mTOR-HIF1 α -glycolysis pathway.

ABSTRACT

Discovery of antimicrobial peptides with notable antibacterial potency by an LLM-based foundation model

BY JIKE WANG, JIANWEN FENG, YU KANG, PEICHEN PAN, JINGXUAN GE, YAN WANG, MINGYANG WANG, ZHENXING WU, XINGCAI ZHANG, JIAMENG YU, [...] TINGJUN HOU +8 authors • 05 MAR 2025

AMP-Designer uses prompt tuning and a large language model to design antimicrobial peptides with a 94.4% success rate in 48 days.

ABSTRACT

Multiplexed glycan immunofluorescence identification of pancreatic cancer cell subpopulations in both tumor and blood samples

BY BRAELYN BINKOWSKI, ZACHARY KLAMER, CHONGFENG GAO, BEN STAAL, ANNA REPESH, HOANG-LE TRAN, DAVID M. BRASS, PAMELA BARTLETT, STEVEN GALLINGER, MARIA BLOMQVIST, [...] BRIAN B. HAAB +7 authors • 07 MAR 2025

Blood assays for tumor-released glycans from pancreatic cancer cell subpopulations enable tumor detection and stratification.

ABSTRACT

Donor HLA-DQ genetic and functional divergence affect the control of BK polyoma virus infection after kidney transplantation

BY MATHIEU F. CHEVALIER, VINCENT ALLAIN, JULIEN GRAS, JULIEN RACLE, JULIETTE VILLEMONTEIX, GILLIAN DIVARD, LINDA FEGHOUL, CONSTANCE DELAUGERRE, JEAN-MICHEL MOLINA, JEAN-LUC TAUPIN, [...] SOPHIE CAILLAT-ZUCMAN +3 authors • 05 MAR 2025

Heterozygosity for functionally divergent HLA-DQ alleles favors a better control of BKPyV infection after kidney transplantation.

ABSTRACT

Development of xanthone derivatives as effective broad-spectrum antimicrobials: Disrupting cell wall and inhibiting DNA synthesis

BY HAIZHOU LI, WEN-TYNG KANG, YUJIAHUI ZHENG, YONGLV HE, RONGCUI ZHONG, SHANFANG FANG, WEIJIE WEN, SHOUPING LIU, SHUIMU LIN • 05 MAR 2025

XT17, a broad-spectrum antimicrobial, effectively combats drug resistance with low toxicity and unique mechanisms.

ABSTRACT

Engineered mesenchymal stromal cells with bispecific polyvalent peptides suppress excessive neutrophil infiltration and boost therapy

BY TENGHUI YE, ZIXIN WU, XI LIU, JIAMIN WU, QIN FU, JIE CAO, DI ZHANG, PENG SHI • 07 MAR 2025

Engineered MSCs target inflamed tissue, competing with neutrophils for selectin sites to effectively block their infiltration.

ABSTRACT

LPS binding caspase activation and recruitment domains (CARDs) are bipartite lipid binding modules

BY ANH B. CAO, PASCAL DEVANT, CHENGLIANG WANG, MENGYU SUN, STEPHANIE N. KENNEDY, WEIYI MA, JIANBIN RUAN, JONATHAN C. KAGAN • 07 MAR 2025

A bacterial sensory protein detects self- and nonself-lipids by similar mechanisms.

ABSTRACT

Structural insights into promoter-proximal pausing of RNA polymerase II at +1 nucleosome

BY MASAHIRO NAGANUMA, TOMOYA KUJIRAI, HARUHIKO EHARA, TAMAMI UEJIMA, TOMOKO ITO, MIE GOTO, MARI AOKI, MASAMI HENMI, SAYAKO MIYAMOTO-KOHNO, MIKAKO SHIROUZU, [...] SHUN-ICHI SEKINE +1 authors • 05 MAR 2025

Structural and biochemical analyses elucidate how NELF and the +1 nucleosome are involved in promoter-proximal pausing of RNAPII.

ABSTRACT

Epstein-Barr virus infection promotes T cell dysregulation in a humanized mouse model of multiple sclerosis

BY JESSICA R. ALLANACH, NAOMI M. FETTIG, BLAIR K. HARDMAN, ARIEL R. ROSEN, VINA FAN, CYNTHIA CHUNG, ERIN J. GOLDBERG, ZACHARY J. MORSE, IRYNA SHANINA, GALINA VOROBEYCHIK, [...] MARC S. HORWITZ +1 authors • 05 MAR 2025

Humanized mice derived from Epstein-Barr virus–infected donors exhibit worsened CNS disease due to dysregulated T cell response.

ABSTRACT

An annular corneal microneedle patch for minimally invasive ophthalmic drug delivery

BY LU WANG, YISHUN GUO, BEN CHEN, SI LU, JIANHUA YANG, YINGYING JIN, XINYI WANG, XINYUE SUN, SHUTING WANG, BAILIANG WANG • 07 MAR 2025

An annular corneal microneedle patch for ophthalmic drug delivery avoids corneal tissue and nerve damage.

ABSTRACT

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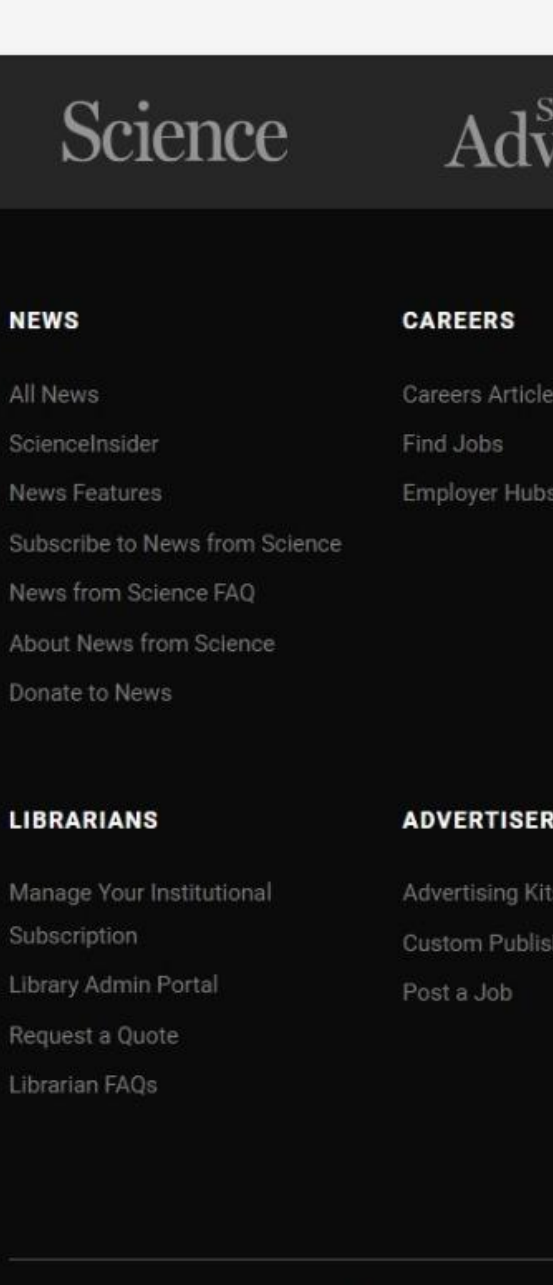

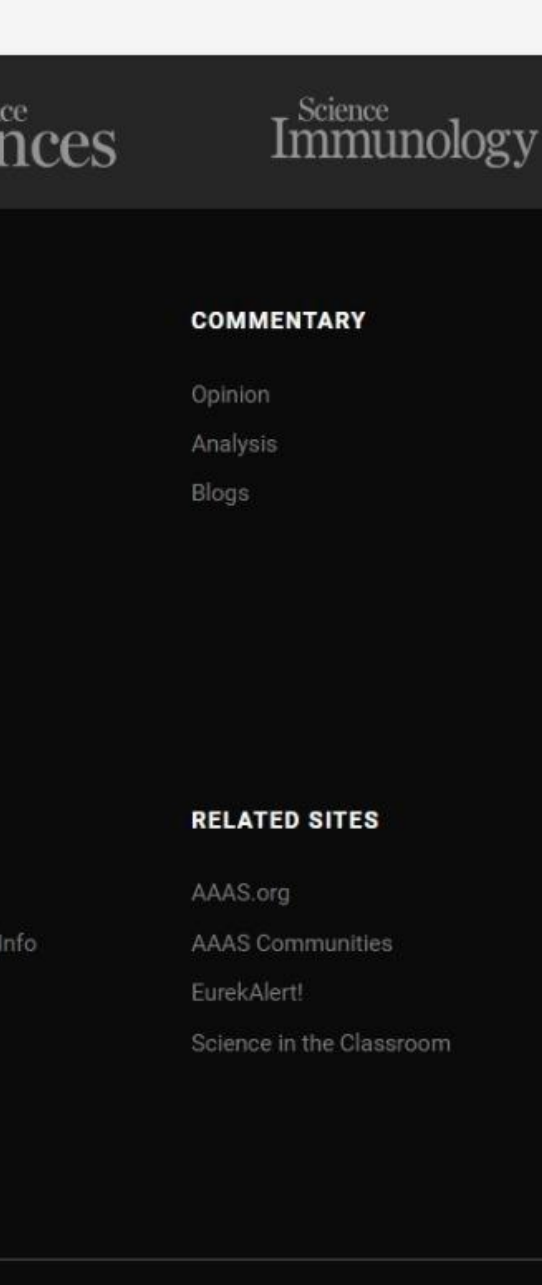

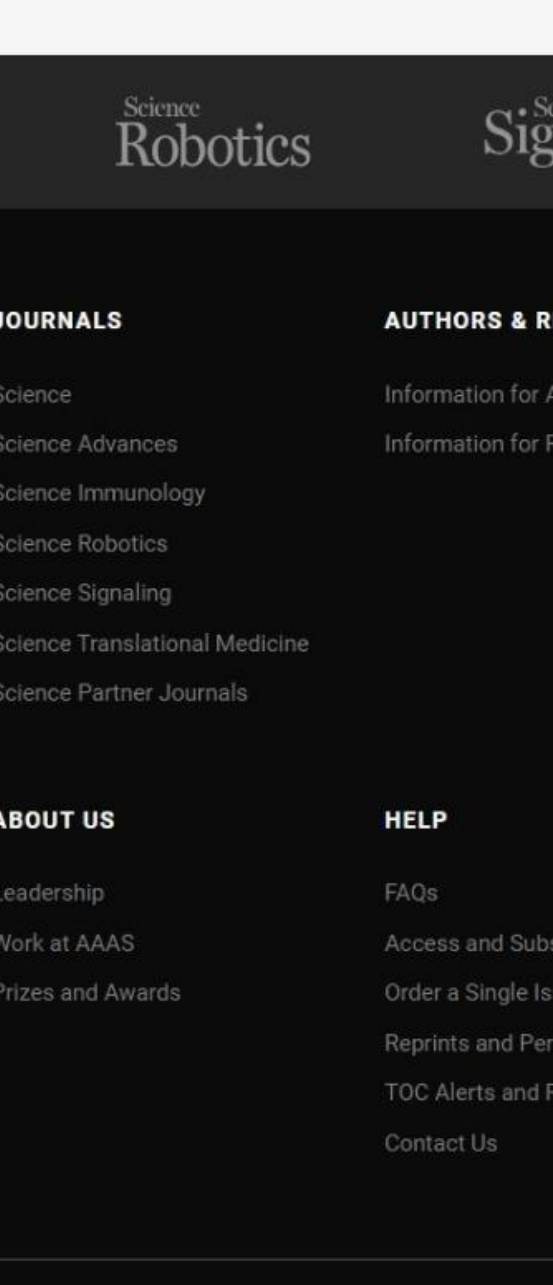

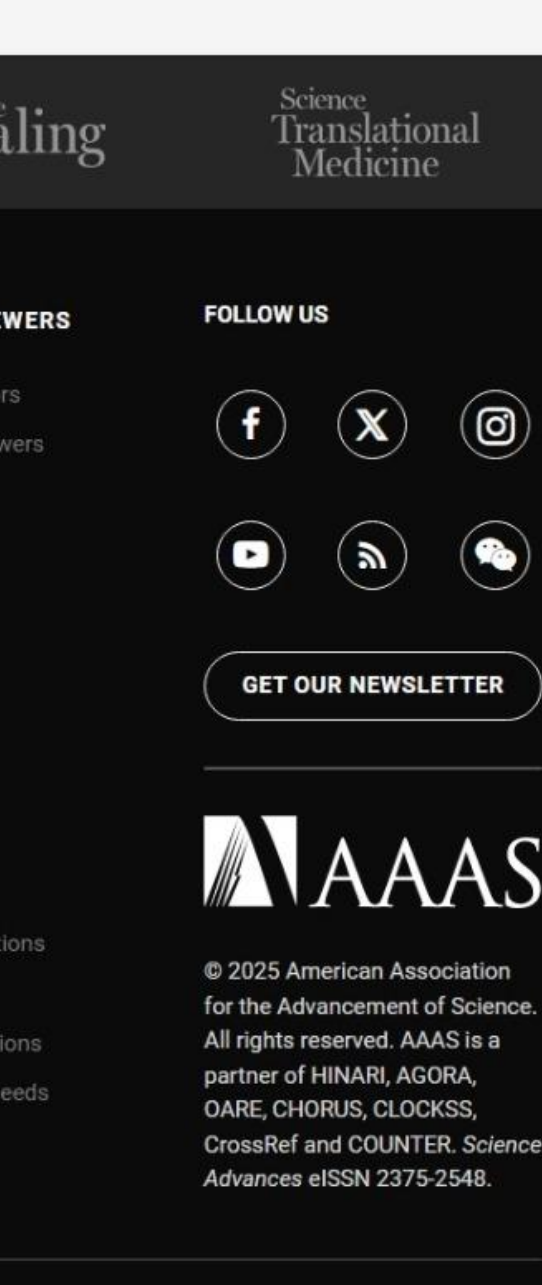

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