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Curriculum vitae

Name: Michael Beierlein

Present title: Assistant Professor
Department of Neurobiology and Anatomy
University of Texas Medical School
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Citizenship: German, US permanent residency

Undergraduate Education:

Faculty of Biology, University of Tübingen, Germany
Diploma in Biology (Advisors: B. Connors and H.-U. Schnitzler), 1987-1994.

Graduate Education:

Department of Neuroscience, Brown University, Providence, RI
Ph.D. Neuroscience (Advisor: B. Connors), 1993-2000.

Postgraduate Training:

Department of Biological Sciences, Columbia University, New York, NY
Postdoctoral research (PI: R. Yuste), 2000-2002.
Department of Neurobiology, Harvard Medical School, Boston, MA
Postdoctoral research (PI: W. Regehr), 2002-2007.

Academic appointments:

Assistant Professor, Department of Neurobiology and Anatomy,
University of Texas Medical School, Houston, Texas, 2007-

Professional Organizations:

Society of Neuroscience

Honors and Awards:

Studienstiftung des deutschen Volkes, (German National Academic Foundation),
1990-1993
DAAD-Fellowship, University of Tübingen, Germany\Brown University, Providence, RI,
1991
Honorable Mention, Howard Hughes Biomedical Institute, 1994
Manning Fellowship, Brown University, 1998
Burroughs-Wellcome Fellowship, Brown University, 1999-2000
Research Training Award, Epilepsy Foundation, 2000-2001

Professional Activities:

Reviewer: Journal of Neuroscience, Journal of Neurophysiology, Trends in
Neuroscience, 2000-present

Publications:

Refereed Original Articles in Journals:

1. Kim, H.G., Beierlein, M., and Connors, B.W. (1995) Inhibitory control of excitable dendrites in neocortex. *J. Neurophysiol.* 74: 1810-1814.
2. Lin, Z., Lin, Y., Schorge, S., Pan, J., Beierlein, M., and Lipscombe, D. (1999) Alternative splicing of a short cassette exon in α_{1B} generates functionally distinct N-type calcium channels in central and peripheral neurons. *J. Neurosci.* 19, 5322-5331.
3. Gibson, J.R.*, Beierlein, M.*, and Connors, B.W. (1999) Two networks of electrically coupled inhibitory neurons in neocortex. *Nature* 402, 75-79.
* denotes equal authorship
4. Beierlein, M.*, Gibson, J.R.* and Connors, B.W. (2000) A network of electrically coupled interneurons drives synchronized inhibition in neocortex. *Nat. Neurosci.* 3, 904-910.
* denotes equal authorship
5. Landisman, C.E., Long, M.A., Beierlein, M., Deans, M.R., Paul, D.L., and Connors, B.W. (2002) Electrical synapses in the thalamic reticular nucleus. *J. Neurosci.* 22, 1002-1009.
6. Amitai, Y., Gibson, J.R., Beierlein, M., Patrick, S.L., Ho, A.M., Connors, B.W., and Golomb, D. (2002) The spatial dimensions of electrically coupled networks of interneurons in the neocortex. *J. Neurosci.* 22, 4142-4152.
7. Beierlein, M. and Connors, B.W. (2002) Short-term dynamics of thalamocortical and intracortical synapses onto layer 6 neurons in neocortex. *J. Neurophysiol.* 88, 1924-1932.
8. Beierlein, M., Fall, C.P., Rinzel, J., and Yuste R. (2002) Thalamocortical bursts trigger recurrent activity in neocortical networks: layer 4 as a frequency-dependent gate. *J. Neurosci.* 22, 9885-9894.
9. Beierlein, M.*, Gibson, J.R.*, and Connors, B.W. (2003) Two dynamically distinct inhibitory networks in layer 4 of the neocortex. *J. Neurophysiol.* 90, 2987-3000.
* denotes equal authorship
10. Beierlein, M., Gee, K.R., Martin, V.V., and Regehr, W.R. (2004) Presynaptic calcium measurements at physiological temperatures using a new class of dextran-conjugated indicators. *J. Neurophysiol.* 92, 591-599.
11. Martin, V.V., Beierlein, M., Morgan, J., Rothe, A., and Gee, K.R. (2004) Novel Fluo-4 analogs for fluorescent calcium measurements. *Cell Calcium* 36, 509-514.
12. Gibson, J.R., Beierlein, M., and Connors, B.W. (2005) Functional properties of electrical synapses between inhibitory interneurons of neocortical layer 4. *J. Neurophysiol.* 93, 467-480.
13. Beierlein, M. and Regehr, W.G. (2006) Brief bursts of parallel fiber activity trigger calcium waves in Bergmann glia. *J. Neurosci.* 26, 6958-6967.
14. Beierlein, M. and Regehr, W.G. (2006) Local interneurons regulate synaptic strength by retrograde release of endocannabinoids. *J. Neurosci.* 26, 9935-9943.
15. Beierlein, M., Fioravante, D., and Regehr, W.G. (2007) Differential expression of post-tetanic potentiation and retrograde signaling mediate target-dependent short-term synaptic plasticity. *Neuron* 54(6), 949-959.

Abstracts:

1. Beierlein, M., Kim, H.G., and Connors, B.W. (1994) Control of excitable dendrites by synaptic inhibition in neocortex. *Soc. Neurosci. Abstr.* 20.
2. Beierlein, M. and Connors, B.W. (1995) Differential control of excitable dendrites by inhibition in neocortical pyramidal cells. *Soc. Neurosci. Abstr.* 21.

3. Beierlein, M. and Connors, B.W. (1997) Modulation of intrinsic firing pattern by synaptic activity in simulated neocortical pyramidal neurons. *Soc. Neurosci. Abstr.* 23.
4. Beierlein, M. and Connors, B.W. (1998) Properties of thalamocortical synapses onto layer 6 neurons in rat neocortex *Soc. Neurosci. Abstr.* 24.
5. Gibson, J.R., Beierlein, M., and Connors, B.W. (1999) Two electrically coupled inhibitory networks in neocortex. *Soc. Neurosci. Abstr.* 25.
6. Connors, B.W., Beierlein, M., and Gibson, J.R. (1999) An electrically coupled network of interneurons drives synchronous inhibition in neocortex. *Soc. Neurosci. Abstr.* 25.
7. Beierlein, M. and Connors, B.W. (1999) Excitatory and inhibitory synapses in layer 4 of neocortex: short-term dynamics and cholinergic modulation. *Soc. Neurosci. Abstr.* 25.
8. Gibson, J.R., Beierlein, M., and Connors, B.W. (2000) Functions of electrical and chemical synapses between inhibitory interneurons. *Soc. Neurosci. Abstr.* 26.
9. Landisman, C.E., Beierlein, M., and Connors, B.W. (2000) Electrical synapses between thalamic reticular neurons. *Soc. Neurosci. Abstr.* 26.
10. Gibson, J.R., Deans, M.R., Landisman, C.E., Long, M.A., Beierlein, M., Sellitto, C., Paul, D.L., and Connors, B.W. (2001) Connexin 36 is critical for electrical synapses and synchronous activity of inhibitory cells in neocortex and thalamus. *Soc. Neurosci. Abstr.* 27.
11. Amitai, Y., Gibson, J.R., Beierlein, M., Patrick, S.L., Ho, A.M., Connors, B.W., and Golomb, D. (2001) The spatial organization of electrically coupled interneuron networks in neocortex. *Soc. Neurosci. Abstr.* 27.
12. Beierlein, M. and Connors, B.W. (2001) Properties of thalamocortical and intracortical inputs to layer 6 of rat somatosensory neocortex. *Soc. Neurosci. Abstr.* 27.
13. Beierlein, M., Fall, C.P., Rinzel, J., and Yuste, R. (2002) Thalamocortical bursts trigger recurrent activity in mouse somatosensory cortex. *Soc. Neurosci. Abstr.* 28.
14. Beierlein, M. and Regehr, W.G. (2006) Local interneurons regulate synaptic strength by retrograde release of endocannabinoids. *Gordon Research Conference on Synaptic Transmission*.

Invited Articles:

1. Beierlein, M. and Regehr, W.G. (2005) Conventional synapses for unconventional cells. *Neuron* (Preview) 46(5), 694-696.

Chapters:

1. Walker, J.M., Hohmann, A.G., Hemstreet, M.K., Martin, W.J., Beierlein, M., Roth, J.S., Patrick, S.L., Carroll, F.I., and Patrick, R.L. (1993) Functional role of sigma receptors in the nervous system. In: *Aspects of Synaptic Transmission, Volume II: Acetylcholine, Sigma Receptors, CCK and Eicosanoids, Neurotoxins*. (Stone, T.W., ed.), pp 91-112, Taylor and Francis, London.
2. Connors, B.W., Castro-Alamancos, M.A., and Beierlein, M. (1996) Diverse neuronal functions of the cerebral cortex. In: *Excitatory amino acids and the cerebral cortex* (Conti, F., Hicks, P., eds.), pp 21–32, MIT, Cambridge, MA.

Invited talks (selected):

1. University of Houston, Houston, TX (February 2008). “Dynamic regulation of inhibitory circuits by short-term plasticity.”
2. FENS Forum, Geneva, Switzerland. (July 2008). “Neuron-glia signaling in the cerebellum.”