



**Cover image:** Pictured is the ephemeral river Zin in the Negev Desert, Israel, viewed from the Sede Boqer Campus of Ben-Gurion University of the Negev. Based on the distribution of the radioisotope krypton-81, Reika Yokochi et al. identified 2 distinct moisture source contributions to the water stored in the Nubian Sandstone Aquifer: one from the Mediterranean Sea within the past 40,000 years and the other from the Atlantic Ocean approximately 360,000 years ago, which was likely retained due to a fault zone that hindered flow. The results suggest that krypton-81 in groundwater can provide a record of regional water cycles going back hundreds of thousands of years. See the article by Yokochi et al. on pages 16222–16227. Image courtesy of Zheng-Tian Lu.

## From the Cover

- 16222 Groundwater source tracing using radiokrypton
- 16204 High-pressure methane hydrate phase
- 16228 Injected fluid diffusion and induced seismicity
- 16302 Social genetic effects on adolescent smoking
- 16454 Yeast antiviral pathway and apoptosis

## Contents

### THIS WEEK IN PNAS

- 16153 In This Issue

### OPINION—Leading scientists discuss current issues

- 16155 To advance sustainable stewardship, we must document not only biodiversity but geodiversity

*Franziska Schrodt, Joseph J. Bailey, W. Daniel Kissling, Kenneth F. Rijdsdijk, Arie C. Seijmonsbergen, Derk van Ree, Jan Hjort, Russell S. Lawley, Christopher N. Williams, Mark G. Anderson, Paul Beier, Pieter van Beukering, Doreen S. Boyd, José Brilha, Luis Carcavilla, Kyla M. Dahlin, Joel C. Gill, John E. Gordon, Murray Gray, Mike Grundy, Malcolm L. Hunter, Joshua J. Lawler, Manu Monge-Ganuzas, Katherine R. Royse, Iain Stewart, Sydne Record, Woody Turner, Phoebe L. Zarnetske, and Richard Field*

### CORE CONCEPTS—A brief introduction to emerging topics in science

- 16159 Seismic tomography uses earthquake waves to probe the inner Earth  
*Sid Perkins*

### QNAS

- 16162 QnAs with Elizabeth Ainsworth  
*Tinsley H. Davis*

### COMMENTARIES


- 16164 Water and methane stay together at extreme pressures  
*Christoph G. Salzmann*  
→ See companion article on page 16204
- 16167 Origin of programmed cell death from antiviral defense?  
*Eugene V. Koonin and Mart Krupovic*  
→ See companion article on page 16454

### LETTERS

- 16170 Temperature impact on GDP growth is overestimated  
*Richard A. Rosen*
- 16171 Reply to Rosen: Temperature–growth relationship is robust  
*Noah S. Diffenbaugh and Marshall Burke*

- 16173 Familial hyperkalemia and hypertension and a hypothesis to explain proximal renal tubular acidosis  
*Zvi Farfel, Haim Mayan, and Steven J. D. Karlish*
- 16175 Reply to Farfel et al.: Is enhanced chloride reabsorption in proximal tubule a possible mechanism of metabolic acidosis in PHAI?  
*Jen-Chi Chen, Shih-Hua Lin, Chou-Long Huang, and Chih-Jen Cheng*

## BRIEF REPORT

- 16177 The overlooked significance of plasma volume for successful adaptation to high altitude in Sherpa and Andean natives  
 *Mike Stembridge, Alexandra M. Williams, Christopher Gasho, Tony G. Dawkins, Aimee Drane, Francisco C. Villafuerte, Benjamin D. Levine, Rob Shave, and Philip N. Ainslie*

## PHYSICAL SCIENCES


### APPLIED PHYSICAL SCIENCES

- 16180 The role of shape-dependent flight stability in the origin of oriented meteorites  
*Khunsa Amin, Jinzi Mac Huang, Kevin J. Hu, Jun Zhang, and Leif Ristroph*
- 16186 Anisotropic spin-orbit torque generation in epitaxial SrIrO<sub>3</sub> by symmetry design  
*T. Nan, T. J. Anderson, J. Gibbons, K. Hwang, N. Campbell, H. Zhou, Y. Q. Dong, G. Y. Kim, D. F. Shao, T. R. Paudel, N. Reynolds, X. J. Wang, N. X. Sun, E. Y. Tsymbal, S. Y. Choi, M. S. Rzchowski, Yong Baek Kim, D. C. Ralph, and C. B. Eom*


### BIOPHYSICS AND COMPUTATIONAL BIOLOGY

- 16192 Mechanical and kinetic factors drive sorting of F-actin cross-linkers on bundles  
*Simon L. Freedman, Cristian Suarez, Jonathan D. Winkelman, David R. Kovar, Gregory A. Voth, Aaron R. Dinner, and Glen M. Hocky*
- 16320 UvrD helicase activation by MutL involves rotation of its 2B subdomain  
*Yerdos A. Ordabayev, Binh Nguyen, Alexander G. Kozlov, Haifeng Jia, and Timothy M. Lohman*

### CHEMISTRY

- 16198 Excitation energy-dependent photocurrent switching in a single-molecule photodiode  
*Bing Shan, Animesh Nayak, Olivia F. Williams, Dillon C. Yost, Nicholas F. Polizzi, Yanming Liu, Ninghao Zhou, Yosuke Kanai, Andrew M. Moran, Michael J. Therien, and Thomas J. Meyer*
- 16204 Observation of methane filled hexagonal ice stable up to 150 GPa  
 *Sofiane Schaack, Umbertoluca Ranieri, Philippe Depondt, Richard Gaal, Werner F. Kuhs, Philippe Gillet, Fabio Finocchi, and Livia E. Bove*  
→ See Commentary on page 16164
- 16210 Energy conversion via metal nanolayers  
*Mavis D. Boamah, Emilie H. Lozier, Jeongmin Kim, Paul E. Ohno, Catherine E. Walker, Thomas F. Miller III, and Franz M. Geiger*
- 16357 In vitro ON4R tau fibrils contain a monomorphous  $\beta$ -sheet core enclosed by dynamically heterogeneous fuzzy coat segments  
*Aurelio J. Dregni, Venkata S. Mandala, Haifan Wu, Matthew R. Elkins, Harrison K. Wang, Ivan Hung, William F. DeGrado, and Mei Hong*


## EARTH, ATMOSPHERIC, AND PLANETARY SCIENCES

- 16216 African biomass burning is a substantial source of phosphorus deposition to the Amazon, Tropical Atlantic Ocean, and Southern Ocean  
*Anne E. Barkley, Joseph M. Prospero, Natalie Mahowald, Douglas S. Hamilton, Kimberly J. Popendorf, Amanda M. Oehlert, Ali Pourmand, Alexandre Gatineau, Kathy Panechou-Pulcherie, Patricia Blackwelder, and Cassandra J. Gaston*
- 16222 Radiokrypton unveils dual moisture sources of a deep desert aquifer  
*Reika Yokochi, Roi Ram, Jake C. Zappala, Wei Jiang, Eilon Adar, Ryan Bernier, Avihu Burg, Uri Dayan, Zheng-Tian Lu, Peter Mueller, Roland Purtschert, and Yoseph Yechieli*
- 16228 Pore-pressure diffusion, enhanced by poroelastic stresses, controls induced seismicity in Oklahoma  
 *Guang Zhai, Manoochehr Shirzaei, Michael Manga, and Xiaowei Chen*
- 16234 Volumetric and shear processes in crystalline rock approaching faulting  
*François Renard, Jessica McBeck, Neelima Kandula, Benoît Cordonnier, Paul Meakin, and Yehuda Ben-Zion*


## ENGINEERING

- 16240 Universal amplification-free molecular diagnostics by billion-fold hierarchical nanofluidic concentration  
*Wei Ouyang and Jongyoon Han*

## ENVIRONMENTAL SCIENCES

- 16448 NADPH-dependent extracellular superoxide production is vital to photophysiology in the marine diatom *Thalassiosira oceanica*  
 *Julia M. Diaz, Sydney Plummer, Colleen M. Hansel, Peter F. Andeer, Mak A. Saito, and Matthew R. McIlvin*

## PHYSICS

- 16250 Anomalous relaxation and the high-temperature structure factor of XXZ spin chains  
*Sarang Gopalakrishnan, Romain Vasseur, and Brayden Ware*
- 16256 Depletion layer dynamics of polyelectrolyte solutions under Poiseuille flow  
 *Seong Jun Park, Anisha Shakya, and John T. King*

## SOCIAL SCIENCES

### ECONOMIC SCIENCES

- 16262 The empirical relationship between nonstandard economic behaviors  
*Mark Dean and Pietro Ortoleva*
- 16268 Personal infidelity and professional conduct in 4 settings  
 *John M. Griffin, Samuel Kruger, and Gonzalo Maturana*
- 16274 Parochialism, social norms, and discrimination against immigrants  
*Donghyun Danny Choi, Mathias Poertner, and Nicholas Sambanis*
- 16280 Ethnic networks can foster the economic integration of refugees  
 *Linna Martén, Jens Hainmueller, and Dominik Hangartner*

### PSYCHOLOGICAL AND COGNITIVE SCIENCES

- 16286 Reappraising academic and social adversity improves middle school students' academic achievement, behavior, and well-being  
 *Geoffrey D. Borman, Christopher S. Rozek, Jaymes Pyne, and Paul Hanselman*

- 16292** **Infants expect leaders to right wrongs**  
Maayan Stavans and Renée Baillargeon
- SOCIAL SCIENCES**
- 16302** **Effects of the peer metagenomic environment on smoking behavior**  
Ramina Sotoudeh, Kathleen Mullan Harris, and Dalton Conley
- SUSTAINABILITY SCIENCE**
- 16308** **Power quality and modern energy for all**  
Veronica Jacome, Noah Klugman, Catherine Wolfram, Belinda Grunfeld, Duncan Callaway, and Isha Ray

## BIOLOGICAL SCIENCES

### APPLIED BIOLOGICAL SCIENCES

- 16314** **Functional selection of protease inhibitory antibodies**  
Tyler Lopez, Zahid Mustafa, Chuan Chen, Ki Baek Lee, Aaron Ramirez, Chris Benitez, Xin Luo, Ru-Rong Ji, and Xin Ge

### BIOCHEMISTRY

- 16320** **UvrD helicase activation by MutL involves rotation of its 2B subdomain**  
Yerdos A. Ordabayev, Binh Nguyen, Alexander G. Kozlov, Haifeng Jia, and Timothy M. Lohman

- 16326** **Phase separation and clustering of an ABC transporter in *Mycobacterium tuberculosis***  
Florian Heinkel, Libin Abraham, Mary Ko, Joseph Chao, Horacio Bach, Lok Tin Hui, Haoran Li, Mang Zhu, Yeou Mei Ling, Jason C. Rogalski, Joshua Scurl, Jennifer M. Bui, Thibault Mayor, Michael R. Gold, Keng C. Chou, Yossef Av-Gay, Lawrence P. McIntosh, and Jörg Gsponer

- 16332** **Phosphatidylserine flipping by the P4-ATPase ATP8A2 is electrogenic**  
Francesco Tadini-Buoninsegni, Stine A. Mikkelsen, Louise S. Mogensen, Robert S. Molday, and Jens Peter Andersen

- 16338** **Selective incorporation of proteinaceous over nonproteinaceous cationic amino acids in model prebiotic oligomerization reactions**  
Moran Frenkel-Pinter, Jay W. Haynes, Martin C. Anton S. Petrov, Bradley T. Burcar, Ramanarayanan Krishnamurthy, Nicholas V. Hud, Luke J. Leman, and Loren Dean Williams

- 16347** **Two PKA R1 $\alpha$  holoenzyme states define ATP as an isoform-specific orthosteric inhibitor that competes with the allosteric activator, cAMP**  
Tsan-Wen Lu, Jian Wu, Phillip C. Aoto, Jui-Hung Weng, Lalima G. Ahuja, Nicholas Sun, Cecilia Y. Cheng, Ping Zhang, and Susan S. Taylor

### BIOPHYSICS AND COMPUTATIONAL BIOLOGY

- 16192** **Mechanical and kinetic factors drive sorting of F-actin cross-linkers on bundles**  
Simon L. Freedman, Cristian Suarez, Jonathan D. Winkelman, David R. Kovar, Gregory A. Voth, Aaron R. Dinner, and Glen M. Hocky
- 16357** **In vitro ON4R tau fibrils contain a monomorphic  $\beta$ -sheet core enclosed by dynamically heterogeneous fuzzy coat segments**  
Aurelio J. Dregni, Venkata S. Mandala, Haifan Wu, Matthew R. Elkins, Harrison K. Wang, Ivan Hung, William F. DeGrado, and Mei Hong
- 16367** **Protein stability engineering insights revealed by domain-wide comprehensive mutagenesis**  
Alex Nisthal, Connie Y. Wang, Marie L. Ary, and Stephen L. Mayo

- 16378** **Frustration and folding of a TIM barrel protein**  
Kevin T. Halloran, Yanming Wang, Karunesh Arora, Srinivas Chakravarthy, Thomas C. Irving, Osman Bilsel, Charles L. Brooks III, and C. Robert Matthews
- 16384** **High-speed AFM reveals subsecond dynamics of cardiac thin filaments upon Ca<sup>2+</sup> activation and heavy meromyosin binding**  
Oleg S. Matusovsky, Alf Mansson, Malin Persson, Yu-Shu Cheng, and Dilson E. Rassier
- 16394** **Structural basis for GPCR-independent activation of heterotrimeric Gi proteins**  
Nicholas A. Kalogiropoulos, Steven D. Rees, Tony Ngo, Noah J. Kopcho, Andrey V. Ilatovskiy, Nina Sun, Elizabeth A. Komives, Geoffrey Chang, Pradipta Ghosh, and Irina Kufareva

### CELL BIOLOGY

- 16404** **Aging of spermatogonial stem cells by Jnk-mediated glycolysis activation**  
Mito Kanatsu-Shinohara, Takuya Yamamoto, Hidehiro Toh, Yasuhiro Kazuki, Kanako Kazuki, Junichi Imoto, Kazuho Ikeo, Motohiko Oshima, Katsuhiko Shirahige, Atsushi Iwama, Yoichi Nabeshima, Hiroyuki Sasaki, and Takashi Shinohara

- 16410** **Regulation of CCL2 expression in human vascular endothelial cells by a neighboring divergently transcribed long noncoding RNA**  
Nadiya Khyzha, Melvin Khor, Peter V. DiStefano, Liangxi Wang, Ljubica Matic, Ulf Hedin, Michael D. Wilson, Lars Maegdefessel, and Jason E. Fish

- 16420** **Disruption of IRE1 $\alpha$  through its kinase domain attenuates multiple myeloma**  
Jonathan M. Harnoss, Adrien Le Thomas, Anna Shemorry, Scot A. Marsters, David A. Lawrence, Min Lu, Yung-Chia Ariel Chen, Jing Qing, Klara Totpal, David Kan, Ehud Segal, Mark Merchant, Mike Reichelt, Heidi Ackerly Wallweber, Weiru Wang, Kevin Clark, Susan Kaufman, Maureen H. Beresini, Steven T. Laing, Wendy Sandoval, Maria Lorenzo, Jiansheng Wu, Justin Ly, Tom De Bruyn, Amy Heidersbach, Benjamin Haley, Alvin Gogineni, Robby M. Weimer, Dong Lee, Marie-Gabrielle Braun, Joachim Rudolph, Michael J. VanWyngarden, Daniel W. Sherbenou, Patricia Gomez-Bougie, Martine Amiot, Diego Acosta-Alvear, Peter Walter, and Avi Ashkenazi

### DEVELOPMENTAL BIOLOGY

- 16430** **Hox genes limit germ cell formation in the short germ insect *Gryllus bimaculatus***  
Austen A. Barnett, Taro Nakamura, and Cassandra G. Extavour

### ECOLOGY

- 16436** **Dissecting macroecological and macroevolutionary patterns of forest biodiversity across the Hawaiian archipelago**  
Dylan Craven, Tiffany M. Knight, Kasey E. Barton, Lalasia Bialic-Murphy, and Jonathan M. Chase
- 16442** **Increasing crop heterogeneity enhances multitrophic diversity across agricultural regions**  
Clélia Sirami, Nicolas Gross, Alette Bosem Baillo, Colette Bertrand, Romain Carrié, Annika Hass, Laura Henckel, Paul Miquet, Carole Vuillot, Audrey Alignier, Jude Girard, Péter Batáry, Yann Clough, Cyrille Violle, David Giralt, Gerard Bota, Isabelle Badenhauer, Gaëtan Lefebvre, Bertrand Gauffre, Aude Vialatte, François Calatayud, Assu Gil-Tena, Lutz Tischendorf, Scott Mitchell, Kathryn Lindsay, Romain Georges, Samuel Hilaire, Jordi Recasens, Xavier Oriol Solé-Senan, Irene Robleño, Jordi Bosch, Jose Antonio Barrientos, Antonio Ricarte, Maria Ángeles Marcos-García, Jesús Miñano, Raphaël Mathevet, Annick Gibon, Jacques Baudry, Gérard Balent, Brigitte Poulin, Françoise Burel, Teja Tschamtké, Vincent Bretagnolle, Gavin Siriwardena, Annie Ouin, Lluís Brotons, Jean-Louis Martin, and Lenore Fahrig

## ENVIRONMENTAL SCIENCES

- 16448** **NADPH-dependent extracellular superoxide production is vital to photophysiology in the marine diatom *Thalassiosira oceanica***  
*Julia M. Diaz, Sydney Plummer, Colleen M. Hansel, Peter F. Andeer, Mak A. Saito, and Matthew R. McIlvin*

## GENETICS

- 16454** **Meiotic viral attenuation through an ancestral apoptotic pathway**  
*Jie Gao, Sabrina Chau, Fuad Chowdhury, Tina Zhou, Saif Hossain, G. Angus McQuibban, and Marc D. Meneghini*  
 → See Commentary on page 16167
- 16463** **A deep intronic splice mutation of *STAT3* underlies hyper IgE syndrome by negative dominance**  
*Joëlle Khourieh, Geetha Rao, Tanwir Habib, Danielle T. Avery, Alain Lefèvre-Utile, Marie-Olivia Chandesris, Aziz Belkadi, Maya Chrabieh, Hanan Alwaseem, Virginie Grandin, Françoise Sarrot-Reynauld, Agathe Sénéchal, Olivier Lortholary, Xiao-Fei Kong, Stéphanie Boisson-Dupuis, Capucine Picard, Anne Puel, Vivien Béziat, Qian Zhang, Laurent Abel, Henrik Molina, Nico Marr, Stuart G. Tangye, Jean-Laurent Casanova, and Bertrand Boisson*

## IMMUNOLOGY AND INFLAMMATION

- 16473** **Enhancing humoral immunity via sustained-release implantable microneedle patch vaccination**  
*Archana V. Boopathy, Anasuya Mandal, Daniel W. Kulp, Sergey Menis, Nitasha R. Bennett, Hannah C. Watkins, Wade Wang, Jacob T. Martin, Nikki T. Thai, Yanpu He, William R. Schief, Paula T. Hammond, and Darrell J. Irvine*
- 16479** **TMEM203 is a binding partner and regulator of STING-mediated inflammatory signaling in macrophages**  
*Yang Li, Sharmy J. James, David H. Wyllie, Claire Wynne, Agnes Czibula, Ahmed Bukhari, Katherine Pye, Seri Musfirah Bte Mustafah, Roberta Fajka-Boja, Eniko Szabo, Adrienn Angyal, Zoltan Hegedus, Laszlo Kovacs, Adrian V. S. Hill, Caroline A. Jefferies, Heather L. Wilson, Zhang Yongliang, and Andre Kiss-Toth*
- 16489** **SLAMF9 regulates pDC homeostasis and function in health and disease**  
*Lital Sever, Lih Radomir, Kristin Strim, Anna Weiner, Nofar Shchottlender, Hadas Lewinsky, Avital F. Barak, Gilgi Friedlander, Shifra Ben-Dor, Shirly Becker-Herman, and Idit Shachar*
- 16497** **Autophagy genes in myeloid cells counteract IFN $\gamma$ -induced TNF-mediated cell death and fatal TNF-induced shock**  
*Anthony Orvedahl, Michael R. McAllaster, Amy Sansone, Bria F. Dunlap, Chandni Desai, Ya-Ting Wang, Dale R. Balce, Cliff J. Luke, Sanghyun Lee, Robert C. Orchard, Maxim N. Artyomov, Scott A. Handley, John G. Doench, Gary A. Silverman, and Herbert W. Virgin*

## MEDICAL SCIENCES

- 16240** **Universal amplification-free molecular diagnostics by billion-fold hierarchical nanofluidic concentration**  
*Wei Ouyang and Jongyoon Han*
- 16507** **Retinal and optic nerve degeneration in liver X receptor  $\beta$  knockout mice**  
*Xiao-yu Song, Wan-fu Wu, Chiara Gabbi, Yu-bing Dai, Mark So, Surendra P. Chaurasiya, Li Wang, Margaret Warner, and Jan-Åke Gustafsson*
- 16513** ***STAT6* induces expression of *Gas6* in macrophages to clear apoptotic neutrophils and resolve inflammation**  
*Saroj Nepal, Chinnaswamy Tiruppathi, Yoshikazu Tsukasaki, Joseph Farahany, Manish Mittal, Jalees Rehman, Darwin J. Prockop, and Asrar B. Malik*

- 16519** **How Kaposi's sarcoma-associated herpesvirus stably transforms peripheral B cells towards lymphomagenesis**  
*Aurélia Faure, Mitch Hayes, and Bill Sugden*

## MICROBIOLOGY

- 16529** **A selective membrane-targeting repurposed antibiotic with activity against persistent methicillin-resistant *Staphylococcus aureus***  
*Wooseong Kim, Guijin Zou, Taylor P. A. Hari, Ingrid K. Wilt, Wenpeng Zhu, Nicolas Galle, Hammad A. Faizi, Gabriel L. Hendricks, Katerina Tori, Wen Pan, Xiaowen Huang, Andrew D. Steele, Erika E. Csatory, Madeline M. Dekarske, Jake L. Rosen, Noelly de Queiroz Ribeiro, Kiho Lee, Jenna Port, Beth Burgwyn Fuchs, Petia M. Vlahovska, William M. Wuest, Huajian Gao, Frederick M. Ausubel, and Eleftherios Mylonakis*
- 16535** **In situ structures of RNA-dependent RNA polymerase inside bluetongue virus before and after uncoating**  
*Yao He, Sakar Shivakoti, Ke Ding, Yanxiang Cui, Polly Roy, and Z. Hong Zhou*
- 16541** **Kinome profiling of non-Hodgkin lymphoma identifies Tyro3 as a therapeutic target in primary effusion lymphoma**  
*Jason P. Wong, Timothy J. Stuhlmiller, Louise C. Giffin, Carolina Lin, Rachele Bigi, Jichen Zhao, Weihe Zhang, Ariana G. Bravo Cruz, Steven I. Park, H. Shelton Earp, Dirk P. Dittmer, Stephen V. Frye, Xiaodong Wang, Gary L. Johnson, and Blossom Damania*
- 16551** **Leptin signaling impairs macrophage defenses against *Salmonella Typhimurium***  
*Julia Fischer, Saray Gutiérrez, Raja Ganesan, Chiara Calabrese, Rajeew Ranjan, Gökhan Cildir, Nina Judith Hos, Jan Rybniker, Martina Wolke, Jochen W. U. Fries, Vinay Tergaonkar, Georg Plum, Adam Antebi, and Nirmal Robinson*
- 16561** **Dynamic colocalization of 2 simultaneously active VSG expression sites within a single expression-site body in *Trypanosoma brucei***  
*James Budzak, Louise E. Kerry, Aris Aristodemou, Belinda S. Hall, Kathrin Witmer, Manish Kushwaha, Carys Davies, Megan L. Povelones, Jacquelyn R. McDonald, Aakash Sur, Peter J. Myler, and Gloria Rudenko*

## NEUROSCIENCE

- 16571** **Hippocampal deletion of *Nav1.1* channels in mice causes thermal seizures and cognitive deficit characteristic of Dravet Syndrome**  
*Rachael E. Stein, Joshua S. Kaplan, Jin Li, and William A. Catterall*
- 16577** **Sex-specific neuroprotection by inhibition of the Y-chromosome gene, *SRY*, in experimental Parkinson's disease**  
*Joohyung Lee, Paulo Pinare-Garcia, Hannah Loke, Seungmin Ham, Eric Vilain, and Vincent R. Harley*
- 16583** **Parvalbumin interneuron in the ventral hippocampus functions as a discriminator in social memory**  
*Xiaofei Deng, Lijia Gu, Nan Sui, Jianyou Guo, and Jing Liang*
- 16593** **Mutant huntingtin disrupts mitochondrial proteostasis by interacting with TIM23**  
*Svitlana Yablonska, Vinitha Ganesan, Lisa M. Ferrando, JinHo Kim, Anna Pyzel, Oxana V. Baranova, Nicolas K. Khattar, Timothy M. Larkin, Sergei V. Baranov, Ning Chen, Colleen E. Strohle, Donté A. Stevens, Xiaomin Wang, Yue-Fang Chang, Mark E. Schurdak, Diane L. Carlisle, Jonathan S. Minden, and Robert M. Friedlander*

