Stanford



John Huguenard

Professor of Neurology and Neurological Sciences (Neurology Research), of Neurosurgery (Adult Neurosurgery) and, by courtesy, of Molecular and Cellular Physiology

Bio

ACADEMIC APPOINTMENTS

- Professor, Neurology and Neurological Sciences
- Professor, Neurosurgery
- Professor (By courtesy), Molecular and Cellular Physiology
- Member, Bio-X
- Member, Maternal & Child Health Research Institute (MCHRI)
- Member, Wu Tsai Neurosciences Institute

ADMINISTRATIVE APPOINTMENTS

- Chair, Neuroscience Program Admissions Committee, Stanford University, (2002-2005)
- Professional Advisory Board, Epilepsy Foundation, (2003- present)
- Director, Neuroscience Graduate Program, Stanford University, (2006-2013)
- Board of Directors, American Epilepsy Society, (2009-2011)

HONORS AND AWARDS

- Javits Merit Award, NINDS/NIH (2004-2011)
- Research Recognition Award, American Epilepsy Society (2007)
- Faculty Award for Outstanding Service to Graduate Students, Stanford University School of Medicine (2010)
- Fellow of the AAAS, American Association for the Advancement of Science (2015)

PROFESSIONAL EDUCATION

- Ph.D., Duke University , Pharmacology (Neuroscience) (1983)

LINKS

- Huguenard Lab Website: https://huguenardlab.stanford.edu/

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

What are the neuronal mechanisms that underlie network oscillatory synchrony in the thalamocortical system? Such oscillations are related to cognitive processes, normal sleep activities and certain forms of epilepsy. Our approach is an analysis of the cells and microcircuits that make up thalamic and cortical circuits. We also use computational approaches to build physiologically constrained network models to test and improve our understanding of the

circuit. Accordingly, we have been able to identify genes whose products, mainly ion channels, play key roles in the regulation of thalamocortical network responses.

Currently, projects focus on: Development of excitatory connections in neocortex, with an emphasis on AMPA receptor alterations in the early postnatal period -- Molecular pharmacology of inhibitory GABA-A receptors in the thalamus -- and the role of receptor phosphorylation in regulating inhibitory function -- Analysis of progression and destabilization of widespread thalamic network activity using large microelectrode arrays -- The roles of neuropeptides, especially NPY, SST, and VIP in regulating thalamic and cortical function -- Reorganization of neocortical connectivity following injury -- Roles of specific GABA-B receptors in regulating pre- and postsynaptic function.

The laboratory uses experimental techniques ranging from biophysical studies of single ion channels to in vivo recording to purely theoretical studies of network synchrony. Our toolbox includes: --Use of mutant mouse models for analysis of gene function in circuit behavior. For example, knockout and knockin mice have been used to identify the specific GABA-A receptor isoforms that are critical for the therapeutic actions of benzodiazepines in thalamus -- patch clamp recording methods for single channels and whole cell currents, with both isolated neurons and those in situ in brain slices -- multi-unit, multi-site extracellular recording techniques -- immunohistochemical techniques for cell identification and protein localization -- molecular & genetic approaches for in situ hybridization of specific transcripts -- targeted antisense oligodeoxynucleotide knockdown of specific gene products -- microscopic techniques for computerized neuronal reconstruction (Neurolucida) -- laser uncaging of photo-labile glutamate derivatives for circuit analysis -- single cell intracellular perfusion for modification of e.g., phosphorylation state -- paired intracellular recordings for analysis of single-axon synaptic connections -- fluorometric detection of calcium indicator dyes in cells and circuits -- local perfusion within slice micro-regions for pharmacological analysis -- computer-based modeling of single cell and circuit behaviors.

Teaching

COURSES

2024-25

- Cellular/Molecular Neuroscience Laboratory: NEPR 288 (Sum)

2023-24

- Cellullar/Molecular Neuroscience Laboratory: NEPR 288 (Sum)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Charlotte Herber

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Molecular and Cellular Physiology (PhD Program)
- Neurosciences (PhD Program)

Publications

PUBLICATIONS

- **Beyond seizure control: Identifying deficits in cognitive networks in absence epilepsy.** *Science advances*
  Vantomme, G., Devienne, G., Hull, J. M., Huguenard, J. R.
  2026; 12 (20): eaed3642

- **Human neuromodulatory assembloids to study serotonin signaling and disease.** *bioRxiv : the preprint server for biology*

Kanton, S., Meng, X., Dong, C., Birey, F., Wang, D., Reis, N., Yoon, S. J., Kim, J. I., McQueen, J. P., Sakai, N., Nishino, S., Huguenard, J. R., Paşca, et al
2026

- **Juvenile-to-adult refinement of thalamic reticular circuits via LRRTM3 enables high-resolution sensory encoding.** *Neuron*
  Lee, D., Han, K. A., Jeong, H., Ha, G. E., Lee, H., Kim, B. S., Park, C., Piao, Y., Lee, H., Kim, J., Yoon, T. H., Kim, S., Kim, et al
  2026
- **Disrupted Development of the mPFC-Thalamic Circuit in Shank3-/- mice, an autism-associated model.** *Molecular psychiatry*
  Devienne, G., Vantomme, G., Huguenard, J. R.
  2025
- **Reticular thalamic hyperexcitability drives autism spectrum disorder behaviors in the Cntnap2 model of autism.** *Science advances*
  Jang, S. S., Takahashi, F., Huguenard, J. R.
  2025; 11 (34): eadw4682
- **Actions of the antiseizure drug carbamazepine in the thalamic reticular nucleus: Potential mechanism of aggravating absence seizures.** *Proceedings of the National Academy of Sciences of the United States of America*
  Jang, S. S., Agranonik, N., Huguenard, J. R.
  2025; 122 (31): e2500644122
- **Rhythmic Quakes Shock the Cortical Focus Theory.** *Epilepsy currents*
  Hull, J. M., Huguenard, J. R.
  2025: 15357597251314673
- **Synaptic cell adhesion molecule Cdh6 identifies a class of sensory neurons with novel functions in colonic motility.** *eLife*
  Gomez-Frittelli, J., Devienne, G. F., Travis, L., Kyloh, M. A., Duan, X., Hibberd, T. J., Spencer, N. J., Huguenard, J. R., Kaltschmidt, J. A.
  2025; 13
- **Reticular Thalamic Hyperexcitability Drives Autism Spectrum Disorder Behaviors in the Cntnap2 Model of Autism.** *bioRxiv : the preprint server for biology*
  Jang, S., Takahashi, F., Huguenard, J. R.
  2025
- **The reuniens thalamus recruits recurrent excitation in the medial prefrontal cortex.** *Proceedings of the National Academy of Sciences of the United States of America*
  Vantomme, G., Devienne, G., Hull, J. M., Huguenard, J. R.
  2025; 122 (11): e2500321122
- **Human assembloids reveal the consequences of CACNA1G gene variants in the thalamocortical pathway.** *Neuron*
  Kim, J. I., Miura, Y., Li, M. Y., Revah, O., Selvaraj, S., Birey, F., Meng, X., Thete, M. V., Pavlov, S. D., Andersen, J., Paşca, A. M., Porteus, M. H., Huguenard, et al
  2024
- **Synaptic cell adhesion moleculeCdh6identifies a class of sensory neurons with novel functions in colonic motility.** *bioRxiv : the preprint server for biology*
  Gomez-Frittelli, J., Devienne, G., Travis, L., Kyloh, M. A., Duan, X., Hibberd, T. J., Spencer, N. J., Huguenard, J. R., Kaltschmidt, J. A.
  2024
- **Cross-regional coordination of activity in the human brain during autobiographical self-referential processing.** *Proceedings of the National Academy of Sciences of the United States of America*
  Stieger, J. R., Pinheiro-Chagas, P., Fang, Y., Li, J., Lusk, Z., Perry, C. M., Girn, M., Contreras, D., Chen, Q., Huguenard, J. R., Spreng, R. N., Edlow, B. L., Wagner, et al
  2024; 121 (32): e2316021121
- **Reuniens thalamus recruits recurrent excitation in medial prefrontal cortex.** *bioRxiv : the preprint server for biology*
  Vantomme, G., Devienne, G., Hull, J. M., Huguenard, J. R.
  2024
- **Antisense oligonucleotide therapeutic approach for Timothy syndrome.** *Nature*
  Chen, X., Birey, F., Li, M. Y., Revah, O., Levy, R., Thete, M. V., Reis, N., Kaganovsky, K., Onesto, M., Sakai, N., Hudacova, Z., Hao, J., Meng, et al

2024; 628 (8009): 818-825

- **Atlas of the aging mouse brain reveals white matter as vulnerable foci.** *Cell*
  Hahn, O., Foltz, A. G., Atkins, M., Kedir, B., Moran-Losada, P., Guldner, I. H., Munson, C., Kern, F., Pálovics, R., Lu, N., Zhang, H., Kaur, A., Hull, et al
  2023

- **Adult Gene Therapy for Epilepsy in a Model of Angelman Syndrome: Hope or Hype?** *Epilepsy currents*
  Huguenard, J. R.
  2023; 23 (5): 312-314

- **Adult Gene Therapy for Epilepsy in a Model of Angelman Syndrome: Hope or Hype?** *EPILEPSY CURRENTS*
  Huguenard, J. R.
  2023

- **A CMOS-based highly scalable flexible neural electrode interface.** *Science advances*
  Zhao, E. T., Hull, J. M., Mintz Hemed, N., Uluşan, H., Bartram, J., Zhang, A., Wang, P., Pham, A., Ronchi, S., Huguenard, J. R., Hierlemann, A., Melosh, N. A.
  2023; 9 (23): eadf9524

- **Prefrontal PV interneurons facilitate attention and are linked to attentional dysfunction in a mouse model of absence epilepsy.** *eLife*
  Ferguson, B., Glick, C., Huguenard, J. R.
  2023; 12

- **Loss of Rai1 enhances hippocampal excitability and epileptogenesis in mouse models of Smith-Magenis syndrome (vol 119, e2210122119, 2022)** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Chang, Y., Kowalczyk, M., Fogerson, P., Lee, Y., Haque, M., Wang, D. C., DeNardo, A., Tessier-Lavigne, M., Huguenard, J. R., Adams, E. L., Luo, L., Huang, W.
  2022; 119 (52)

- **Loss of Rai1 enhances hippocampal excitability and epileptogenesis in mouse models of Smith-Magenis syndrome.** *Proceedings of the National Academy of Sciences of the United States of America*
  Chang, Y., Kowalczyk, M., Fogerson, P. M., Lee, Y., Haque, M., Adams, E. L., Wang, D. C., DeNardo, L. A., Tessier-Lavigne, M., Huguenard, J. R., Luo, L., Huang, W.
  2022; 119 (43): e2210122119

- **Maturation and circuit integration of transplanted human cortical organoids.** *Nature*
  Revah, O., Gore, F., Kelley, K. W., Andersen, J., Sakai, N., Chen, X., Li, M. Y., Birey, F., Yang, X., Saw, N. L., Baker, S. W., Amin, N. D., Kulkarni, et al
  2022; 610 (7931): 319-326

- **Maladaptive myelination promotes generalized epilepsy progression.** *Nature neuroscience*
  Knowles, J. K., Xu, H., Soane, C., Batra, A., Saucedo, T., Frost, E., Tam, L. T., Fraga, D., Ni, L., Villar, K., Talmi, S., Huguenard, J. R., Monje, et al
  2022

- **Author Correction: Precise spatiotemporal control of voltage-gated sodium channels by photocaged saxitoxin.** *Nature communications*
  Elleman, A. V., Devienne, G., Makinson, C. D., Haynes, A. L., Huguenard, J. R., Du Bois, J.
  2022; 13 (1): 2277

- **NF1 MUTATION DRIVES NEURONAL ACTIVITY-DEPENDENT OPTIC GLIOMA INITIATION**
  Pan, Y., Hysinger, J., Barron, T., Schindler, N., Cobb, O., Guo, X., Yalcin, B., Anastasaki, C., Mulinyawe, S., Ponnuswami, A., Scheaffer, S., Ma, Y., Chang, et al
  OXFORD UNIV PRESS INC.2021: 212

- **Precise spatiotemporal control of voltage-gated sodium channels by photocaged saxitoxin.** *Nature communications*
  Elleman, A. V., Devienne, G., Makinson, C. D., Haynes, A. L., Huguenard, J. R., Du Bois, J.
  2021; 12 (1): 4171

- **NF1 mutation drives neuronalactivity-dependent initiation of optic glioma.** *Nature*
  Pan, Y., Hysinger, J. D., Barron, T., Schindler, N. F., Cobb, O., Guo, X., Yalcin, B., Anastasaki, C., Mulinyawe, S. B., Ponnuswami, A., Scheaffer, S., Ma, Y., Chang, et al
  2021

- **Long-term maturation of human cortical organoids matches key early postnatal transitions.** *Nature neuroscience*
  Gordon, A. n., Yoon, S. J., Tran, S. S., Makinson, C. D., Park, J. Y., Andersen, J. n., Valencia, A. M., Horvath, S. n., Xiao, X. n., Huguenard, J. R., Pașca, S. P., Geschwind, D. H.
  2021
- **Development and validation of a potent and specific inhibitor for the CLC-2 chloride channel.** *Proceedings of the National Academy of Sciences of the United States of America*
  Koster, A. K., Reese, A. L., Kuryshev, Y., Wen, X., McKiernan, K. A., Gray, E. E., Wu, C., Huguenard, J. R., Maduke, M., Du Bois, J.
  2020
- **PFC PV Interneurons Facilitate Visual Attention and are Disrupted in a Genetic Model of Absence Epilepsy**
  Ferguson, B., Huguenard, J.
  SPRINGERNATURE.2020: 88–89
- **Perspective: Is Cortical Hyperexcitability the Only Path to Generalized Absence Epilepsy?** *EPILEPSY CURRENTS*
  Huguenard, J. R.
  2020
- **Nonlinearities between inhibition and T-type calcium channel activity bidirectionally regulate thalamic oscillations.** *eLife*
  Lu, A. C., Lee, C. K., Kleiman-Weiner, M., Truong, B., Wang, M., Huguenard, J., Beenhakker, M. P.
  2020; 9
- **Neuronal defects in a human cellular model of 22q11.2 deletion syndrome.** *Nature medicine*
  Khan, T. A., Revah, O. n., Gordon, A. n., Yoon, S. J., Krawisz, A. K., Goold, C. n., Sun, Y. n., Kim, C. H., Tian, Y. n., Li, M. Y., Schaepe, J. M., Ikeda, K. n., Amin, et al
  2020
- **Current Controversy: Spikes, Bursts, and Synchrony in Generalized Absence Epilepsy: Unresolved Questions Regarding Thalamocortical Synchrony in Absence Epilepsy.** *Epilepsy currents*
  Huguenard, J.
  2019; 19 (2): 105–11
- **Differentiation and maturation of oligodendrocytes in human three-dimensional neural cultures.** *Nature neuroscience*
  Marton, R. M., Miura, Y. n., Sloan, S. A., Li, Q. n., Revah, O. n., Levy, R. J., Huguenard, J. R., Pașca, S. P.
  2019
- **Reliability of human cortical organoid generation** *NATURE METHODS*
  Yoon, S., Elahi, L. S., Pasca, A. M., Marton, R. M., Gordon, A., Revah, O., Miura, Y., Walczak, E. M., Holdgate, G. M., Fan, H., Huguenard, J. R., Geschwind, D. H., Pasca, et al
  2019; 16 (1): 75-+
- **Reliability of human cortical organoid generation.** *Nature methods*
  Yoon, S. J., Elahi, L. S., Pașca, A. M., Marton, R. M., Gordon, A. n., Revah, O. n., Miura, Y. n., Walczak, E. M., Holdgate, G. M., Fan, H. C., Huguenard, J. R., Geschwind, D. H., Pașca, et al
  2019; 16 (1): 75–78
- **Shank and Zinc Mediate an AMPA Receptor Subunit Switch in Developing Neurons.** *Frontiers in molecular neuroscience*
  Ha, H. T., Leal-Ortiz, S., Lalwani, K., Kiyonaka, S., Hamachi, I., Mysore, S. P., Montgomery, J. M., Garner, C. C., Huguenard, J. R., Kim, S. A.
  2018; 11: 405
- **Shank and Zinc Mediate an AMPA Receptor Subunit Switch in Developing Neurons** *FRONTIERS IN MOLECULAR NEUROSCIENCE*
  Ha, H. T. T., Leal-Ortiz, S., Lalwani, K., Kiyonaka, S., Hamachi, I., Mysore, S. P., Montgomery, J. M., Garner, C. C., Huguenard, J. R., Kim, S. A.
  2018; 11
- **Anatomically Defined and Functionally Distinct Dorsal Raphe Serotonin Sub-systems.** *Cell*
  Ren, J. n., Friedmann, D. n., Xiong, J. n., Liu, C. D., Ferguson, B. R., Weerakkody, T. n., DeLoach, K. E., Ran, C. n., Pun, A. n., Sun, Y. n., Weissbourd, B. n., Neve, R. L., Huguenard, et al
  2018
- **Absence seizure susceptibility correlates with pre-ictal ß oscillations.** *Journal of physiology, Paris*
  Sorokin, J. M., Paz, J. T., Huguenard, J. R.

2017

- **Assembly of functionally integrated human forebrain spheroids** *NATURE*
  Birey, F., Andersen, J., Makinson, C. D., Islam, S., Wei, W., Huber, N., Fan, H. C., Metzler, K. R., Panagiotakos, G., Thom, N., O'Rourke, N. A., Steinmetz, L. M., Bernstein, et al
  2017; 545 (7652): 54-?

- **Breathing control center neurons that promote arousal in mice** *SCIENCE*
  Yackle, K., Schwarz, L. A., Kam, K., Sorokin, J. M., Huguenard, J. R., Feldman, J. L., Luo, L., Krasnow, M. A.
  2017; 355 (6332): 1411-1415

- **Regulation of Thalamic and Cortical Network Synchrony by Scn8a.** *Neuron*
  Makinson, C. D., Tanaka, B. S., Sorokin, J. M., Wong, J. C., Christian, C. A., Goldin, A. L., Escayg, A., Huguenard, J. R.
  2017

- **Bidirectional Control of Generalized Epilepsy Networks via Rapid Real-Time Switching of Firing Mode.** *Neuron*
  Sorokin, J. M., Davidson, T. J., Frechette, E., Abramian, A. M., Deisseroth, K., Huguenard, J. R., Paz, J. T.
  2017; 93 (1): 194-210

- **Tapping the Brakes: Cellular and Synaptic Mechanisms that Regulate Thalamic Oscillations** *NEURON*
  Fogerson, P. M., Huguenard, J. R.
  2016; 92 (4): 687-704

- **Catching a wave.** *eLife*
  Fogerson, P. M., Huguenard, J. R.
  2016; 5

- **Two classes of excitatory synaptic responses in rat thalamic reticular neurons.** *Journal of neurophysiology*
  Deleuze, C., Huguenard, J. R.
  2016; 116 (3): 995-1011

- **LSPS/Optogenetics to Improve Synaptic Connectivity Mapping: Unmasking the Role of Basket Cell-Mediated Feedforward Inhibition.** *eNeuro*
  Brill, J., Mattis, J., Deisseroth, K., Huguenard, J. R.
  2016; 3 (4)

- **Early postnatal switch in GABAA receptor a-subunits in the reticular thalamic nucleus.** *Journal of neurophysiology*
  Pangratz-Fuehrer, S., Sieghart, W., Rudolph, U., Parada, I., Huguenard, J. R.
  2016; 115 (3): 1183-1195

- **Enhanced phasic GABA inhibition during the repair phase of stroke: a novel therapeutic target** *BRAIN*
  Hiu, T., Farzampour, Z., Paz, J. T., Wang, E. H., Badgely, C., Olson, A., Micheva, K. D., Wang, G., Lemmens, R., Tran, K. V., Nishiyama, Y., Liang, X., Hamilton, et al
  2016; 139: 468-480

- **Satb2 Regulates the Differentiation of Both Callosal and Subcerebral Projection Neurons in the Developing Cerebral Cortex.** *Cerebral cortex*
  Leone, D. P., Heavner, W. E., Ferenczi, E. A., Dobreva, G., Huguenard, J. R., Grosschedl, R., McConnell, S. K.
  2015; 25 (10): 3406-3419

- **Optogenetics: 10 years after ChR2 in neurons-views from the community** *NATURE NEUROSCIENCE*
  Adamantidis, A., Arber, S., Bains, J. S., Bamberg, E., Bonci, A., Buzsaki, G., Cardin, J. A., Costa, R. M., Dan, Y., Goda, Y., Graybiel, A. M., Haeusser, M., Hegemann, et al
  2015; 18 (9): 1202–12

- **Functional cortical neurons and astrocytes from human pluripotent stem cells in 3D culture.** *Nature methods*
  Pasca, A. M., Sloan, S. A., Clarke, L. E., Tian, Y., Makinson, C. D., Huber, N., Kim, C. H., Park, J., O'Rourke, N. A., Nguyen, K. D., Smith, S. J., Huguenard, J. R., Geschwind, et al
  2015; 12 (7): 671-678

- **Functional cortical neurons and astrocytes from human pluripotent stem cells in 3D culture.** *Nature methods*

Pasca, A. M., Sloan, S. A., Clarke, L. E., Tian, Y., Makinson, C. D., Huber, N., Kim, C. H., Park, J., O'Rourke, N. A., Nguyen, K. D., Smith, S. J., Huguenard, J. R., Geschwind, et al
2015; 12 (7): 671-678

- **Albumin induces excitatory synaptogenesis through astrocytic TGF-beta/ALK5 signaling in a model of acquired epilepsy following blood-brain barrier dysfunction** *NEUROBIOLOGY OF DISEASE*
  Weissberg, I., Wood, L., Kamintsky, L., Vazquez, O., Milikovsky, D. Z., Alexander, A., Oppenheim, H., Ardizzone, C., Becker, A., Frigerio, F., Vezzani, A., Buckwalter, M. S., Huguenard, et al
  2015; 78: 115-125
- **Electrical synapses connect a network of gonadotropin releasing hormone neurons in a cichlid fish** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Ma, Y., Juntti, S. A., Hu, C. K., Huguenard, J. R., Fernald, R. D.
  2015; 112 (12): 3805-3810
- **Microcircuits and their interactions in epilepsy: is the focus out of focus?** *NATURE NEUROSCIENCE*
  Paz, J. T., Huguenard, J. R.
  2015; 18 (3): 351-359
- **Seizing upon mechanisms for impaired consciousness.** *Neuron*
  Farzampour, Z., Huguenard, J.
  2015; 85 (3): 453-455
- **Cholinergic control of gamma power in the midbrain spatial attention network.** *journal of neuroscience*
  Bryant, A. S., Goddard, C. A., Huguenard, J. R., Knudsen, E. I.
  2015; 35 (2): 761-775
- **Optogenetics and Epilepsy: Past, Present and Future** *EPILEPSY CURRENTS*
  Paz, J. T., Huguenard, J. R.
  2015; 15 (1): 34-38
- **Functional cortical neurons and astrocytes from human pluripotent stem cells in 3D cultures.** *Nature Methods*
  Pasca, A. M., Sloan, S., Clarke, L. E., Tian, Y., Makinson, C., Huber, N., Kim, C., Park, J., O'Rourke, N., Nguyen, K., Smith, S. J., Huguenard, J., Geschwind, et al
  2015: 671–78
- **Endozepines.** *Advances in pharmacology (San Diego, Calif.)*
  Farzampour, Z., Reimer, R. J., Huguenard, J.
  2015; 72: 147-164
- **Attentional flexibility in the thalamus: now we're getting SOMwhere.** *Nature neuroscience*
  Makinson, C. D., Huguenard, J. R.
  2014; 18 (1): 2-4
- **Frequency-dependent, cell type-divergent signaling in the hippocamposeptal projection.** *journal of neuroscience*
  Mattis, J., Brill, J., Evans, S., Lerner, T. N., Davidson, T. J., Hyun, M., Ramakrishnan, C., Deisseroth, K., Huguenard, J. R.
  2014; 34 (35): 11769-11780
- **Parallel Midbrain Microcircuits Perform Independent Temporal Transformations** *JOURNAL OF NEUROSCIENCE*
  Goddard, C. A., Huguenard, J., Knudsen, E.
  2014; 34 (24): 8130-8138
- **Parallel midbrain microcircuits perform independent temporal transformations.** *The Journal of neuroscience : the official journal of the Society for Neuroscience*
  Goddard, C. A., Huguenard, J., Knudsen, E.
  2014; 34 (24): 8130-8
- **A local glutamate-glutamine cycle sustains synaptic excitatory transmitter release.** *Neuron*
  Tani, H., Dulla, C. G., Farzampour, Z., Taylor-Weiner, A., Huguenard, J. R., Reimer, R. J.
  2014; 81 (4): 888-900

- **Spatially Reciprocal Inhibition of Inhibition within a Stimulus Selection Network in the Avian Midbrain.** *PloS one*
  Goddard, C. A., Mysore, S. P., Bryant, A. S., Huguenard, J. R., Knudsen, E. I.
  2014; 9 (1)
- **Modulation of Short-Term Plasticity in the Corticothalamic Circuit by Group III Metabotropic Glutamate Receptors** *JOURNAL OF NEUROSCIENCE*
  Kyuyoung, C. L., Huguenard, J. R.
  2014; 34 (2): 675-687
- **Spatially reciprocal inhibition of inhibition within a stimulus selection network in the avian midbrain.** *PloS one*
  Goddard, C. A., Mysore, S. P., Bryant, A. S., Huguenard, J. R., Knudsen, E. I.
  2014; 9 (1)
- **Astrocytes potentiate GABAergic transmission in the thalamic reticular nucleus via endozepine signaling** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Christian, C. A., Huguenard, J. R.
  2013; 110 (50): 20278-20283
- **Sniffer patch laser uncaging response (SPLURgE): an assay of regional differences in allosteric receptor modulation and neurotransmitter clearance** *JOURNAL OF NEUROPHYSIOLOGY*
  Christian, C. A., Huguenard, J. R.
  2013; 110 (7): 1722-1731
- **Endogenous Positive Allosteric Modulation of GABA(A) Receptors by Diazepam binding inhibitor** *NEURON*
  Christian, C. A., Herbert, A. G., Holt, R. L., Peng, K., Sherwood, K. D., Pangratz-Fuehrer, S., Rudolph, U., Huguenard, J. R.
  2013; 78 (6): 1063-1074
- **Reemerging role of cable properties in action potential initiation** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Ma, Y., Huguenard, J. R.
  2013; 110 (10): 3715-3716
- **Closed-loop optogenetic control of thalamus as a tool for interrupting seizures after cortical injury** *NATURE NEUROSCIENCE*
  Paz, J. T., Davidson, T. J., Frechette, E. S., Delord, B., Parada, I., Peng, K., Deisseroth, K., Huguenard, J. R.
  2013; 16 (1): 64-U98
- **Sleep and Epilepsy: A Summary of the 2011 Merritt-Putnam Symposium** *EPILEPSY CURRENTS*
  DeWolfe, J. L., Malow, B., Huguenard, J., Stickgold, R., Bourgeois, B., Holmes, G. L.
  2013; 13 (1): 42-49
- **Glutamate biosensor imaging reveals dysregulation of glutamatergic pathways in a model of developmental cortical malformation** *NEUROBIOLOGY OF DISEASE*
  Dulla, C. G., Tani, H., Brill, J., Reimer, R. J., Huguenard, J. R.
  2013; 49: 232-246
- **A call for transparent reporting to optimize the predictive value of preclinical research** *NATURE*
  Landis, S. C., Amara, S. G., Asadullah, K., Austin, C. P., Blumenstein, R., Bradley, E. W., Crystal, R. G., Darnell, R. B., Ferrante, R. J., Fillit, H., Finkelstein, R., Fisher, M., Gendelman, et al
  2012; 490 (7419): 187-191
- **Mechanism for Hypocretin-mediated sleep-to-wake transitions** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Carter, M. E., Brill, J., Bonnavion, P., Huguenard, J. R., Huerta, R., de Lecea, L.
  2012; 109 (39): E2635-E2644
- **Glutamate biosensor imaging reveals dysregulation of glutamatergic pathways in a model of developmental cortical malformation.** *Neurobiology of disease*
  Dulla, C. G., Tani, H., Brill, J., Reimer, R. J., Huguenard, J. R.
  2012; 49C: 232-246
- **Enhanced NMDA Receptor-Dependent Thalamic Excitation and Network Oscillations in Stargazer Mice** *JOURNAL OF NEUROSCIENCE*

Lacey, C. J., Bryant, A., Brill, J., Huguenard, J. R.
2012; 32 (32): 11067-11081

- **R U OK? The Novel Therapeutic Potential of R Channels in Epilepsy** *EPILEPSY CURRENTS*
  Paz, J. T., Huguenard, J. R.
  2012; 12 (2): 75-76
- **Influence of a Subtype of Inhibitory Interneuron on Stimulus-Specific Responses in Visual Cortex** *CEREBRAL CORTEX*
  Mao, R., Schummers, J., Knoblich, U., Lacey, C. J., Van Wart, A., Cobos, I., Kim, C., Huguenard, J. R., Rubenstein, J. L., Sur, M.
  2012; 22 (3): 493-508
- **Gamma Oscillations Are Generated Locally in an Attention-Related Midbrain Network** *NEURON*
  Goddard, C. A., Sridharan, D., Huguenard, J. R., Knudsen, E. I.
  2012; 73 (3): 567-580
- **Increased Excitatory Synaptic Input to Granule Cells from Hilar and CA3 Regions in a Rat Model of Temporal Lobe Epilepsy** *JOURNAL OF NEUROSCIENCE*
  Zhang, W., Huguenard, J. R., Buckmaster, P. S.
  2012; 32 (4): 1183-1196
- **Neocortical excitation/inhibition balance in information processing and social dysfunction** *NATURE*
  Yizhar, O., Fenno, L. E., Prigge, M., Schneider, F., Davidson, T. J., O'Shea, D. J., Sohal, V. S., Goshen, I., Finkelstein, J., Paz, J. T., Stehfest, K., Fudim, R., Ramakrishnan, et al
  2011; 477 (7363): 171-178
- **A new mode of corticothalamic transmission revealed in the Gria4(-/-) model of absence epilepsy** *NATURE NEUROSCIENCE*
  Paz, J. T., Bryant, A. S., Peng, K., Fenno, L., Yizhar, O., Frankel, W. N., Deisseroth, K., Huguenard, J. R.
  2011; 14 (9): 1167-U225
- **Reorganization of Inhibitory Synaptic Circuits in Rodent Chronically Injured Epileptogenic Neocortex** *CEREBRAL CORTEX*
  Jin, X., Huguenard, J. R., Prince, D. A.
  2011; 21 (5): 1094-1104
- **Martinotti Cells: Community Organizers** *NEURON*
  Lee, C. K., Huguenard, J. R.
  2011; 69 (6): 1042-1045
- **Enhanced Infragranular and Supragranular Synaptic Input onto Layer 5 Pyramidal Neurons in a Rat Model of Cortical Dysplasia** *CEREBRAL CORTEX*
  Brill, J., Huguenard, J. R.
  2010; 20 (12): 2926-2938
- **Differential effects of Na plus -K plus ATPase blockade on cortical layer V neurons** *JOURNAL OF PHYSIOLOGY-LONDON*
  Anderson, T. R., Huguenard, J. R., Prince, D. A.
  2010; 588 (22): 4401-4414
- **Astrocytes as Gatekeepers of GABA(B) Receptor Function** *JOURNAL OF NEUROSCIENCE*
  Beenhakker, M. P., Huguenard, J. R.
  2010; 30 (45): 15262-15276
- **Desynchronization of Neocortical Networks by Asynchronous Release of GABA at Autaptic and Synaptic Contacts from Fast-Spiking Interneurons** *PLOS BIOLOGY*
  Manseau, F., Marinelli, S., Mendez, P., Schwaller, B., Prince, D. A., Huguenard, J. R., Bacci, A.
  2010; 8 (9)
- **Focal Cortical Infarcts Alter Intrinsic Excitability and Synaptic Excitation in the Reticular Thalamic Nucleus** *JOURNAL OF NEUROSCIENCE*
  Paz, J. T., Christian, C. A., Parada, I., Prince, D. A., Huguenard, J. R.
  2010; 30 (15): 5465-5479
- **Glutamine Is Required for Persistent Epileptiform Activity in the Disinhibited Neocortical Brain Slice** *JOURNAL OF NEUROSCIENCE*
  Tani, H., Dulla, C. G., Huguenard, J. R., Reimer, R. J.

2010; 30 (4): 1288-1300

- **Maintenance of Thalamic Epileptiform Activity Depends on the Astrocytic Glutamate-Glutamine Cycle** *JOURNAL OF NEUROPHYSIOLOGY*
  Bryant, A. S., Li, B., Beenhakker, M. P., Huguenard, J. R.
  2009; 102 (5): 2880-2888
- **Resting Our Cortices by Going DOWN to Sleep** *NEURON*
  Mignot, E., Huguenard, J. R.
  2009; 63 (6): 719-721
- **Who let the spikes out?** *NATURE NEUROSCIENCE*
  Dulla, C. G., Huguenard, J. R.
  2009; 12 (8): 959-960
- **Synergistic Roles of GABA(A) Receptors and SK Channels in Regulating Thalamocortical Oscillations** *JOURNAL OF NEUROPHYSIOLOGY*
  Kleiman-Weiner, M., Beenhakker, M. P., Segal, W. A., Huguenard, J. R.
  2009; 102 (1): 203-213
- **Neurons that Fire Together Also Conspire Together: Is Normal Sleep Circuitry Hijacked to Generate Epilepsy?** *NEURON*
  Beenhakker, M. P., Huguenard, J. R.
  2009; 62 (5): 612-632
- **Robust Short-Latency Perisomatic Inhibition onto Neocortical Pyramidal Cells Detected by Laser-Scanning Photostimulation** *JOURNAL OF NEUROSCIENCE*
  Brill, J., Huguenard, J. R.
  2009; 29 (23): 7413-7423
- **A gain in GABA(A) receptor synaptic strength in thalamus reduces oscillatory activity and absence seizures** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Schofield, C. M., Kleiman-Weiner, M., Rudolph, U., Huguenard, J. R.
  2009; 106 (18): 7630-7635
- **Sequential Changes in AMPA Receptor Targeting in the Developing Neocortical Excitatory Circuit** *JOURNAL OF NEUROSCIENCE*
  Brill, J., Huguenard, J. R.
  2008; 28 (51): 13918-13928
- **The Endocannabinoid 2-Arachidonoylglycerol Is Responsible for the Slow Self-Inhibition in Neocortical Interneurons** *JOURNAL OF NEUROSCIENCE*
  Marinelli, S., Pacioni, S., Bisogno, T., Di Marzo, V., Prince, D. A., Huguenard, J. R., Bacci, A.
  2008; 28 (50): 13532-13541
- **Normal sleep homeostasis and lack of epilepsy phenotype in GABA(A) receptor alpha 3 subunit-knockout mice** *NEUROSCIENCE*
  Winsky-Sommerer, R., Knapman, A., Fedele, D. E., Schofield, C. M., Vyazovskiy, V. V., Rudolph, U., Huguenard, J. R., Fritschy, J., Tobler, I.
  2008; 154 (2): 595-605
- **Absence seizures in C3H/HeJ and knockout mice caused by mutation of the AMPA receptor subunit Gria4** *HUMAN MOLECULAR GENETICS*
  Beyer, B., Deleuze, C., Letts, V. A., Mahaffey, C. L., Boumil, R. M., Lew, T. A., Huguenard, J. R., Frankel, W. N.
  2008; 17 (12): 1738-1749
- **Imaging of glutamate in brain slices using FRET sensors** *JOURNAL OF NEUROSCIENCE METHODS*
  Dulla, C., Tani, H., Okumoto, S., Frommer, W. B., Reimer, R. J., Fluguenard, J. R.
  2008; 168 (2): 306-319
- **Intrinsic excitability of cholinergic neurons in the rat parabigeminal nucleus** *JOURNAL OF NEUROPHYSIOLOGY*
  Goddard, C. A., Knudsen, E. I., Huguenard, J. R.
  2007; 98 (6): 3486-3493
- **GABA affinity shapes IPSCs in thalamic nuclei** *JOURNAL OF NEUROSCIENCE*
  Schofield, C. M., Huguenard, J. R.
  2007; 27 (30): 7954-7962

- **Thalamic synchrony and dynamic regulation of global forebrain oscillations** *TRENDS IN NEUROSCIENCES*
  Huguenard, J. R., McCormick, D. A.
  2007; 30 (7): 350-356

- **PKC and polyamine modulation of GluR2-deficient AMPA receptors in immature neocortical pyramidal neurons of the rat** *JOURNAL OF PHYSIOLOGY-LONDON*
  Shin, J., Shen, F., Huguenard, J.
  2007; 581 (2): 679-691

- **Giant spontaneous depolarizing potentials in the developing thalamic reticular nucleus** *JOURNAL OF NEUROPHYSIOLOGY*
  Pangratz-Fuehrer, S., Rudolph, U., Huguenard, J. R.
  2007; 97 (3): 2364-2372

- **Gender and age differences in expression of GABA(A) receptor subunits in rat somatosensory thalamus and cortex in an absence epilepsy model** *NEUROBIOLOGY OF DISEASE*
  Li, H., Huguenard, J. R., Fisher, R. S.
  2007; 25 (3): 623-630

- **Recurrent circuits in layer II of medial entorhinal cortex in a model of temporal lobe epilepsy** *JOURNAL OF NEUROSCIENCE*
  Kumar, S. S., Jin, X., Buckmaster, P. S., Huguenard, J. R.
  2007; 27 (6): 1239-1246

- **Modulation of epileptiform activity by glutamine and system A transport in a model of post-traumatic epilepsy** *NEUROBIOLOGY OF DISEASE*
  Tani, H., Bandrowski, A. E., Parada, I., Wynn, M., Huguenard, J. R., Prince, D. A., Reimer, R. J.
  2007; 25 (2): 230-238

- **NPY signaling through Y-1 receptors modulates thalamic oscillations** *8th International NPY Meeting*
  Brill, J., Kwakye, G., Huguenard, J. R.
  ELSEVIER SCIENCE INC.2007: 250–56

- **A thalamic sleep tonic.** *Epilepsy currents*
  Staley, K. J., Huguenard, J. R.
  2006; 6 (5): 164-166

- **Distinct electrical and chemical connectivity maps in the thalamic reticular nucleus: Potential roles in synchronization and sensation** *JOURNAL OF NEUROSCIENCE*
  Deleuze, C., Huguenard, J. R.
  2006; 26 (33): 8633-8645

- **Electrophysiological classification of somatostatin-positive interneurons in mouse sensorimotor cortex** *JOURNAL OF NEUROPHYSIOLOGY*
  Halabisky, B., Shen, F., Huguenard, J. R., Prince, D. A.
  2006; 96 (2): 834-845

- **Selective changes in thalamic and cortical GABA(A) receptor subunits in a model of acquired absence epilepsy in the rat** *NEUROPHARMACOLOGY*
  Li, H., Kraus, A., Wu, J., Huguenard, J. R., Fisher, R. S.
  2006; 51 (1): 121-128

- **Chronic valproic acid treatment triggers increased neuropeptide Y expression and signaling in rat nucleus reticularis thalami** *JOURNAL OF NEUROSCIENCE*
  Brill, J., Lee, M., Zhao, S., Fernald, R. D., Huguenard, J. R.
  2006; 26 (25): 6813-6822

- **Enhanced excitatory synaptic connectivity in layer V pyramidal neurons of chronically injured epileptogenic neocortex in rats** *JOURNAL OF NEUROSCIENCE*
  Jin, X. M., Prince, D. A., Huguenard, J. R.
  2006; 26 (18): 4891-4900

- **Intrinsic and synaptic dynamics interact to generate emergent patterns of rhythmic bursting in thalamocortical neurons** *JOURNAL OF NEUROSCIENCE*
  Sohal, V. S., Pangratz-Fuehrer, S., Rudolph, U., Huguenard, J. R.
  2006; 26 (16): 4247-4255
- **Fast IPSCs in rat thalamic reticular nucleus require the GABA(A) receptor beta(1) subunit** *JOURNAL OF PHYSIOLOGY-LONDON*
  Huntsman, M. M., Huguenard, J. R.
  2006; 572 (2): 459-475
- **Barrel cortex microcircuits: Thalamocortical feedforward inhibition in spiny stellate cells is mediated by a small number of fast-spiking interneurons** *JOURNAL OF NEUROSCIENCE*
  Sun, Q. Q., Huguenard, J. R., Prince, D. A.
  2006; 26 (4): 1219-1230
- **Enhancement of spike-timing precision by autaptic transmission in neocortical inhibitory interneurons** *NEURON*
  Bacci, A., Huguenard, J. R.
  2006; 49 (1): 119-130
- **Inhibitory coupling specifically generates emergent gamma oscillations in diverse cell types** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Sohal, V. S., Huguenard, J. R.
  2005; 102 (51): 18638-18643
- **REORGANIZATION OF BARREL CIRCUITS LEADS TO THALAMICALLY-EVOKED CORTICAL EPILEPTIFORM ACTIVITY.** *Thalamus & related systems*
  Sun, Q., Huguenard, J. R., Prince, D. A.
  2005; 3 (4): 261-273
- **Modulation of neocortical interneurons: extrinsic influences and exercises in self-control** *TRENDS IN NEUROSCIENCES*
  Bacci, A., Huguenard, J. R., Prince, D. A.
  2005; 28 (11): 602-610
- **Polyamines modulate AMPA receptor-dependent synaptic responses in immature layer V pyramidal neurons** *JOURNAL OF NEUROPHYSIOLOGY*
  Shin, J., Shen, F., Huguenard, J. R.
  2005; 93 (5): 2634-2643
- **Impaired Cl- extrusion in layer V pyramidal neurons of chronically injured epileptogenic neocortex** *JOURNAL OF NEUROPHYSIOLOGY*
  Jin, X. M., Huguenard, J. R., Prince, D. A.
  2005; 93 (4): 2117-2126
- **Long-lasting self-inhibition of neocortical interneurons mediated by endocannabinoids** *NATURE*
  Bacci, A., Huguenard, J. R., Prince, D. A.
  2004; 431 (7006): 312-316
- **T-Channel Defects in Patients with Childhood Absence Epilepsy.** *Epilepsy currents / American Epilepsy Society*
  Huguenard, J. R.
  2004; 4 (1): 7-8
- **Pathway-specific differences in subunit composition of synaptic NMDA receptors on pyramidal neurons in neocortex** *JOURNAL OF NEUROSCIENCE*
  Kumar, S. S., Huguenard, J. R.
  2003; 23 (31): 10074-10083
- **Target-specific neuropeptide Y-ergic synaptic inhibition and its network consequences within the mammalian thalamus** *JOURNAL OF NEUROSCIENCE*
  Sun, Q. Q., Baraban, S. C., Prince, D. A., Huguenard, J. R.
  2003; 23 (29): 9639-9649
- **Major differences in inhibitory synaptic transmission onto two neocortical interneuron subclasses** *JOURNAL OF NEUROSCIENCE*
  Bacci, A., Rudolph, U., Huguenard, J. R., Prince, D. A.

2003; 23 (29): 9664-9674

- **Inhibitory interconnections control burst pattern and emergent network synchrony in reticular thalamus** *JOURNAL OF NEUROSCIENCE*
  Sohal, V. S., Huguenard, J. R.
  2003; 23 (26): 8978-8988
- **Dynamic GABA(A) receptor subtype-specific modulation of the synchrony and duration of thalamic oscillations** *JOURNAL OF NEUROSCIENCE*
  Sohal, V. S., Keist, R., Rudolph, U., Huguenard, J. R.
  2003; 23 (9): 3649-3657
- **Vasoactive intestinal polypeptide and pituitary adenylate cyclase-activating polypeptide activate hyperpolarization activated cationic current and depolarize thalamocortical neurons in vitro** *JOURNAL OF NEUROSCIENCE*
  Sun, Q. Q., Prince, D. A., Huguenard, J. R.
  2003; 23 (7): 2751-2758
- **Intact synaptic GABAergic inhibition and altered neurosteroid modulation of thalamic relay neurons in mice lacking delta subunit** *JOURNAL OF NEUROPHYSIOLOGY*
  Porcello, D. M., Huntsman, M. M., Mihalek, R. M., Homanics, G. E., Huguenard, J. R.
  2003; 89 (3): 1378-1386
- **Neurotransmitter Supply and Demand in Epilepsy.** *Epilepsy currents / American Epilepsy Society*
  Huguenard, J.
  2003; 3 (2): 61-63
- **Baseline glutamate levels affect group I and II mGluRs in layer V pyramidal neurons of rat sensorimotor cortex** *JOURNAL OF NEUROPHYSIOLOGY*
  Bandrowski, A. E., Huguenard, J. R., Prince, D. A.
  2003; 89 (3): 1308-1316
- **Functional autaptic neurotransmission in fast-spiking interneurons: A novel form of feedback inhibition in the neocortex** *JOURNAL OF NEUROSCIENCE*
  Bacci, A., Huguenard, J. R., Prince, D. A.
  2003; 23 (3): 859-866
- **Actions of U-92032, a T-type Ca2+ channel antagonist, support a functional linkage between I-T and slow intrathalamic rhythms** *JOURNAL OF NEUROPHYSIOLOGY*
  Porcello, D. M., Smith, S. D., Huguenard, J. R.
  2003; 89 (1): 177-185
- **Differential modulation of synaptic transmission by neuropeptide Y in rat neocortical neurons** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Bacci, A., Huguenard, J. R., Prince, D. A.
  2002; 99 (26): 17125-17130
- **Synaptic inhibition of pyramidal cells evoked by different interneuronal subtypes in layer V of rat visual cortex** *JOURNAL OF NEUROPHYSIOLOGY*
  Xiang, Z. X., Huguenard, J. R., Prince, D. A.
  2002; 88 (2): 740-750
- **Somatostatin inhibits thalamic network oscillations in vitro: Actions on the GABAergic neurons of the reticular nucleus** *JOURNAL OF NEUROSCIENCE*
  Sun, Q. Q., Huguenard, J. R., Prince, D. A.
  2002; 22 (13): 5374-5386
- **Reciprocal inhibition controls the oscillatory state in thalamic networks** *10th Computational Neuroscience Meeting (CSN 01)*
  Sohal, V. S., Huguenard, J. R.
  ELSEVIER SCIENCE BV.2002: 653–659
- **A developmental switch of AMPA receptor subunits in neocortical pyramidal neurons** *JOURNAL OF NEUROSCIENCE*
  Kumar, S. S., Bacci, A., Kharazia, V., Huguenard, J. R.

2002; 22 (8): 3005-3015

- **Resilient RTN fast spiking in Kv3.1 null mice suggests redundancy in the action potential repolarization mechanism** *JOURNAL OF NEUROPHYSIOLOGY*
  Porcello, D. M., Ho, C. S., Joho, R. H., Huguenard, J. R.
  2002; 87 (3): 1303-1310
- **Block of T -Type Ca(2+) Channels Is an Important Action of Succinimide Antiabsence Drugs.** *Epilepsy currents*
  Huguenard, J. R.
  2002; 2 (2): 49-52
- **Sodium channels: Grit, determination, and persistence** *NEURON*
  Huguenard, J. R.
  2002; 33 (4): 492-494
- **Prolactin-releasing peptide (PrRP) promotes awakening and suppresses absence seizures** *NEUROSCIENCE*
  Lin, S. H., Arai, A. C., Espana, R. A., Berridge, C. W., Leslie, F. M., Huguenard, J. R., Vergnes, M., Civelli, O.
  2002; 114 (1): 229-238
- **Properties of excitatory synaptic connections mediated by the corpus callosum in the developing rat neocortex** *JOURNAL OF NEUROPHYSIOLOGY*
  Kumar, S. S., Huguenard, J. R.
  2001; 86 (6): 2973-2985
- **Kinetic and pharmacological properties of GABA(A) receptors in single thalamic neurons and GABA(A) subunit expression** *JOURNAL OF NEUROPHYSIOLOGY*
  Browne, S. H., Kang, J., Akk, G., Chiang, L. W., Schulman, H., Huguenard, J. R., Prince, D. A.
  2001; 86 (5): 2312-2322
- **GABA(B) and NMDA receptors contribute to spindle-like oscillations in rat thalamus in vitro** *JOURNAL OF NEUROPHYSIOLOGY*
  Jacobsen, R. B., Ulrich, D., Huguenard, J. R.
  2001; 86 (3): 1365-1375
- **Thalamocortical Circuits and Excitability.** *Epilepsy currents / American Epilepsy Society*
  Huguenard, J.
  2001; 1 (1): 13
- **It takes T to tango** *NEURON*
  Sohal, V. S., Huguenard, J. R.
  2001; 31 (1): 3-4
- **The role of H-current in regulating strength and frequency of thalamic network oscillations.** *Thalamus & related systems*
  Yue, B. W., Huguenard, J. R.
  2001; 1 (2): 95-103
- **Clonazepam suppresses oscillations in rat thalamic slices** *9th Annual Computational Neuroscience Meeting (CNS*00)*
  Sohal, V. S., Huguenard, J. R.
  ELSEVIER SCIENCE BV.2001: 907–913
- **Differential regulation of GABA release and neuronal excitability mediated by neuropeptide Y-1 and Y-2 receptors in rat thalamic neurons** *JOURNAL OF PHYSIOLOGY-LONDON*
  Sun, Q. Q., Akk, G., Huguenard, J. R., Prince, D. A.
  2001; 531 (1): 81-94
- **Neuropeptide Y receptors differentially modulate G-protein-activated inwardly rectifying K+ channels and high-voltage-activated Ca2+ channels in rat thalamic neurons** *JOURNAL OF PHYSIOLOGY-LONDON*
  Sun, Q. Q., Huguenard, J. R., Prince, D. A.
  2001; 531 (1): 67-79
- **Nonlinear thermodynamic models of voltage-dependent currents** *JOURNAL OF COMPUTATIONAL NEUROSCIENCE*
  Destexhe, A., Huguenard, J. R.

2000; 9 (3): 259-270

- **Reliability of axonal propagation: The spike doesn't stop here** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Huguenard, J. R.
  2000; 97 (17): 9349-9350
- **Circuit mechanisms of spike-wave discharge: Are there similar underpinnings for centrotemporal spikes?** *Workshop on Benign Focal Epilepsies of Childhood: Genetically Determined Pathophysiology*
  Huguenard, J. R.
  WILEY-BLACKWELL PUBLISHING, INC.2000: 1076–77
- **Reciprocal inhibitory connections produce desynchronizing phase lags during intrathalamic oscillations** *8th Annual Computational Neurosciences Meeting (CNS 99)*
  Sohal, V. S., Huntsman, M. M., Huguenard, J. R.
  ELSEVIER SCIENCE BV.2000: 509–516
- **Reciprocal inhibitory connections regulate the spatiotemporal properties of intrathalamic oscillations** *JOURNAL OF NEUROSCIENCE*
  Sohal, V. S., Huntsman, M. M., Huguenard, J. R.
  2000; 20 (5): 1735-1745
- **Voltage-gated potassium channels activated during action potentials in layer V neocortical pyramidal neurons** *JOURNAL OF NEUROPHYSIOLOGY*
  Kang, J., Huguenard, J. R., Prince, D. A.
  2000; 83 (1): 70-80
- **Nucleus-specific differences in GABA(A)-receptor-mediated inhibition are enhanced during thalamic development** *JOURNAL OF NEUROPHYSIOLOGY*
  Huntsman, M. M., Huguenard, J. R.
  2000; 83 (1): 350-358
- **Long-range connections synchronize rather than spread intrathalamic oscillatory activity: Computational modeling and in vitro electrophysiology** *NEUROCOMPUTING*
  Sohal, V. S., Huguenard, J. R.
  1999; 26-7: 525-531
- **Reciprocal inhibitory connections and network synchrony in the mammalian thalamus** *SCIENCE*
  Huntsman, M. M., Porcello, D. M., Homanics, G. E., Delorey, T. M., Huguenard, J. R.
  1999; 283 (5401): 541-543
- **Neuronal circuitry of thalamocortical epilepsy and mechanisms of antiabsence drug action.** *Advances in neurology*
  Huguenard, J. R.
  1999; 79: 991-999
- **Low-voltage-activated (T-type) calcium-channel genes identified** *TRENDS IN NEUROSCIENCES*
  Huguenard, J. R.
  1998; 21 (11): 451-452
- **Long-range connections synchronize rather than spread intrathalamic oscillations: Computational modeling and in vitro electrophysiology** *JOURNAL OF NEUROPHYSIOLOGY*
  Sohal, V. S., Huguenard, J. R.
  1998; 80 (4): 1736-1751
- **Cholinergic switching within neocortical inhibitory networks** *SCIENCE*
  Xiang, Z. X., Huguenard, J. R., Prince, D. A.
  1998; 281 (5379): 985-988
- **Anatomical and physiological considerations in thalamic rhythm generation** *JOURNAL OF SLEEP RESEARCH*
  Huguenard, J. R.
  1998; 7: 24-29

- **Dendritic low-threshold calcium currents in thalamic relay cells** *JOURNAL OF NEUROSCIENCE*
  Destexhe, A., Neubig, M., Ulrich, D., Huguenard, J.
  1998; 18 (10): 3574-3588
- **Localization of CCK receptors in thalamic reticular neurons: A modeling study** *JOURNAL OF NEUROPHYSIOLOGY*
  Sohal, V. S., Cox, C. L., Huguenard, J. R.
  1998; 79 (5): 2820-2824
- **Adrenergic modulation of GABA(A) receptor-mediated inhibition in rat sensorimotor cortex** *JOURNAL OF NEUROPHYSIOLOGY*
  Bennett, B. D., Huguenard, J. R., Prince, D. A.
  1998; 79 (2): 937-946
- **GABA(A) receptor-mediated currents in interneurons and pyramidal cells of rat visual cortex** *JOURNAL OF PHYSIOLOGY-LONDON*
  Xiang, Z. X., Huguenard, J. R., Prince, D. A.
  1998; 506 (3): 715-730
- **Dendritic calcium currents in thalamic relay cells** *6th Annual Computational Neuroscience Conference*
  Neubig, M., Ulrich, D., Huguenard, J., Destexhe, A.
  PLENUM PRESS DIV PLENUM PUBLISHING CORP.1998: 233–238
- **GABA(A) receptor-mediated Cl- currents in rat thalamic reticular and relay neurons** *JOURNAL OF NEUROPHYSIOLOGY*
  ZHANG, S. L., Huguenard, J. R., Prince, D. A.
  1997; 78 (5): 2280-2286
- **GAB(A)-receptor-mediated rebound burst firing and burst shunting in thalamus** *JOURNAL OF NEUROPHYSIOLOGY*
  Ulrich, D., Huguenard, J. R.
  1997; 78 (3): 1748-1751
- **Nucleus reticularis neurons mediate diverse inhibitory effects in thalamus** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Cox, C. L., Huguenard, J. R., Prince, D. A.
  1997; 94 (16): 8854-8859
- **Adrenoceptor-mediated elevation of ambient GABA levels activates presynaptic GABA(B) receptors in rat sensorimotor cortex** *JOURNAL OF NEUROPHYSIOLOGY*
  Bennett, B. D., Huguenard, J. R., Prince, D. A.
  1997; 78 (1): 561-566
- **Nucleus-specific chloride homeostasis in rat thalamus** *JOURNAL OF NEUROSCIENCE*
  Ulrich, D., Huguenard, J. R.
  1997; 17 (7): 2348-2354
- **Peptidergic modulation of intrathalamic circuit activity in vitro: Actions of cholecystokinin** *JOURNAL OF NEUROSCIENCE*
  Cox, C. L., Huguenard, J. R., Prince, D. A.
  1997; 17 (1): 70-82
- **Two types of BK channels in immature rat neocortical pyramidal neurons** *JOURNAL OF NEUROPHYSIOLOGY*
  Kang, J., Huguenard, J. R., Prince, D. A.
  1996; 76 (6): 4194-4197
- **gamma-Aminobutyric acid type B receptor-dependent burst-firing in thalamic neurons: A dynamic clamp study** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Ulrich, D., Huguenard, J. R.
  1996; 93 (23): 13245-13249
- **Development of BK channels in neocortical pyramidal neurons** *JOURNAL OF NEUROPHYSIOLOGY*
  Kang, J., Huguenard, J. R., Prince, D. A.
  1996; 76 (1): 188-198
- **GABA(B) receptor-mediated responses in GABAergic projection neurones of rat nucleus reticularis thalami in vitro** *JOURNAL OF PHYSIOLOGY-LONDON*

Ulrich, D., Huguenard, J. R.
1996; 493 (3): 845-854

- **Heterogeneous axonal arborizations of rat thalamic reticular neurons in the ventrobasal nucleus** *JOURNAL OF COMPARATIVE NEUROLOGY*
  Cox, C. L., Huguenard, J. R., Prince, D. A.
  1996; 366 (3): 416-430
- **In vivo, in vitro, and computational analysis of dendritic calcium currents in thalamic reticular neurons** *JOURNAL OF NEUROSCIENCE*
  Destexhe, A., CONTRERAS, D., Steriade, M., Sejnowski, T. J., Huguenard, J. R.
  1996; 16 (1): 169-185
- **Low-threshold calcium currents in central nervous system neurons** *ANNUAL REVIEW OF PHYSIOLOGY*
  Huguenard, J. R.
  1996; 58: 329-348
- **Excitability changes in thalamic and neocortical neurons after injury.** *Epilepsy research. Supplement*
  Huguenard, J. R., Chung, J. M., Prince, D. A.
  1996; 12: 129-135
- **A model of spike initiation in neocortical pyramidal neurons** *NEURON*
  Mainen, Z. F., Joerges, J., Huguenard, J. R., Sejnowski, T. J.
  1995; 15 (6): 1427-1439
- **PURINERGIC INHIBITION OF GABA AND GLUTAMATE RELEASE IN THE THALAMUS - IMPLICATIONS FOR THALAMIC NETWORK ACTIVITY** *NEURON*
  Ulrich, D., Huguenard, J. R.
  1995; 15 (4): 909-918
- **CHOLECYSTOKININ DEPOLARIZES RAT THALAMIC RETICULAR NEURONS BY SUPPRESSING A K+ CONDUCTANCE** *JOURNAL OF NEUROPHYSIOLOGY*
  Cox, C. L., Huguenard, J. R., Prince, D. A.
  1995; 74 (3): 990-1000
- **INTRATHALAMIC RHYTHMICITY STUDIED IN-VITRO - NOMINAL T-CURRENT MODULATION CAUSES ROBUST ANTIOSCILLATORY EFFECTS** *JOURNAL OF NEUROSCIENCE*
  Huguenard, J. R., Prince, D. A.
  1994; 14 (9): 5485-5502
- **CLONAZEPAM SUPPRESSES GABA(B)-MEDIATED INHIBITION IN THALAMIC RELAY NEURONS THROUGH EFFECTS IN NUCLEUS-RETICULARIS** *JOURNAL OF NEUROPHYSIOLOGY*
  Huguenard, J. R., Prince, D. A.
  1994; 71 (6): 2576-2581
- **NEUROTRANSMITTER CONTROL OF NEOCORTICAL NEURONAL-ACTIVITY AND EXCITABILITY** *CEREBRAL CORTEX*
  McCormick, D. A., Wang, Z., Huguenard, J.
  1993; 3 (5): 387-398
- **TRANSIENT CA2+ CURRENTS IN NEURONS ISOLATED FROM RAT LATERAL HABENULA** *JOURNAL OF NEUROPHYSIOLOGY*
  Huguenard, J. R., Gutnick, M. J., Prince, D. A.
  1993; 70 (1): 158-166
- **TRANSIENT ENHANCEMENT OF LOW-THRESHOLD CALCIUM CURRENT IN THALAMIC RELAY NEURONS AFTER CORTICECTOMY** *JOURNAL OF NEUROPHYSIOLOGY*
  Chung, J. M., Huguenard, J. R., Prince, D. A.
  1993; 70 (1): 20-27
- **SIMULATION OF THE CURRENTS INVOLVED IN RHYTHMIC OSCILLATIONS IN THALAMIC RELAY NEURONS** *JOURNAL OF NEUROPHYSIOLOGY*
  Huguenard, J. R., McCormick, D. A.
  1992; 68 (4): 1373-1383

- **A MODEL OF THE ELECTROPHYSIOLOGICAL PROPERTIES OF THALAMOCORTICAL RELAY NEURONS** *JOURNAL OF NEUROPHYSIOLOGY*
  McCormick, D. A., Huguenard, J. R.
  1992; 68 (4): 1384-1400
- **A NOVEL T-TYPE CURRENT UNDERLIES PROLONGED CA2+-DEPENDENT BURST FIRING IN GABAERGIC NEURONS OF RAT THALAMIC RETICULAR NUCLEUS** *JOURNAL OF NEUROSCIENCE*
  Huguenard, J. R., Prince, D. A.
  1992; 12 (10): 3804-3817
- **A FAST TRANSIENT POTASSIUM CURRENT IN THALAMIC RELAY NEURONS - KINETICS OF ACTIVATION AND INACTIVATION** *JOURNAL OF NEUROPHYSIOLOGY*
  Huguenard, J. R., Coulter, D. A., Prince, D. A.
  1991; 66 (4): 1304-1315
- **SLOW INACTIVATION OF A TEA-SENSITIVE K-CURRENT IN ACUTELY ISOLATED RAT THALAMIC RELAY NEURONS** *JOURNAL OF NEUROPHYSIOLOGY*
  Huguenard, J. R., Prince, D. A.
  1991; 66 (4): 1316-1328
- **Patch-Clamp Studies of Voltage-Gated Currents in Identified Neurons of the Rat Cerebral Cortex** *CEREBRAL CORTEX*
  Hamill, O. P., Huguenard, J. R., Prince, D. A.
  1991; 1 (1): 48-61
- **DIFFERENTIAL-EFFECTS OF PETIT-MAL ANTICONVULSANTS AND CONVULSANTS ON THALAMIC NEURONS - GABA CURRENT BLOCKADE** *BRITISH JOURNAL OF PHARMACOLOGY*
  Coulter, D. A., Huguenard, J. R., Prince, D. A.
  1990; 100 (4): 807-813
- **DIFFERENTIAL-EFFECTS OF PETIT-MAL ANTICONVULSANTS AND CONVULSANTS ON THALAMIC NEURONS - CALCIUM CURRENT REDUCTION** *BRITISH JOURNAL OF PHARMACOLOGY*
  Coulter, D. A., Huguenard, J. R., Prince, D. A.
  1990; 100 (4): 800-806
- **PHYSIOLOGY OF THALAMIC RELAY NEURONS - PROPERTIES OF CALCIUM CURRENTS INVOLVED IN BURST-FIRING** *SYMP ON GENERALIZED EPILEPSY : CELLULAR, MOLECULAR AND PHARMACOLOGICAL APPROACHES*
  Huguenard, J. R., Coulter, D. A., Prince, D. A.
  BIRKHAUSER BOSTON.1990: 181–189
- **CELLULAR ACTIONS OF PETIT-MAL ANTICONVULSANTS - IMPLICATION OF THALAMIC LOW-THRESHOLD CALCIUM CURRENT IN GENERATION OF SPIKE-WAVE DISCHARGE** *SYMP ON GENERALIZED EPILEPSY : CELLULAR, MOLECULAR AND PHARMACOLOGICAL APPROACHES*
  Coulter, D. A., Huguenard, J. R., Prince, D. A.
  BIRKHAUSER BOSTON.1990: 425–435
- **CALCIUM CURRENTS IN RAT THALAMOCORTICAL RELAY NEURONS - KINETIC-PROPERTIES OF THE TRANSIENT, LOW-THRESHOLD CURRENT** *JOURNAL OF PHYSIOLOGY-LONDON*
  Coulter, D. A., Huguenard, J. R., Prince, D. A.
  1989; 414: 587-604
- **CHARACTERIZATION OF ETHOSUXIMIDE REDUCTION OF LOW-THRESHOLD CALCIUM CURRENT IN THALAMIC NEURONS** *ANNALS OF NEUROLOGY*
  Coulter, D. A., Huguenard, J. R., Prince, D. A.
  1989; 25 (6): 582-593
- **SODIUM-CHANNELS IN DENDRITES OF RAT CORTICAL PYRAMIDAL NEURONS** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Huguenard, J. R., Hamill, O. P., Prince, D. A.
  1989; 86 (7): 2473-2477
- **SPECIFIC PETIT MAL ANTICONVULSANTS REDUCE CALCIUM CURRENTS IN THALAMIC NEURONS** *NEUROSCIENCE LETTERS*

Coulter, D. A., Huguenard, J. R., Prince, D. A.
1989; 98 (1): 74-78

- **DEVELOPMENT OF GABA RESPONSIVENESS IN EMBRYONIC TURTLE CORTICAL-NEURONS** *NEUROSCIENCE LETTERS*
  Shen, J. M., Huguenard, J. R., Kriegstein, A. R.
  1988; 89 (3): 335-341

- **DEVELOPMENTAL-CHANGES IN NA+ CONDUCTANCES IN RAT NEOCORTICAL NEURONS - APPEARANCE OF A SLOWLY INACTIVATING COMPONENT** *JOURNAL OF NEUROPHYSIOLOGY*
  Huguenard, J. R., Hamill, O. P., Prince, D. A.
  1988; 59 (3): 778-795

- **WHOLE-CELL VOLTAGE-CLAMP STUDY OF THE FADING OF GABA-ACTIVATED CURRENTS IN ACUTELY DISSOCIATED HIPPOCAMPAL-NEURONS** *JOURNAL OF NEUROPHYSIOLOGY*
  Huguenard, J. R., Alger, B. E.
  1986; 56 (1): 1-18

- **Membrane currents underlying bursting pacemaker activity and spike frequency adaptation in invertebrates.** *Advances in neurology*
  Lewis, D. V., Huguenard, J. R., Anderson, W. W., Wilson, W. A.
  1986; 44: 235-261

- **SUPPRESSION OF REPETITIVE FIRING OF NEURONS BY DIPHENYLBARBITURIC ACID** *JOURNAL OF PHARMACOLOGY AND EXPERIMENTAL THERAPEUTICS*
  Huguenard, J. R., Wilson, W. A.
  1985; 232 (1): 228-231

- **BARBITURATE-INDUCED ALTERATIONS IN THE KINETIC-PARAMETERS OF SLOW OUTWARD CURRENT IN APLYSIA GIANT-NEURONS** *JOURNAL OF PHARMACOLOGY AND EXPERIMENTAL THERAPEUTICS*
  Huguenard, J. R., Wilson, W. A.
  1985; 234 (3): 821-829

- **THE IONIC MECHANISM OF THE SLOW OUTWARD CURRENT IN APLYSIA NEURONS** *JOURNAL OF NEUROPHYSIOLOGY*
  Huguenard, J. R., ZBICZ, K. L., Lewis, D. V., Evans, G. J., Wilson, W. A.
  1985; 54 (2): 449-461

- **ROLE OF ORNITHINE DECARBOXYLASE IN CARDIAC GROWTH AND HYPERTROPHY** *SCIENCE*
  Bartolome, J., Huguenard, J., Slotkin, T. A.
  1980; 210 (4471): 793-794