

## THIS WEEK IN PNAS

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## PERSPECTIVE

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e2410021121 **The quest for an unbiased scientific impact indicator remains open**  
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**Cover image:** Pictured is an East Pacific red octopus (*Octopus rubescens*) holding a glass vial. Arman Tekinalp et al. used medical imaging, biomechanical data, and live behavioral experiments involving *O. rubescens* to model a soft, octopus-inspired arm composed of around 200 continuous muscle groups. The authors found that the anatomical connectivity and tissue compliance of the simulated arm allowed simple muscle actuation patterns to produce complex, 3D reconfigurations. The results provide insight into the design and control principles of both biological and robotic soft appendages. See the article by Tekinalp et al. e2318769121. Image credit: Ekaterina Gribkova (University of Illinois Urbana-Champaign, Urbana, IL).

### OPEN ACCESS

Free online through the PNAS immediate open access option.

e2410675121 **Reply to Vaccario et al.: The role of baselines in fair and unbiased citation metric evaluation**  
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e2403758121 **US states that mandated COVID-19 vaccination see higher, not lower, take-up of COVID-19 boosters and flu vaccines**  
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e2409246121 **Reply to Fitzgerald: COVID-19 vaccine mandates and voluntary vaccination behavior**  
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## INAUGURAL ARTICLE

e2414957121 **Estimates of actual and potential lives saved in the United States from the use of COVID-19 convalescent plasma**  
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## BRIEF REPORTS

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e2302730121 **Signatures of criticality in efficient coding networks**  
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e2412541121 **Flagellar motility is mutagenic**  
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e2407046121 **HIV, inflammation, and initiation of methamphetamine use in sexual and gender minorities assigned male at birth**  
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e2413357121 **Experimental localization of metal-binding sites reveals the role of metal ions in type II DNA topoisomerases**  
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e2414037121 **Ultrafast transient absorption spectra and kinetics of human blue cone visual pigment at room temperature**  
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e2404145121 **Aligned colloidal clusters in an alternating rotating magnetic field elucidated by magnetic relaxation**  
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e2406262121 **Mixed equilibrium/nonequilibrium effects govern surface mobility in polymer glasses**  
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e2316450121 **Mechanosensitive fluorescence lifetime probes for investigating the dynamic mechanism of ferroptosis**  
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e2404433121 **Switching of electrochemical selectivity due to plasmonic field-induced dissociation**  
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e2406956121 **The smallest electrochemical bubbles**  
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e2408064121 **Engineering substrate channeling in a bifunctional terpene synthase**  
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### COMPUTER SCIENCES

e2322420121 **Embers of autoregression show how large language models are shaped by the problem they are trained to solve**  
**OPEN ACCESS**  
R. Thomas McCoy, Shunyu Yao, Dan Friedman, Mathew D. Hardy, and Thomas L. Griffiths

### EARTH, ATMOSPHERIC, AND PLANETARY SCIENCES

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e2322622121 **Partitioning the drivers of Antarctic glacier mass balance (2003–2020) using satellite observations and a regional climate model**  
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e2313098121 **Toward defining the Anthropocene onset using a rapid increase in anthropogenic fingerprints in global geological archives**  
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e2412288121 **Fast, variable stiffness-induced braided coiled artificial muscles**  
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e2407030121 **Complexity of confined water vitrification and its glass transition temperature**  
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### PSYCHOLOGICAL AND COGNITIVE SCIENCES

e2322420121 **Embers of autoregression show how large language models are shaped by the problem they are trained to solve**  
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### APPLIED BIOLOGICAL SCIENCES

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Arjun Krishnamoorthi, David Salom, Arum Wu, Krzysztof Palczewski, and Peter M. Rentzepis

e2410995121 **Capturing a methanogenic carbon monoxide dehydrogenase/acetyl-CoA synthase complex via cryogenic electron microscopy**  
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Alison Biester, David A. Grahame, and Catherine L. Drennan

e2415567121 **Isoform-specific C-terminal phosphorylation drives autoinhibition of Casein kinase 1**  
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e2320591121 **LAMTOR1 ablation impedes cGAS degradation caused by chemotherapy and promotes antitumor immunity**  
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## BIOPHYSICS AND COMPUTATIONAL BIOLOGY

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- e2407647121 **Memory effects of transcription regulator–DNA interactions in bacteria**  
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- e2408064121 **Engineering substrate channeling in a bifunctional terpene synthase**  
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- e2406358121 **Autonomous multicolor bioluminescence imaging in bacteria, mammalian, and plant hosts**  
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- e2415934121 **Chemical mapping of the surface interactome of PIEZO1 identifies CADM1 as a modulator of channel inactivation**  
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## ECOLOGY

- e2316827121 **Migratory birds modulate niche tradeoffs in rhythm with seasons and life history**  
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Bernd Vorneweg, Yuriy Andryushchenko, Nyambayar Batbayar, Mindaugas Dagys, Mark Desholm, Batbayar Galtbalt, Andrey E. Gavrilov, Oleg A. Goroshko, Elena I. Ilyashenko, Valentin Yu Ilyashenko, Johan Månsson,  
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## ENVIRONMENTAL SCIENCES

- e2400362121 **Snowmelt duration controls red algal blooms in the snow of the European Alps**  
Léon Roussel, Marie Dumont, Simon Gascoin, Diego Monteiro, Mathias Bavay, Pierre Nabat, Jade Abdellatif Ezzedine, Mathieu Fructus, Matthieu Lafaysse, Samuel Morin, and Eric Maréchal

## EVOLUTION

- e2412526121 **Local adaptation, plasticity, and evolved resistance to hypoxic cold stress in high-altitude deer mice**  
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- e2403426121 **The ivory lncRNA regulates seasonal color patterns in buckeye butterflies**  
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## IMMUNOLOGY AND INFLAMMATION

- e2404841121 **TCA metabolism regulates DNA hypermethylation in LPS and *Mycobacterium tuberculosis*-induced immune tolerance**  
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## MEDICAL SCIENCES

- e2414957121 **Estimates of actual and potential lives saved in the United States from the use of COVID-19 convalescent plasma**  
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Quigly Dragotakes, Patrick W. Johnson, Matthew R. Buras, Rickey E. Carter, Michael J. Joyner, Evan Bloch, Kelly A. Gebo, Daniel F. Hanley, Jeffrey P. Henderson, Liise-anne Pirofski, Shmuel Shoham, Jonathon W. Senefeld, Aaron A.R. Tobian, Chad C. Wiggins, R. Scott Wright, Nigel S. Paneth, David J. Sullivan, and Arturo Casadevall
- e2321378121 **Nuclear envelope budding inhibition slows down progerin-induced aging process**  
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- e2320034121 **Modulation of diabetes-related retinal pathophysiology by PTX3**  
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- e2405001121 **Enhancer landscape of lung neuroendocrine tumors reveals regulatory and developmental signatures with potential theranostic implications**  
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e2408549121 **Toward a CRISPR-based mouse model of *Vhl*-deficient clear cell kidney cancer: Initial experience and lessons learned**  
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## MICROBIOLOGY

e2407820121 **YkuR functions as a protein deacetylase in *Streptococcus mutans***  
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e2401897121 **Membrane association and polar localization of the *Legionella pneumophila* T4SS DotO ATPase mediated by two nonredundant receptors**  
Sukhithasri Vijayrajratnam, Sonja Milek, Stefano Maggi, Kaleigh Ashen, Micah Ferrell, Ahmet Hasanovic, Agnieszka Holgerson, Shanmugapriya Kannaiah, Manpreet Singh, Debnath Ghosal, Grant J. Jensen, and Joseph P. Vogel

e2413241121 **Intestinal *Lactobacillus murinus*-derived small RNAs target porcine polyamine metabolism**  
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e2406397121 **Coupling of cell growth modulation to asymmetric division and cell cycle regulation in *Caulobacter crescentus***  
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Skye Glenn, Alessio Fragasso, Wei-Hsiang Lin, Alexandros Papagiannakis, Setsu Kato, and Christine Jacobs-Wagner

## NEUROSCIENCE

e2406010121 **Synaptic weight dynamics underlying memory consolidation: Implications for learning rules, circuit organization, and circuit function**  
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Brandon J. Bhasin, Jennifer L. Raymond, and Mark S. Goldman

e2410828121 **A mismatch between striatal cholinergic pauses and dopaminergic reward prediction errors**  
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Mariana Duhne, Ali Mohebi, Kyoungjun Kim, Lilian Pelattini, and Joshua D. Berke

e2409097121 **A conserved peptide-binding pocket in HyNaC/ASIC ion channels**  
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## PHARMACOLOGY

e2408469121 **Targeted recruitment of immune effector cells for rapid eradication of influenza virus infections**  
Imrul Shahriar, Mohini Kamra, Ananda Kumar Kanduluru, Charity Lynn Campbell, Thanh Hiep Nguyen, Madduri Srinivasarao, and Philip S. Low

e2407130121 **SPMs exert anti-inflammatory and pro-resolving effects through positive allosteric modulation of the prostaglandin EP4 receptor**  
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Mohamad Wessam Alnouri, Kenneth Anthony Roquid, Rémy Bonnavion, Haaglim Cho, Jan Heering, Jeonghyeon Kwon, Yannick Jäger, ShengPeng Wang, Stefan Günther, Nina Wetttschureck, Gerd Geisslinger, Robert Gurke, Christa E. Müller, Ewgenij Proschak, and Stefan Offermanns

e2407936121 **Insulin-inspired hippocampal neuron-targeting technology for protein drug delivery**  
Noriyasu Kamei, Kento Ikeda, Yuka Ohmoto, Seita Fujisaki, Ryusei Shirata, Maya Maki, Mika Miyata, Yuki Miyauchi, Nanaka Nishiyama, Mana Yamada, Yuna Ohigashi, and Mariko Takeda-Morishita

## PHYSIOLOGY

e2408719121 **Regression of postprandial cardiac hypertrophy in burmese pythons is mediated by FoxO1**  
Thomas G. Martin, Dakota R. Hunt, Stephen J. Langer, Yuxiao Tan, Christopher C. Ebmeier, and Leslie A. Leinwand

## POPULATION BIOLOGY

e2414052121 **Evidence for a survival-driven traveling wave in a keystone boreal predator population**  
Derek A. Arnold, Greg A. Breed, Jared S. Laufenberg, Nathan D. Berg, Mark R. Bertram, Bradley D. Scotton, and Knut Kielland

## CORRECTIONS

### CELL BIOLOGY

e2418611121 **RNF212B E3 ligase is essential for crossover designation and maturation during male and female meiosis in the mouse**  
Yazmine B. Condezo, Raquel Sainz-Urruela, Laura Gomez-H, Daniel Salas-Lloret, Natalia Felipe-Medina, Rachel Bradley, Ian D. Wolff, Stephanie Tanis, Jose Luis Barbero, Manuel Sánchez-Martín, Dirk de Rooij, Ivo A. Hendriks, Michael L. Nielsen, Román Gonzalez-Prieto, Paula E. Cohen, Alberto M. Pendas, and Elena Llano

e2418618121 **HKDC1, a target of TFEB, is essential to maintain both mitochondrial and lysosomal homeostasis, preventing cellular senescence**  
Mengying Cui, Koji Yamano, Kenichi Yamamoto, Hitomi Yamamoto-Imoto, Satoshi Minami, Takeshi Yamamoto, Sho Matsui, Tatsuya Kaminishi, Takayuki Shima, Monami Ogura, Megumi Tsuchiya, Kohei Nishino, Brian T. Layden, Hisakazu Kato, Hidesato Ogawa, Shinya Oki, Yukinori Okada, Yoshitaka Isaka, Hidetaka Kosako, Noriyuki Matsuda, Tamotsu Yoshimori, and Shuhei Nakamura

### MEDICAL SCIENCES

e2418444121 **Therapeutic stem cells expressing variants of EGFR-specific nanobodies have antitumor effects**  
Jeroen A. J. M. van de Water, Tugba Bagci-Onder, Aayush S. Agarwal, Hiroaki Wakimoto, Rob C. Roovers, Yanni Zhu, Randa Kasmieh, Deepak Bhare, Paul M. P. Van Bergen en Henegouwen, and Khalid Shah