Update:
Transcranial Magnetic Stimulation (TMS) in Epilepsy

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Conflict of Interest Disclosure

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**Current:**
- Neuromotion Inc. (technology for improving emotional control; co-founder)
- Brainsway Inc. (research support [equipment and personnel])
- Soterix Medical Inc. (research support [equipment])
- Neuroelectrics Inc. (research support [equipment])
- Journal of Central Nervous System Diseases (EIC)
- NIH NIMH, DoD, CIMIT, ERF, TRP (research grants)

**Past:**
- Neuropace Inc. (research grant and equipment)
  - Nexstim Inc. (consultant)
- Sage Therapeutics Inc. (consultant)
- Fisher Family Fund and Fisher-Wallace Inc. (research support [unrestricted gift and equipment])
TMS Basics


Perilesional mapping (Najib et al., 2011)
TMS FDA Status: four devices approved

Neuronetics: major depression

Nexstim: motor / language mapping

Brainsway: major depression

eNeura: migraine
Better seizure control with improved targeting in TLE: 1 Hz rTMS in TLE; trial in progress

Seizure frequency around rTMS block

2 Weeks After rTMS

-71.6  2.0

-100  -80  -60  -40  -20  0  20  40  60

Change in Seizure Frequency (%)

Target rTMS
Non-target rTMS
Placebo rTMS

Deep TMS H-Coil System
Brainsway Inc.
Measures of Cortical Inhibition by Paired-Pulse TMS (ppTMS) in Epilepsy

Rotenberg and Pascual-Leone, 2010
Loss of cortical inhibition after TBI

Hsieh et al. ETP 2013; in progress
Gradual loss of parvalbumin (PV)-cells after TBI

Sham control

Post-TBI (peri-lesion)

Post-TBI (contra-lesion)

Peri-lesion

Contra-lesion

Gradual loss of parvalbumin (PV)-cells after TBI
ppTMS as a biomarker in TBI treatment

Goodrich et al., J. Neurotrauma 2013

Hameed et al., in progress
Colleagues and mentors
- Narong Auvichayapat – Khon Kaen U., Thailand
- Paradee Auvichayapat - Khon Kaen U., Thailand
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- Blaise Bourgeois - BCH
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Current and recent lab members
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