

The Journal of Neuroscience

January 15, 2014 • Volume 34 Number 3 • www.jneurosci.org



Cover legend: An Egyptian fruit bat. These bats, as well as big brown bats, have place cells in hippocampal area CA1. These neurons also exhibit clear tuning to head direction, thus encoding both place and movement direction. For more information, see the article by Rubin et al. (pages 1067–1080). Photograph by Haim Ziv. Used with permission.

i This Week in The Journal

Journal Club

- 689 **In Search of Causal Mechanisms Underlying Bistable Perception**
Stefan Rach and René J. Huster

Brief Communications

- 691 **Multisensory Temporal Integration in Autism Spectrum Disorders**
Ryan A. Stevenson, Justin K. Siemann, Brittany C. Schneider, Haley E. Eberly, Tiffany G. Woynaroski, Stephen M. Camarata, and Mark T. Wallace
- 758 **S6 Kinase Inhibits Intrinsic Axon Regeneration Capacity via AMP Kinase in *Caenorhabditis elegans***
Thomas Hubert, Zilu Wu, Andrew D. Chisholm, and Yishi Jin
- 817 **Similar Roles of Substantia Nigra and Ventral Tegmental Dopamine Neurons in Reward and Aversion**
Anton Ilango, Andrew J. Kesner, Kristine L. Keller, Garret D. Stuber, Antonello Bonci, and Satoshi Ikemoto
- 839 **A Transition in Brain State during Propofol-Induced Unconsciousness**
Eran A. Mukamel, Elvira Pirondini, Behtash Babadi, Kin Foon Kevin Wong, Eric T. Pierce, P. Grace Harrell, John L. Walsh, Andres F. Salazar-Gomez, Sydney S. Cash, Emad N. Eskandar, Veronica S. Weiner, Emery N. Brown, and Patrick L. Purdon
- 1022 **Prion Transmission Prevented by Modifying the $\beta 2$ - $\alpha 2$ Loop Structure of Host PrP^C**
Timothy D. Kurt, Cyrus Bett, Natalia Fernández-Borges, Shivanjali Joshi-Barr, Simone Hornemann, Thomas Rüllicke, Joaquín Castilla, Kurt Wüthrich, Adriano Aguzzi, and Christina J. Sigurdson
- 1051 **Effects of Neuregulin 3 Genotype on Human Prefrontal Cortex Physiology**
Heike Tost, Joseph H. Callicott, Roberta Rasetti, Radhakrishna Vakkalanka, Venkata S. Mattay, Daniel R. Weinberger, and Amanda J. Law

Articles

CELLULAR/MOLECULAR

- 705 **Modes and Regulation of Endocytic Membrane Retrieval in Mouse Auditory Hair Cells**
Jakob Neef, SangYong Jung, Aaron B. Wong, Kirsten Reuter, Tina Pangršič, Rituparna Chakrabarti, Sebastian Kügler, Christine Lenz, Régis Nouvian, Rebecca M. Boumil, Wayne N. Frankel, Carolin Wichmann, and Tobias Moser

- 764 **The Voltage-Gated Anion Channels Encoded by *clh-3* Regulate Egg Laying in *C. elegans* by Modulating Motor Neuron Excitability**
Robyn Branicky, Hiroaki Miyazaki, Kevin Strange, and William R. Schafer
- 776 **Neurofibromin Is the Major Ras Inactivator in Dendritic Spines**
Ana F. Oliveira and Ryohei Yasuda
- 804 **Postsynaptic GABA_B Receptor Activity Regulates Excitatory Neuronal Architecture and Spatial Memory**
Miho Terunuma, Raquel Revilla-Sanchez, Isabel M. Quadros, Qiudong Deng, Tarek Z. Deeb, Michael Lumb, Piotr Sicinski, Philip G. Haydon, Menelas N. Pangalos, and Stephen J. Moss
- 855 **Investigation of Synapse Formation and Function in a Glutamatergic-GABAergic Two-Neuron Microcircuit**
Chia-Ling Chang, Thorsten Trimbuch, Hsiao-Tuan Chao, Julia-Christine Jordan, Melissa A. Herman, and Christian Rosenmund
- 869 **Phosphorylation of Ser1166 on GluN2B by PKA Is Critical to Synaptic NMDA Receptor Function and Ca²⁺ Signaling in Spines**
Jessica A. Murphy, Ivar S. Stein, C. Geoffrey Lau, Rui T. Peixoto, Teresa K. Aman, Naoki Kaneko, Kelly Aromolaran, Jessica L. Saulnier, Gabriela K. Popescu, Bernardo L. Sabatini, Johannes W. Hell, and R. Suzanne Zukin
- 880 **Neuronal Expression of GalNAc Transferase Is Sufficient to Prevent the Age-Related Neurodegenerative Phenotype of Complex Ganglioside-Deficient Mice**
Denggao Yao, Rhona McGonigal, Jennifer A. Barrie, Joanna Cappell, Madeleine E. Cunningham, Gavin R. Meehan, Simon N. Fewou, Julia M. Edgar, Edward Rowan, Yuhsuke Ohmi, Keiko Furukawa, Koichi Furukawa, Peter J. Brophy, and Hugh J. Willison
- 922 **Shp2-Dependent ERK Signaling Is Essential for Induction of Bergmann Glia and Foliation of the Cerebellum**
Kairong Li, Alan W. Leung, Qiuxia Guo, Wentian Yang, and James Y. H. Li
- 980 **Photoinactivation of Glutamate Receptors by Genetically Encoded Unnatural Amino Acids**
Viktoria Klippenstein, Valentina Ghisi, Marcus Wietstruk, and Andrew J. R. Plested
- 992 **An Unconventional Secretory Pathway Mediates the Cilia Targeting of Peripherin/rds**
Guilian Tian, Philip Ropelewski, Ina Nemet, Richard Lee, Kerrie H. Lodowski, and Yoshikazu Imanishi
- 1007 **Fluoxetine Exposure during Adolescence Alters Responses to Aversive Stimuli in Adulthood**
Sergio D. Iniguez, Lyonna F. Alcantara, Brandon L. Warren, Lace M. Riggs, Eric M. Parise, Vincent Vialou, Katherine N. Wright, Genesis Dayrit, Steven J. Nieto, Matthew B. Wilkinson, Mary K. Lobo, Rachael L. Neve, Eric J. Nestler, and Carlos A. Bolaños-Guzmán

DEVELOPMENT/PLASTICITY/REPAIR

- 717 **The Environmental Neurotoxicant PCB 95 Promotes Synaptogenesis via Ryanodine Receptor-Dependent miR132 Upregulation**
Adam Lesiak, Mingyan Zhu, Hao Chen, Suzanne M. Appleyard, Soren Impey, Pamela J. Lein, and Gary A. Wayman
- 737 **Bifurcation of Axons from Cranial Sensory Neurons Is Disabled in the Absence of Npr2-Induced cGMP Signaling**
Gohar Ter-Avetisyan, Fritz G. Rathjen, and Hannes Schmidt

- 969 **BDNF Promotes Axon Branching of Retinal Ganglion Cells via miRNA-132 and p250GAP**
Katharine J. Marler, Philipp Suetterlin, Asha Dopplapudi, Aine Rubikaite, Jihad Adnan, Nicola A. Maiorano, Andrew S. Lowe, Ian D. Thompson, Manav Pathania, Angélique Bordey, Tudor Fulga, David L. Van Vactor, Robert Hindges, and Uwe Drescher

SYSTEMS/CIRCUITS

- 793 **Mechanisms of Coordination in Distributed Neural Circuits: Decoding and Integration of Coordinating Information**
Carmen Smarandache-Wellmann, Cynthia Weller, and Brian Mulloney
- 941 **Intermittency Coding in the Primary Olfactory System: A Neural Substrate for Olfactory Scene Analysis**
Il Memming Park, Yuriy V. Bobkov, Barry W. Ache, and José C. Príncipe

BEHAVIORAL/COGNITIVE

- 698 **Phasic Dopamine Release in the Rat Nucleus Accumbens Symmetrically Encodes a Reward Prediction Error Term**
Andrew S. Hart, Robb B. Rutledge, Paul W. Glimcher, and Paul E. M. Phillips
- 748 **Mental Action Simulation Synchronizes Action–Observation Circuits across Individuals**
Lauri Nummenmaa, Dmitry Smirnov, Juha M. Lahnakoski, Enrico Gleran, Iiro P. Jääskeläinen, Mikko Sams, and Riitta Hari
- 784 **Auditory and Tactile Signals Combine to Influence Vision during Binocular Rivalry**
Claudia Lunghi, Maria Concetta Morrone, and David Alais
- 823 **Tonic Inhibition of Accumbal Spiny Neurons by Extrasynaptic $\alpha 4\beta\delta$ GABA_A Receptors Modulates the Actions of Psychostimulants**
Edward P. Maguire, Tom Macpherson, Jerome D. Swinny, Claire I. Dixon, Murray B. Herd, Delia Belevi, David N. Stephens, Sarah L. King, and Jeremy J. Lambert
- 846 **The Neural Dynamics of Face Detection in the Wild Revealed by MVPA**
Maxime Cauchoix, Gladys Barragan-Jason, Thomas Serre, and Emmanuel J. Barbeau
- 892 **Endogenous Attention Signals Evoked by Threshold Contrast Detection in Human Superior Colliculus**
Sucharit Katyal and David Ress
- 901 **An Investigation into the Origin of Anatomical Differences in Dyslexia**
Anthony J. Krafnick, D. Lynn Flowers, Megan M. Luetje, Eileen M. Napoliello, and Guinevere F. Eden
- 909 **Action Recognition by Motion Detection in Posture Space**
Stefanie Theusner, Marc de Lussanet, and Markus Lappe
- 932 **Precuneus Is a Functional Core of the Default-Mode Network**
Amanda V. Utevsky, David V. Smith, and Scott A. Huettel
- 953 **A Novel Role for Brain Interleukin-6: Facilitation of Cognitive Flexibility in Rat Orbitofrontal Cortex**
Jennifer J. Donegan, Milena Girotti, Marc S. Weinberg, and David A. Morilak
- 1037 **Bihemispheric Transcranial Direct Current Stimulation Enhances Effector-Independent Representations of Motor Synergy and Sequence Learning**
Sheena Waters-Metenier, Masud Husain, Tobias Wiestler, and Jörn Diedrichsen

1057 Cocaine Dysregulates Opioid Gating of GABA Neurotransmission in the Ventral Pallidum

Yonatan M. Kupchik, Michael D. Scofield, Kenner C. Rice, Kejun Cheng, Bernard P. Roques, and Peter W. Kalivas

1067 Encoding of Head Direction by Hippocampal Place Cells in Bats

Alon Rubin, Michael M. Yartsev, and Nachum Ulanovsky

NEUROBIOLOGY OF DISEASE

726 Dopamine Deficiency Contributes to Early Visual Dysfunction in a Rodent Model of Type 1 Diabetes

Moe H. Aung, Han na Park, Moon K. Han, Tracy S. Obertone, Jane Abey, Fazila Aseem, Peter M. Thule, P. Michael Iuvone, and Mabelle T. Pardue

963 BDNF Mediates Neuroprotection against Oxygen-Glucose Deprivation by the Cardiac Glycoside Oleandrin

Michael J. Van Kanegan, Dong Ning He, Denise E. Dunn, Peiying Yang, Robert A. Newman, Anne E. West, and Donald C. Lo

1028 Cognitive Enhancing Treatment with a PPAR γ Agonist Normalizes Dentate Granule Cell Presynaptic Function in Tg2576 APP Mice

Miroslav N. Nenov, Fernanda Laezza, Sigmund J. Haidacher, Yingxin Zhao, Rovshan G. Sadygov, Jonathan M. Starkey, Heidi Spratt, Bruce A. Luxon, Kelly T. Dineley, and Larry Denner

Persons interested in becoming members of the Society for Neuroscience should contact the Membership Department, Society for Neuroscience, 1121 14th St., NW, Suite 1010, Washington, DC 20005, phone 202-962-4000.

Instructions for Authors are available at <http://www.jneurosci.org/misc/itoa.shtml>. Authors should refer to these Instructions online for recent changes that are made periodically.

Brief Communications Instructions for Authors are available via Internet (http://www.jneurosci.org/misc/ifa_bc.shtml).

Submissions should be submitted online using the following url: <http://jneurosci.msubmit.net>. Please contact the Central Office, via phone, fax, or e-mail with any questions. Our contact information is as follows: phone, 202-962-4000; fax, 202-962-4945; e-mail, jn@sfn.org.