

# The Journal of Neuroscience

January 7, 2015 • Volume 35 Number 1 • www.jneurosci.org



**Cover legend:** Glycine receptor  $\alpha 1$  subunits (green) are trafficked into the dendrites of hippocampal neurons. The protein GM130 (pink) is present in the cis-Golgi and DAPI (blue) labels the nucleus (Adobe Photoshop filter plastic wrap was added to the original image). For more information, see the article by Schaefer et al. (pages 422–437).

## i This Week in The Journal

### Journal Club

- 1 **Considering the Impact of Large-Scale Network Interactions on Cognitive Control**  
Fiona Kumfor, Nadene Dermody, and Muireann Irish

### Brief Communications

- 366 **Bridging the Gap between Perceptual and Cognitive Perspectives on Absolute Pitch**  
Stefan Elmer, Lars Rogenmoser, Jürg Kühnis, and Lutz Jäncke

### Articles

#### CELLULAR/MOLECULAR

- 21 **Brg1-Dependent Chromatin Remodelling Is Not Essentially Required during Oligodendroglial Differentiation**  
Melanie Bischof, Matthias Weider, Melanie Küspert, Klaus-Armin Nave, and Michael Wegner
- 64 **Sleep Slow Wave-Related Homo and Heterosynaptic LTD of Intrathalamic GABA<sub>A</sub>ergic Synapses: Involvement of T-Type Ca<sup>2+</sup> Channels and Metabotropic Glutamate Receptors**  
Romain Pigeat, Patrick Chausson, Fanny M. Dreyfus, Nathalie Leresche, and Régis C. Lambert
- 112 **Diversity of Glutamatergic Synaptic Strength in Lateral Prefrontal versus Primary Visual Cortices in the Rhesus Monkey**  
Maria Medalla and Jennifer I. Luebke
- 221 **Itk Signals Promote Neuroinflammation by Regulating CD4<sup>+</sup> T-Cell Activation and Trafficking**  
Arun K. Kannan, Do-Geun Kim, Avery August, and Margaret S. Bynoe
- 325 **Gene Dosage in the Dysbindin Schizophrenia Susceptibility Network Differentially Affect Synaptic Function and Plasticity**  
Ariana P. Mullin, Madhumala K. Sadanandappa, Wenpei Ma, Dion K. Dickman, Krishnaswamy VijayRaghavan, Mani Ramaswami, Subhabrata Sanyal, and Victor Faundez
- 352 **Chromatin Landscape Defined by Repressive Histone Methylation during Oligodendrocyte Differentiation**  
Jia Liu, Laura Magri, Fan Zhang, Nidaa O. Marsh, Stefanie Albrecht, Jimmy L. Huynh, Jasbir Kaur, Tanja Kuhlmann, Weijia Zhang, Paul A. Slesinger, and Patrizia Casaccia

372 **Combinatorial Mutagenesis of the Voltage-Sensing Domain Enables the Optical Resolution of Action Potentials Firing at 60 Hz by a Genetically Encoded Fluorescent Sensor of Membrane Potential**  
Hong Hua Piao, Dhanarajan Rajakumar, Bok Eum Kang, Eun Ha Kim, and Bradley J. Baker

386 **cJun and CREB2 in the Postsynaptic Neuron Contribute to Persistent Long-Term Facilitation at a Behaviorally Relevant Synapse**  
Jiang-Yuan Hu, Amir Levine, Ying-Ju Sung, and Samuel Schacher

#### DEVELOPMENT/PLASTICITY/REPAIR

140 **Mapping the Stability of Human Brain Asymmetry across Five Sex-Chromosome Aneuploidies**  
Amy Lin, Liv Clasen, Nancy Raitano Lee, Gregory L. Wallace, Francois Lalonde, Jonathan Blumenthal, Jay N. Giedd, and Armin Raznahan

234 **Fgf-Signaling-Dependent Sox9a and Atoh1a Regulate Otic Neural Development in Zebrafish**  
Jialiang Wang, Ying Wu, Feng Zhao, Yuting Wu, Wei Dong, Jue Zhao, Zuoyan Zhu, and Dong Liu

409 **Expanded Terminal Fields of Gustatory Nerves Accompany Embryonic BDNF Overexpression in Mouse Oral Epithelia**  
Chengsan Sun, Arjun Dayal, and David L. Hill

#### SYSTEMS/CIRCUITS

53 **Imaging the Awake Visual Cortex with a Genetically Encoded Voltage Indicator**  
Matteo Carandini, Daisuke Shimaoka, L. Federico Rossi, Tatsuo K. Sato, Andrea Benucci, and Thomas Knöpfel

84 **Temporal Plasticity Involved in Recovery from Manual Dexterity Deficit after Motor Cortex Lesion in Macaque Monkeys**  
Yumi Murata, Noriyuki Higo, Takuya Hayashi, Yukio Nishimura, Yoko Sugiyama, Takao Oishi, Hideo Tsukada, Tadashi Isa, and Hirota Onoe

146 **Circuit Formation and Function in the Olfactory Bulb of Mice with Reduced Spontaneous Afferent Activity**  
Paolo Lorenzon, Nelly Redolfi, Michael J. Podolsky, Ilaria Zamparo, Sira Angela Franchi, Gianluca Pietra, Anna Boccaccio, Anna Menini, Venkatesh N. Murthy, and Claudia Lodovichi

170 **Cortical State Determines Global Variability and Correlations in Visual Cortex**  
Marieke L. Schölvinck, Aman B. Saleem, Andrea Benucci, Kenneth D. Harris, and Matteo Carandini

198 **Distinct Midbrain and Habenula Pathways Are Involved in Processing Aversive Events in Humans**  
Kelly Hennigan, Kimberlee D'Ardenne, and Samuel M. McClure

299 **Motor Origin of Precise Synaptic Inputs onto Forebrain Neurons Driving a Skilled Behavior**  
Daniela Vallentin and Michael A. Long

#### BEHAVIORAL/COGNITIVE

74 **Pharmacogenetic Excitation of Dorsomedial Prefrontal Cortex Restores Fear Prediction Error**  
Joanna Oi-Yue Yau and Gavan P. McNally

128 **Persistent CaMKII Activation Mediates Learning-Induced Long-Lasting Enhancement of Synaptic Inhibition**  
Sourav Ghosh, Iris Reuveni, Raphael Lamprecht, and Edi Barkai

- 161 **Methylphenidate and Atomoxetine Inhibit Social Play Behavior through Prefrontal and Subcortical Limbic Mechanisms in Rats**  
E.J. Marijke Achterberg, Linda W.M. van Kerkhof, Ruth Damsteegt, Viviana Trezza, and Louk J.M.J. Vanderschuren
- 179 **Learning Modifies Odor Mixture Processing to Improve Detection of Relevant Components**  
Jen-Yung Chen, Emiliano Marachlian, Collins Assisi, Ramon Huerta, Brian H. Smith, Fernando Locatelli, and Maxim Bazhenov
- 209 **The Neural Substrate for Binaural Masking Level Differences in the Auditory Cortex**  
Heather J. Gilbert, Trevor M. Shackleton, Katrin Krumbholz, and Alan R. Palmer
- 245 **Saccade Planning Evokes Topographically Specific Activity in the Dorsal and Ventral Streams**  
Golbarg T. Saber, Franco Pestilli, and Clayton E. Curtis
- 253 **Spatial and Temporal Characteristics of Error-Related Activity in the Human Brain**  
Maital Neta, Francis M. Miezin, Steven M. Nelson, Joseph W. Dubis, Nico U.F. Dosenbach, Bradley L. Schlaggar, and Steven E. Petersen
- 339 **Overexpression of the Type 1 Adenylyl Cyclase in the Forebrain Leads to Deficits of Behavioral Inhibition**  
Xuanmao Chen, Hong Cao, Amit Saraf, Larry S. Zweifel, and Daniel R. Storm

#### NEUROBIOLOGY OF DISEASE

- 4 **Demyelination Causes Adult CNS Progenitors to Revert to an Immature State and Express Immune Cues That Support Their Migration**  
Sarah Moyon, Anne Laure Dubessy, Marie Stephane Aigrot, Matthew Trotter, Jeffrey K. Huang, Luce Dauphinot, Marie Claude Potier, Christophe Kerninon, Stephane Melik Parsadaniantz, Robin J. M. Franklin, and Catherine Lubetzki
- 36 **Caveolin-1 in the Anterior Cingulate Cortex Modulates Chronic Neuropathic Pain via Regulation of NMDA Receptor 2B Subunit**  
Jun-Xia Yang, Lu Hua, Yan-Qiang Li, Yan-Yu Jiang, Dong Han, He Liu, Qian-Qian Tang, Xiao-Na Yang, Cui Yin, Ling-Yun Hao, Le Yu, Peng Wu, Cui-Jie Shao, Hai-Lei Ding, Yong-Mei Zhang, and Jun-Li Cao
- 96 **Gene Expression Analyses Identify Narp Contribution in the Development of L-DOPA-Induced Dyskinesia**  
Fanny Charbonnier-Beaupel, Marion Malerbi, Cristina Alcacer, Khadija Tahiri, Wassila Carpentier, Chuansong Wang, Matthew During, Desheng Xu, Paul F. Worley, Jean-Antoine Girault, Denis Hervé, and Jean-Christophe Corvol
- 267 **Early-Course Unmedicated Schizophrenia Patients Exhibit Elevated Prefrontal Connectivity Associated with Longitudinal Change**  
Alan Anticevic, Xinyu Hu, Yuan Xiao, Junmei Hu, Fei Li, Feng Bi, Michael W. Cole, Aleksandar Savic, Genevieve J. Yang, Grega Repovs, John D. Murray, Xiao-Jing Wang, Xiaoqi Huang, Su Lui, John H. Krystal, and Qiyong Gong
- 287 **Altered Sensory Experience Exacerbates Stable Dendritic Spine and Synapse Loss in a Mouse Model of Huntington's Disease**  
Reena Prity Murmu, Wen Li, Zsuzsanna Szepesi, and Jia-Yi Li
- 308 **Extracellular Glutamate Exposure Facilitates Group I mGluR-Mediated Epileptogenesis in the Hippocampus**  
Wangfa Zhao, Shih-Chieh Chuang, Steven R. Young, Riccardo Bianchi, and Robert K.S. Wong

- 316 **Stress Induces the Danger-Associated Molecular Pattern HMGB-1 in the Hippocampus of Male Sprague Dawley Rats: A Priming Stimulus of Microglia and the NLRP3 Inflammasome**  
Michael D. Weber, Matthew G. Frank, Kevin J. Tracey, Linda R. Watkins, and Steven F. Maier
- 396 **PDE-4 Inhibition Rescues Aberrant Synaptic Plasticity in *Drosophila* and Mouse Models of Fragile X Syndrome**  
Catherine H. Choi, Brian P. Schoenfeld, Eliana D. Weisz, Aaron J. Bell, Daniel B. Chambers, Joseph Hinchey, Richard J. Choi, Paul Hinchey, Maria Kollaros, Michael J. Gertner, Neal J. Ferrick, Allison M. Terlizzi, Nicole Yohn, Eric Koenigsberg, David A. Liebelt, R. Suzanne Zukin, Newton H. Woo, Michael R. Tranfaglia, Natalia Louneva, Steven E. Arnold, Steven J. Siegel, Francois V. Bolduc, Thomas V. McDonald, Thomas A. Jongens, and Sean M.J. McBride
- 422 **Disturbed Neuronal ER-Golgi Sorting of Unassembled Glycine Receptors Suggests Altered Subcellular Processing Is a Cause of Human Hyperekplexia**  
Natascha Schaefer, Christoph J. Kluck, Kerry L. Price, Heike Meiselbach, Nadine Vornberger, Stephan Schwarzinger, Stephanie Hartmann, Georg Langlhofer, Solveig Schulz, Nadja Schlegel, Knut Brockmann, Bryan Lynch, Cord-Michael Becker, Sarah C.R. Lummis, and Carmen Villmann
- 438 **Correction:** The article “Hydroxamic Acid-Based Histone Deacetylase (HDAC) Inhibitors Can Mediate Neuroprotection Independent of HDAC Inhibition” by Sama F. Sleiman, David E. Olson, Megan W. Bourassa, Saravanan S. Karuppagounder, Yan-Ling Zhang, Jennifer Gale, Florence F. Wagner, Manuela Basso, Giovanni Coppola, John T. Pinto, Edward B. Holson, and Rajiv R. Ratan appeared on pages 14328–14337 of the October 22, 2014 issue. A correction for that article appears on page 438.
- 

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](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](mailto:jn@sfn.org).