

Bradley C. Lega

Work Address: Department of Neurosurgery
UT Southwestern
5323 Harry Hines Blvd MC 8855
Dallas, TX 75390

Education:

08/98 – 05/02	BA	Rice University
08/02 – 05/06	MD	Baylor College of Medicine

Postgraduate Training and Fellowship Appointments:

06/06 – 06/07 Intern in General Surgery, University of Pennsylvania, Philadelphia

07/07 – 06/13 Resident in Neurosurgery, University of Pennsylvania, Philadelphia

07/13 – 06/14 Fellow in Epilepsy Surgery, Cleveland Clinic, Cleveland, Ohio

Licensure: Board Certified in Neurosurgery

Awards, Honors and Membership in Honorary Societies:

2005. Alpha Omega Alpha
2002. Phi Beta Kappa

Research Support:

R01NS107357-01, "Using deep brain stimulation of the parietal cortex to investigate the electrophysiology of human episodic memory." Role: PI 7/18 - 7/22

R21NS095094-01A1, "Comparison of fMRI and iEEG metrics of hippocampal connectivity during memory encoding and retrieval." Role: PI 7/16—7/18

"Restoring Active Memory," Defense Advanced Research Projects Agency. PI: MJ Kahana
Role: Co—investigator 7/16 -- 7/18

UT Southwestern Disease Oriented Clinical Scholars THR Scholars Program, "Parietal-hippocampal interactions during episodic memory processing." Role: PI 2/17 – 2/19

Completed:

K08NS104080, "Parietal-hippocampal interaction during episodic memory encoding and retrieval." Role: PI 3/18-7/18

NIH KL2/UT Southwestern Center for Translational Medicine, "Using gene expression profiles to understand brain oscillations in episodic memory." 4/17—1/18

Role: Co- PI (Konopka)

University of Texas BRAIN initiative seed grant, PC366532, "Comparing intracranial EEG, fMRI, and gene expression profiles in humans." 6/2015 --6/2016

Role: PI

UT Southwestern Crowley Foundation seed grant, "Electrophysiological studies of cognition in neurosurgical patients." 1/2015--1/2016

Role: PI

Lega, NIH Loan Repayment Program, "Electrophysiological Studies of Human Memory," 6/2011 - 6/2013

Refereed Papers (selected):

Lega B, Germi J, Rugg M. **(2017)**. Modulation of Oscillatory Power and Connectivity in the Human Posterior Cingulate Cortex Supports the Encoding and Retrieval of Episodic Memories. *Journal of Cognitive Neuroscience*, 7(4), 1-18.

Lin, J., Rugg, M. D., Das, S., Stein, J., Rizzuto, D. S., Kahana, M. J., & Lega, B. C. **(2017)**. Theta band power increases in the posterior hippocampus predict successful episodic memory encoding in humans. *Hippocampus*. doi:10.1002/hipo.22751

Stefano Berto, Guang-Zhong Wang, James Germi, Bradley C. Lega, Genevieve Konopka; Human Genomic Signatures of Brain Oscillations During Memory Encoding **(2017)**. *Cereb Cortex* 1-16. doi: 10.1093/cercor/bhx083

Ezzyat, Y., Wanda, P.A., Levy, D.F., Kadel, A., Aka, A., Pedisich, I., Sperling, M.R., Sharan, A.D., Lega, B.C., Burks, A. and Gross, R.E., **(2018)**. Closed-loop stimulation of temporal cortex rescues functional networks and improves memory. *Nature communications*, 9(1), p.365.

Ezzyat, Y., Kragel, J. E., Burke, J. F., Levy, D. F., Lyalenko, A., Wanda, P., Lega, B. . . . Kahana, M. J. **(2017)**. Direct Brain Stimulation Modulates Encoding States and Memory Performance in Humans. *Current Biology*, 27(9), 1251-1258. doi:10.1016/j.cub.2017.03.028

Michal T. Kucewicz, Brent M. Berry, Vaclav Kremen, Benjamin H. Brinkmann, Michael R. Sperling, Barbara C. Jobst, Robert E. Gross, Bradley Lega, Sameer A. Sheth, Joel M. Stein, Sandhitsu R. Das, Richard Gorniak, S. Matthew Stead, Daniel S. Rizzuto, Michael J. Kahana, Gregory A. Worrell; Dissecting gamma frequency activity during human memory processing. **(2017)** *Brain*; 140 (5): 1337-1350. doi: 10.1093/brain/awx043

Horak, P. C., Meisenhelter, S., Song, Y., Testorf, M. E., Kahana, M. J., Viles, W. D., Lega, B. Jobst, B. C. **(2016)**. Interictal epileptiform discharges impair word recall in multiple brain areas. *Epilepsia*, 58(3), 373-380. doi:10.1111/epi.13633

Long, N. M., Sperling, M. R., Worrell, G. A., Davis, K. A., Gross, R. E., Lega, B. C., et al. (2016). Contextually mediated spontaneous retrieval is specific to the hippocampus. *Current Biology*, 27, 1–6.

Famili, A., Krishnan, G., Davenport, E., Germi, J., Wagner, B., Lega, B., & Montillo, A. (2017). Automatic identification of successful memory encoding in stereo-eeg of refractory, mesial temporal lobe epilepsy. 2017 IEEE 14th International Symposium on Biomedical Imaging (ISBI 2017). doi:10.1109/isbi.2017.7950589

Jacobs, J; Miller, J; Lee, SA; Coffey TA; Watrous, AJ; Sperling, MR; Sharan, AS; Worrell, G; Berry, B; Lega, BC; Jobst, BC; Davis, K; Gross, RE; Sheth, SA; Ezzyat, Y; Das, SR; Stein, J; Gorniak, SR; Kahana, MJ; Rizzuto, D. (2016) "Direct electrical stimulation of the human hippocampus and entorhinal region impairs memory." *Neuron* 92(5): 282-93.

Podkorytova, I; Hoes, K; Lega, BC. "Stereo-Encephalography Versus Subdural Electrodes for Seizure Localization." *Neurosurgery Clinic of North America*, (2016).

Lega, BC; Burke, JF; Jacobs, J; Kahana, M. "Phase-amplitude coupling in the hippocampus and neocortex during the encoding of episodic memories." *Cerebral Cortex*, (2014): bh232

Lega, BC; Dionisio, S; Bingaman, W; Najm, I; Gonzalez-Martinez, J; "The gamma band effect for episodic memory encoding is absent in epileptogenic hippocampi." *Clinical Neurophysiology*, (2014). PMID: 25249414

Lega, BC; Dionisio, S; Bingaman, W; Najm, I; Nair, D; Gonzalez-Martinez, J. "Cortico-cortical evoked potentials for sites of early versus late seizure spread in stereoelectroencephalography." (2015) Sep;115:17-29. doi: 10.1016/j.eplepsyres.2015.04.009. Epub May 2. PMID: 26220373

Lega, BC; Mullin, J; Wyllie, E; Bingaman, W. "Surgery for Hemispheric Malformation of Cortical Development: Indications and Approach." in *Child's Nervous System*, annual review. (2015)

Lega, BC; Jacobs, J; Kahana, M. "Human hippocampal theta oscillations and the formation of episodic memories." (2011) *Hippocampus*. DOI:10.1002/hipo.20937.

Lega, BC; Kahana, M; Jaggi, J; Baltuch, GH; Zaghoul, K. "Neuronal and local field potential activity during reward processing in the human ventral striatum." (2011) *NeuroReport*. DOI: 10.1097/WNR.0b013e32834b2975.

Zaghoul, KA; Weidemann, C; Lega, BC; Jaggi, J; Baltuch, GH; Kahana, MJ. "Neuronal activity in the human subthalamic nucleus encodes decision conflict during action selection." (2012) *Journal of Neuroscience* 32(7): 2453-2460.

Jacobs, J; Lega, BC; Anderson, C. "Explaining how brain stimulation can evoke memories." *Journal of Cognitive Neuroscience*, (2011). DOI:10.1162/jocn_a_00170

Lega, BC; Serruya, MD; Zaghloul, KA. "Brain-Machine Interfaces: Electrophysiological Challenges and Limitations." *Critical Reviews in Biomedical Engineering*, 39(1):121-144, 2011.

Lega, BC; Halpern, C; Jaggi, JL; Baltuch, GH. "Deep Brain Stimulation in the Treatment of Refractory Epilepsy: Update on Current Data and Future Directions." *Neurobiology of Disease*, July, 2009.

Lega BC, Wilfong AA, Goldsmith IL, Verma A, Yoshor D. "Cortical resection tailored to awake, intraoperative ictal recordings and motor mapping in the treatment of intractable epilepsy partialis continua: report of two cases." *Neurosurgery* 64(3 Suppl):195-6, 2009.

Yoshor D, Bosking WH, Lega BC, Sun P, Maunsell JH. "Local cortical function after uncomplicated subdural electrode implantation. Laboratory investigation." *Journal of Neurosurgery* 108(1):139-44, 2008.

Yoshor D, Bosking WH, Lega BC, Sun P, Maunsell JH. "Local cortical function after uncomplicated subdural electrode implantation. Laboratory investigation." *Journal of Neurosurgery* 108(1):139-44, 2008.

Book Chapters

Neely, O; Podkorytova, I; Lega, BC. "Stereo EEG in the treatment of refractory epilepsy." *Epilepsy Surgery: Techniques*. Gordon Baltuch ed. Thieme, in press.

Lega, BC; Watrous, A; Jacobs, J. "Human hippocampal theta oscillations: Distinctive features and interspecies commonalities." *Human brain oscillations*, in press.

Lega BC, Whitmore RG, Sanborn M, Schuster J. "Neurosurgery." *The Surgical Review*. Robert Roses, ed. Lippincott Williams & Wilkins, 2011.

Lega, BC; Newman, J; Welch, W; Lee, JYK. "Transoral Approach to the Craniovertebral Junction." *Surgical Atlas of Spine Surgery*. Alexander Vaccaro and James Eck, eds. Jaypee Brothers, New Delhi, 2011.

Lega, BC; Baltuch, GH. "Anterior Thalamic Modulation in the Treatment of Epilepsy." *Neuromodulation*. Arthur Cukiert, ed. Sao Paolo, 2010.

NIH Study Sections:

Recording and Modulation in the Human CNS (2017 - present)

Ad hoc reviewer:

Journal of Emergency Medicine, Journal of Psychiatry, Neurosurgery, Journal of Cognitive Neuroscience

Memberships in Professional and Scientific Societies:

National Societies:

American Association of Neurological Surgeons

Congress of Neurological Surgeons

American Epilepsy Society

Society for Neuroscience

Cognitive Neuroscience Society

State Societies:

Texas Epilepsy Foundation, member of professional advisory board