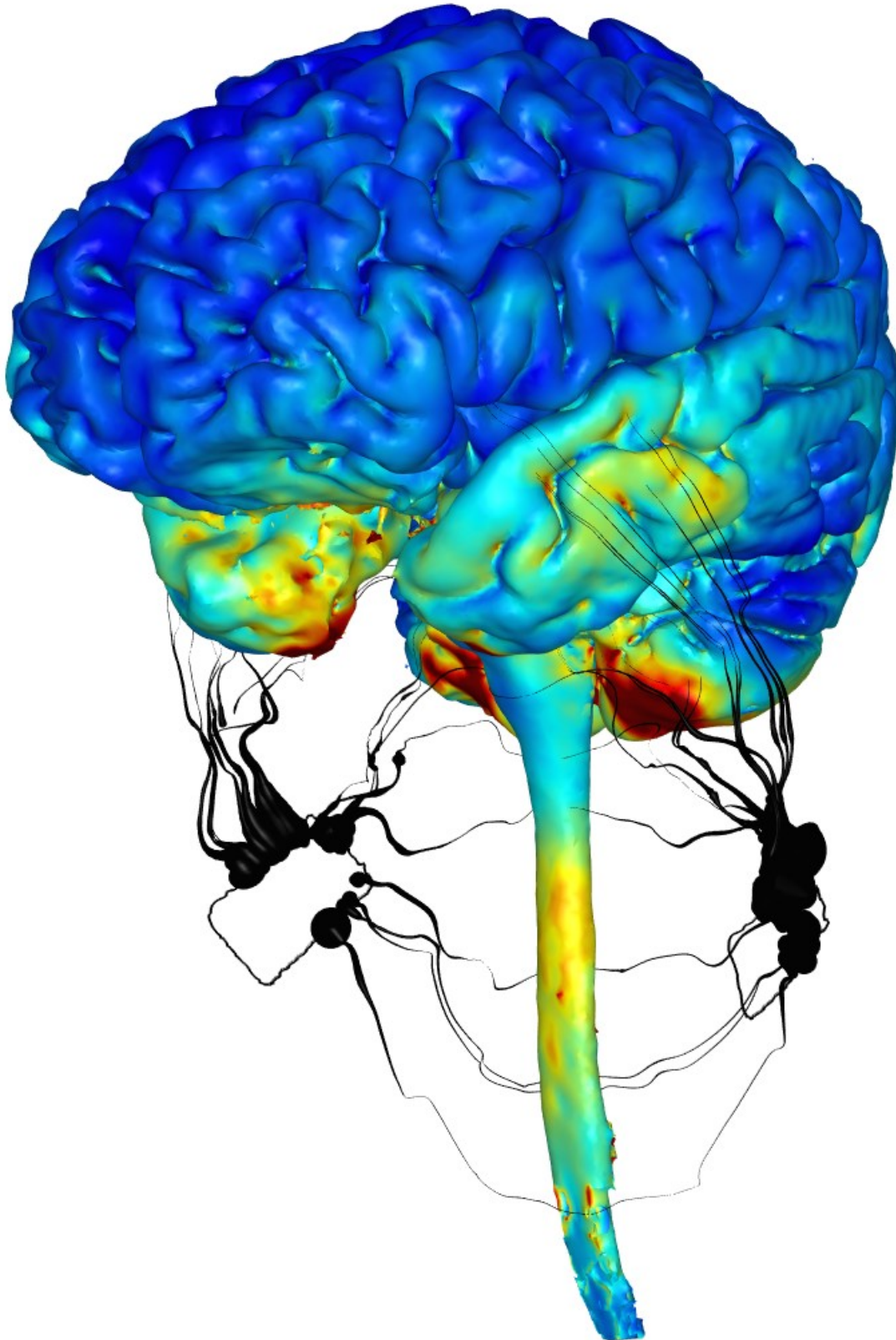


Your Brain on Nucalm



What is this you ask? This is your brain on NuCalm!

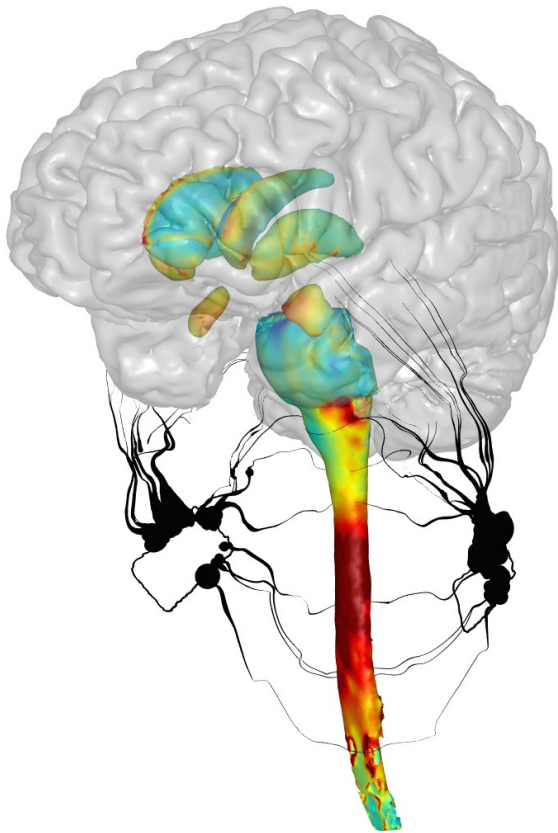
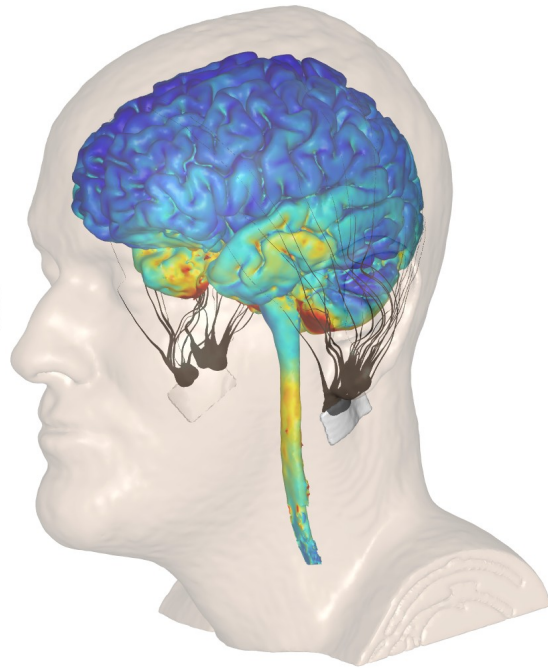
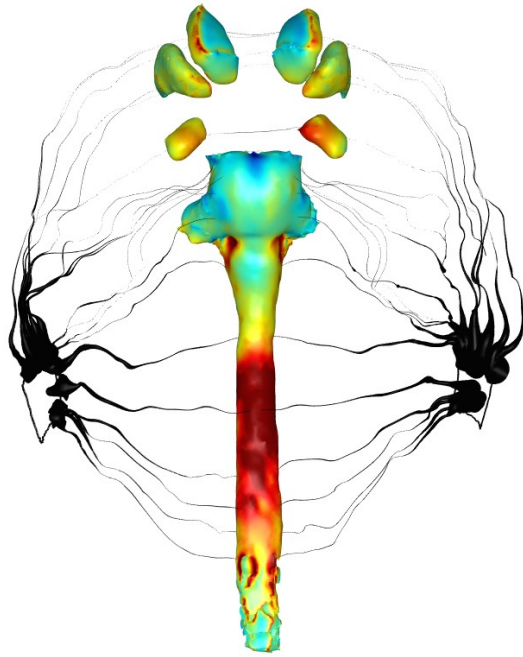
Using state of the art Finite Element Method (FEM) stimulations on a subject - MRI-derived head model of an adult male, Dr. Marom Bikson, co-director of Neural Engineering at The City College of New York and the New York Center for Biomedical Engineering, has been researching NuCalm's impact on the brain.

Dr. Bikson is a recognized leader in the research and development of medical devices including biosensors, drug delivery technology, and electrotherapy devices for neurological disorders; medical device safety including electrical hazards, electroporation, heating damage, and safe stimulation protocols; understanding the neuronal networks underlying normal brain function, including the role of endogenous electric fields; developing new treatments for neurological diseases including epilepsy and depression, through translational research.

Dr. Bikson called me a couple weeks ago after several weeks of exploring the NuCalm system and said, "Jim, we have some preliminary findings I'd like to share with you. You are probably already aware of this, but your system works."

As you can see, NuCalm impacts the deep midbrain, temporal cortex, cerebellum, and the brain stem, which is innervated by the Vagus nerve. The Vagus nerve is critical for

parasympathetic nervous system dominance as it serves as the autonomic nervous system highway throughout the endocrine system. RED (maximum intensity on that particular view), BLUE (limited intensity), GREEN (mid intensity). Black flux lines show general path of the CES current.



Below please find some of Dr. Bikson's publications:

DaSilva AF, Truong DQ, DosSantos MF, Toback RL, Datta A, Bikson M. State-of-art neuroanatomical target analysis of high-definition and conventional tDCS montages used for migraine and pain control. *Frontier in Neuroanatomy*, 15 July 2015

<http://dx.doi.org/10.3389/fnana.2015.00089> PDF Free Online

A, Nascimento T, Lawrence M, Gupta V, Zieba T, Truong DQ, Bikson M, Datta A, Bellile E, DaSilva AF. High-Definition and Non-Invasive Brain Modulation of Pain and Motor Dysfunction in Chronic TMD. *Brain Stimulation* in press 2015

Xu J, Healy SM, Truong DQ, Datta A, Bikson M, Potenza MN. A Feasibility Study of Bilateral Anodal Stimulation of the Prefrontal Cortex Using High-Definition Electrodes in Healthy Participants. *Yale Journal of Biology and Medicine* 88(3):219-225, 2015 PDF

Shekhawat GS, Sundram F, Bikson M, Truong D, Ridder DD, Kirk I, Stinear CM, Welch D, Searchfield GD. Intensity, Duration, and Location of High-Definition Transcranial Direct Current Stimulation for Tinnitus Relief *Neurorehabilitation & Neural Repair*. DOI: 10.1177/1545968315595286 2015 PDF

Galletta EE, Cancelli A, Cottone C, Simonelli I, Tecchio F, Bikson M, Marangolo P. Use of computational modeling to inform tDCS electrode montages for the promotion of language recovery in post-stroke aphasia. *Brain Stimulation* in press 2015

Knotkova H, Woods AJ, Bikson M, Nitcher MA. Transcranial Direct Current Stimulation (tDCS): What Pain Practitioners Need to Know. *Practical Pain Management*. 15(3) 2015 link

Bikson M, Aboosera M, Uchida RR, Cordeiro Q. Targeting negative symptoms in schizophrenia: results from a proof-of-concept trial assessing prefrontal anodic tDCS protocol. *Schizophrenia Research*. in press

Senco NM, Huang Y, D'Urso G, Parra LC, Bikson M, Mantovani A, Shavitt EG, Hoexter MQ, Miguel EC, Brunoni A. Transcranial direct current stimulation in obsessive-compulsive disorder: emerging clinical evidence and

considerations for optimal montage of electrodes. *Expert Rev. Med Device* 1-11 (2015) [PDF](#)

Jones KT, Stephens JA, Alam M, Bikson M, Berryhill ME. Longitudinal Neurostimulation in Older Adults Improves Working Memory. *PLOS ONE* DOI: 10.1371/journal.pone.0121904 [Free Online](#)

Nitsche M, Bikson M, Bestmann S. On the use of meta-analysis in neuromodulatory non-invasive brain stimulation. *Brain Stimulation*. Letter-to-the-editor in press 2015 DOI: 10.1016/j.brs.2015.03.008 [PDF](#)

Woods AJ, Hamilton R, Kranjec A, Minhaus P, Bikson M, Yu J, Chatterjee A. Exploring structure-function relationships using parallel fMRI and tDCS. *Brain Stimulation* 2015 doi: <http://dx.doi.org/10.1016/j.brs.2014.01.033>

Khadka N, Truong DQ, Bikson M. Principles of Within Electrode Current Steering (WECS). *Journal Of Medical Devices* doi:10.1115/1.4030126 [PDF](#)

Charvet L, Kasschau M, Datta A, Knotkova H, Stevens MC, Alonzo A, Loo C, Krull KR, Bikson M. Remotely-Supervised Transcranial Direct Current Stimulation (tDCS) for Clinical Trials: Guidelines for Technology and Protocols. *Front. Syst. Neurosci.* doi: 10.3389/fnsys.2015.00026 [Free Online](#)

Grecco LH, Li S, Michel S, Castillo-Saavedra L, Mourdoukoutas A, Bikson M, Fregni F. Transcutaneous Spinal Stimulation as a therapeutic strategy for spinal cord injury: State of the art. *Journal of Neurorestoratology*. 2015 3:73-82 [PDF](#)

Song W, Truong D, Bikson M, Martin JH. Trans-spinal direct current stimulation immediately modifies motor cortex sensorimotor maps *Journal of Neurophysiology*. 2015 in press

Seibt O, Brunoni AR, Huang Y, Bikson M. The pursuit of DLPFC: Non-neuronavigated methods to target the left dorsolateral prefrontal cortex with symmetric bicephalic transcranial Direct Current Stimulation (tDCS) *Brain Stimulation* 2015 in press doi: 10.1016/j.brs.2015.01.401. [PDF](#)

Brunoni AR, Bikson M et al. The Escitalopram versus Electric Current Therapy to treat Depression Clinical Study (ELECT-TDCS): rationale and study design of a non-inferiority, triple-arm, placebo-controlled clinical trial. *São Paulo*

Medical Journal 133(3):252-63 10.1590/1516-3180.2014.00351712, 2015
[PDF](#)

2014

Reato D, Bikson M, Parra L. Lasting modulation of in-vitro oscillatory activity with weak direct current stimulation. *Journal of Neurophysiology*. 113: 1334-1341 doi: 10.1152/jn.00208. 2014 [PDF](#)

M, Edwards D, Kappenman E. The outlook for non-invasive brain stimulation. *Brain Stimulation* 2014, 7(6):771-2. doi: 10.1016/j.brs.2014.10.005
[PDF](#) [Journal Link](#)

Khadka N, Rahman A, Sarantos C, Truong D, Bikson M. Methods for Specific Electrode Resistance Measurement during Transcranial Direct Current Stimulation *Brain Stimulation* 2014 8(1):150-9. doi: 10.1016/j.brs.2014.10.004. [PDF](#)

Fregni F, Nitsche MA, Loo CK, Brunoni AR, Marangolo P, Leite J, Carvalho S, Bolognini N, Caumo W, Paik NJ, Simis M, Ueda K, Ekhtiari H, Luu P, Tucker DM, Tyler WJ, Brunelin J, Datta A, Juan CH, Venkatasubramanian G, Boggio PM, Bikson M. Regulatory Considerations for the Clinical and Research Use of Transcranial Direct Current Stimulation (tDCS): review and recommendations from an expert panel. *Clinical Research and Regulatory Affairs*. DOI: 10.3109/10601333.2015.980944 [PDF](#)

Foerster BR, Nascimento T, DeBoer M, Bender M, Rice I, Truong D, Bikson M, Clauw D, Zubieta J, Harris R, DaSilva A. Excitatory and Inhibitory Brain Metabolites as Targets and Predictors of Effective Motor Cortex tDCS Therapy in Fibromyalgia Arthritis & Rheumatology 2014 doi: 10.1002/art.38945. in press

Gillick BT, Kirton A, Carmel J, Minhas P, Bikson M. Pediatric Stroke and transcranial Direct Current Stimulation: Methods for Rational Individualized Dose Optimization *Front. Hum. Neurosci.* 2014; doi: 10.3389/fnhum.2014.00739 [Free Online](#)

Scheldrup M, Greenwood PM, McKendrick R, Strohl J, Bikson M, Alam A, McKinley RA, Parasuraman R. Transcranial direct current stimulation

facilitates cognitive multi-task performance differentially depending on anode location and subtask *Front. Hum. Neurosci.* 2014; DOI: 10.3389/fnhum.2014.00665 [Free Online](#)

DosSantos MF, Martikainen LK, Nascimento TD, Love TM, DeBoer MD, Schambra HM, Bikson M, Zubieta J, DaSilva AF. Building up Analgesia in Humans via the Endogenous μ -Opioid System by Combining Placebo and Active tDCS: A Preliminary Report. *PLOS ONE* 2014; 9(7) e102350 DOI: 10.1371/journal.pone.0102350 [Free Online](#)

Richardson JD, Fillmore P, Datta A, Truong D, Bikson M, Fridriksson J. Toward Development of Sham Protocols for High- Definition Transcranial Direct Current Stimulation (HD-tDCS). *NeuroRegulation* 2014; 1(1) p. 62-72 doi:10.15540/nr.2014.1.1.62 [PDF](#)

Guleyupoglu B, Febles N, Minhas P, Hahn C, Bikson M. Reduced discomfort during High-Definition transcutaneous stimulation using 6% benzocaine. *Frontiers of Human Neuroscience* 2014; doi: 10.3389/fneng.2014.00028 [PDF Free Online](#)

Guarienti F, Caumo W, Shiozawa P, Cordeiro Q, Boggio PS, Benseñor IM, Lotufo PA, Bikson M, Brunoni AR. Reducing transcranial direct current stimulation (tDCS)-induced erythema with skin pretreatment: considerations for sham-controlled tDCS clinical trials. *Neuromodulation: Technology at the Neural Interface* 2014; DOI: 10.1111/ner.12230 [PDF](#)

Moreno-Duarte I, Gebodh N, Schestatsky P, Guleyupoglu B, Reato D, Bikson M, Fregni F. Transcranial Electrical Stimulation: transcranial Direct Current Stimulation (tDCS), transcranial Alternating Current Stimulation (tACS), transcranial Pulsed Current Stimulation (tPCS), and Transcranial Random Noise Stimulation (tRNS). *The Stimulated Brain* 2014; (ed. R Cohen Kadosh). Elsevier ISBN 9780124047044, Chapter 2, p.35-60

Truong D, Minhas P, Nair A, Bikson M. Computational modeling assisted design of optimized and individualized transcranial Direct Current Stimulation protocols . *The Stimulated Brain* 2014; (ed. R Cohen Kadosh). Elsevier ISBN 9780124047044 Chapter 4, p.85-116

Antal A, Bikson M, Datta A, Lafon B, Dechent P, Parra LC, Paulus W. Imaging artifacts induced by electrical stimulation during conventional fMRI of the brain. *Neuroimage* 2014; 85:1040-1047 (Cover). [PDF](#)

Woods AJ, Hamilton RH, Kranjec A, Minhas P, Bikson M, Yu J, Chatterjee A. Space, Time, and Causality in the Human Brain. *Neuroimage* 2014; 92:285-297 [PDF](#)

Truong DQ, Huber M, Xie X, Datta A, Rahman A, Parra LC, Dmochowski J, Bikson M. Clinician accessible tools for GUI computational models of transcranial electrical stimulation: BONSAI and SPHERES. *Brain Stimulation* 2014; 7(4):521-4. doi: 10.1016/j.brs.2014.03.009 [PDF](#) Use the free modeling tools here: [BONSAI](#) and [SPHERES](#)

Schambra HM, Bikson M, Wager TD, DosSantos MF, DaSilva AF. It's all in your head: reinforcing the placebo response with tDCS. *Brain Stimulation* 2014; 7(4): 623-4 Letter-to-Editor

Brunoni AR, Shiozawa P, Truong D, Javitt DC, Elkis, H, Fregni F, Bikson M. Understanding tDCS effects in schizophrenia: a systematic review of clinical data and an integrated computation modeling analysis. *Expert Reviews of Medical Devices* 2014; epub [PDF](#)

Toshev P, Guleyupoglu B, Bikson M. Informing dose design by modeling transcutaneous spinal direct current stimulation *Clinical Neurophysiology* 2014; S1388-2457(14)00174-6. doi: 10.1016/j.clinph.2014.03.022.; [PDF](#)

Shahid SS, Bikson M, Wen P, Ahfock T. The value and cost of complexity in predictive modelling: role of tissue anisotropic conductivity and fibre tracts in neuromodulation *Journal of Neural Engineering* 2014; 11(3):036002. doi: 10.1088/1741-2560/11/3/036002 [PDF](#)

Manuel AL, David AW, Bikson M, Schnider A. Frontal tDCS modulates orbitofrontal reality filtering. *Neuroscience* 2014; 264: 21-27 [PDF](#) [Journal Link](#)

Weiss SA, Bikson M. Open questions on the mechanisms of neuromodulation with applied and endogenous electric fields. *Frontiers of Human Neuroscience* 2014; doi: 10.3389/fnhum.2014.00227 [Free Online](#) Opening editorial to special issue co-edited by M. Bikson and S.H Weiss

Rahman A, Toshev PL, Bikson M. Polarizing cerebellar neurons with transcranial Direct Current Stimulation *Clinical Neurophysiology* 2014; 125: 435-438 [PDF](#)

2013

Kessler SK, Woods AJ, Minhas O, Rosen AR, Gorman C, Bikson M. Dosage considerations for transcranial direct current stimulation in children: a computational modeling study. *PLoS ONE* In Press 2013, 8(9): e76112. doi:10.1371/journal.pone.0076112 [Free Online](#)

Bikson M, Bestmann S, Edwards D. Transcranial Devices are not playthings. *Nature* 2013; correspondence 501:7466 [PDF](#)

Guleyupoglu B, Schestatsky P, Edwards D, Fregni F, Bikson M. Classification of methods in transcranial Electrical Stimulation (tES) and evolving strategy from historical approaches to contemporary innovations. *Journal of Neuroscience Methods* 2013; 219: 291-311 [PDF](#) [Journal Link](#)

Berker AO, Bikson M, Bestmann S. Predicting the behavioural impact of transcranial direct current stimulation: issues and limitations *Frontiers of Human Neuroscience* 2013; doi 10.3389/fnhum.2013.00613 [Journal Link](#)

Rahman A, Bikson M. Origins of specificity during tDCS: anatomical, activity-selective, and input-bias mechanisms *Frontiers of Human Neuroscience* 2013; doi 10.3389/fnhum.2013.00688 [Journal Link](#)

Reato D, Rahman A, Bikson M, Parra LC. Effects of weak transcranial Alternating Current Stimulation on brain activity – a review of known mechanisms from animal studies. *Frontiers of Human Neuroscience* 2013; doi 10.3389/fnhum.2013.00687 [Journal Link](#) [PDF](#)

Bikson M, Dmochowski J, Rahman A. The “Quasi-Uniform” Assumption in Animal and Computational Models of Non-Invasive Electrical Stimulation. *Brain Stimulation* Letter to the Editor 2013; 6:704-705 [PDF](#)

Datta A, Zhou X, Su Y, Parra LC, Bikson M. Validation of finite element model of transcranial electrical stimulation using scalp potentials: implications for clinical dose. *J Neural Engineering* 2013;10(3):036018. doi: 10.1088/1741-2560/10/3/036018 [PDF](#)

Dmochowski J, Datta A, Huang Y, Richardson JC, Bikson M, Fridriksson J, Parra KC. Targeted Transcranial Direct Current Stimulation for Rehabilitation after Stroke. *J Neuroimage* 2013; 75:12-19 [PDF](#)

Moreno-Duarte I, Morse L, Alam M, Bikson M, Zafonte R, Fregni F. Targeted therapies using electric and magnetic neural stimulation for the treatment of chronic pain in spinal cord injury. *Neuroimage* 2013; 85(3) 1003-1013 [PDF](#)

Okano AH, Fontes EB, Montenegro RA, Farinatti PV, Cyrino ES, Min LL, Bikson M, Noakes TD. Brain stimulation modulates the autonomic nervous system, rating of perceived exertion and performance during maximal exercise. *British Journal of Sports Medicine* 2013; epub [PDF](#)

Cano T, Morales-Quezada JL, Bikson M, Fregni F. Methods to focalize noninvasive electrical brain stimulation: principles and future clinical development for the treatment of pain. *Expert Reviews Neurotherapy* 2013; 13(5):465-7 [Proof](#) [PDF](#)

Rahman A, Reato D, Arlotti M, Gasca F, Datta A, Parra LC, Bikson M. Cellular Effects of Acute Direct Current Stimulation: Somatic and Synaptic Terminal Effects. *Journal of Physiology* 2013; 591.10: 2563-2578 [PDF](#)

Truong DQ, Magerowski G, Blackburn GL, Bikson M, Alonso-Alonso M. Computational modeling of transcranial direct current stimulation (tDCS) in obesity: impact of head fat and dose guidelines. *Neuroimage Clinical* 2013; 2:759-766 [PDF](#)

Edwards D, Cortes M, Datta A, Minhas P, Wassermann EM, Bikson M. Physiological and modeling evidence for focal transcranial electrical brain stimulation in humans: a basis for high-definition tDCS *NeuroImage* 2013; 74: 266-275 [PDF](#)

Villamar MF, Volz MS, Datta A, Bikson N, DaSilva AF, Fregni F. Technique and Considerations in the Use of 4x1 Ring High-definition Transcranial Direct Current Stimulation (HD-tDCS). *JOVE* 2013; (77) doi: 10.3791/50309. [WATCH](#)

Chrysikou EG, Hamilton RH, Coslett HB, Datta A, Bikson N, Thompson-Schill SL. Non-invasive transcranial direct current stimulation over the left

prefrontal cortex facilitates cognitive flexibility in tool use. *Cognitive Neuroscience* 2013; 4(2) 81-89 [TEXT](#)

Villamar MF, Wivatvongvana P, Patumanond J, Bikson M, Truong DQ, Datta A, Fregi F. Focal modulation of primary motor cortex in Fibromyalgia using 4x1-Ring High-Definition Transcranial Direct Current Stimulation (HD-tDCS): Immediate and delayed analgesic effects of cathodal and anodal stimulation. *J Pain* 2013; 14(4): 371-83 [PDF](#)

Reato D, Gasca F, Datta, A, Bikson M, Marshall L, Parra LC. Transcranial electrical stimulation accelerates human sleep homeostasis. *PLOS Computational Biology* 2013; 9(2): e1002898. doi:10.1371/journal.pcbi.1002898 [LINK](#)

Hahn C, Rice J, Macuff S, Minhas P, Rahman A, Bikson M. Methods for extra-low voltage transcranial Direct Current Stimulation: Current and time dependent impedance decreases. *Clinical Neurophysiology* 2013; 124(3) 551-556 [PDF](#)

Datta A, Dmochowski J, Guleyupoglu B, Bikson N, Fregni F. Cranial Electrotherapy Stimulation and transcranial Pulsed Current Stimulation: A computer based high-resolution modeling study *Neuroimage* 2012; 65:280-287. [PDF](#)

Kuo HI, Datta A, Bikson M, Minhas P, Paulus W, Kuo MF, Nitsche MA. Comparing cortical plasticity induced by conventional and high-definition 4x1 ring tDCS: a neurophysiological study *Brain Stimulation* 2013; 6(4):644-8 [PDF](#) [Journal Link](#)

Weiss SA, McKhann G, Goodman R, Emerson RG, Trevelyan A, Bikson M, Schevon CA. Field effects and ictal synchronization: insights from in homine observations *Frontiers of Human Neuroscience* 2013; 7:828 [Free Journal Link](#)

2012

Datta A, Truong D, Minhas P, Parra LC, Bikson M. Inter-individual variation during transcranial Direct Current Stimulation and normalization of dose using MRI-derived computational models. *Frontiers in Neuropsychiatric*

Imaging and Stimulation. 2012; 3:91. doi: 10.3389/fpsy.2012.00091 [Open Access](#)

Bikson M, Rahman A, Datta A. Computational Models of Transcranial Direct Current Stimulation. *Clinical EEG and Neuroscience* . 2012; 43(3) 176-183 [PDF](#)

Dasilva AF, Mendonca ME, Zaghi S, Lopes M, Dossantos MF, Spierings EL, Bajwa Z, Datta A, Bikson M, Fregni F. tDCS-Induced Analgesia and Electrical Fields in Pain-Related Neural Networks in Chronic Migraine. *Headache*. 2012; 52(8) 1283-95 [PDF](#)

Medina J, Beauvais J, Datta A, Bikson M, Coslett HB, Hamilton RH. Transcranial direct current stimulation accelerates allocentric target detection. *Brain Stimulation*. 2012; 6(3) 433-9 [PDF Journal Link](#)

Dmochowski JP, Bikson M, Parra LC. The point spread function of the human head and its implications for transcranial current stimulation. *Phys Med Biol*. 2012; 57(20) 6459-77 [PDF](#)

Kronberg G, Bikson M. Electrode assembly design for transcranial Direct Current Stimulation: A FEM modeling study. *Conf Proc IEEE Eng Med Biol Soc*. 2012; 891-5. doi: 10.1109/EMBC.2012.6346075 [PDF](#)

Truong DQ, Magerowski G, Pascual-Leone A, Alonso-Alonso M, Bikson M. Finite Element Study of Skin and Fat Delineation in an Obese Subject for Transcranial Direct Current Stimulation. *Conf Proc IEEE Eng Med Biol Soc*. 2012; 6587-90. doi: 10.1109/EMBC.2012.6347504 [PDF](#)

Truong DQ, Datta A, Xu J, Fregni F, Bikson M. Optimization of Prefrontal Cortex transcranial Direct Current Stimulation via a Combined High Definition and Conventional Electrode Montage: A FEM modeling studying. *Conf Proc IEEE Eng Med Biol Soc*. 2012; Slides: [PDF](#)

Minhas P, Bikson M, Woods A, Rosen A, Kessler S. Transcranial Direct Current Stimulation in Pediatric Brain: A computational modeling study. 859-62. doi: 10.1109/EMBC.2012.6346067. *Conf Proc IEEE Eng Med Biol Soc*. 2012; [PDF Free PMIC](#)

Arlotti M, Rahman A, Minhas P, Bikson M. Axon terminal polarization induced by weak uniform DC electric fields: a modeling study. *Conf Proc IEEE Eng Med Biol Soc.* 2012; 4575-8. doi: 10.1109/EMBC.2012.6346985 [PDF](#)

Dmochowski J, Bikson M, Datta A, Richardson J, Fridriksson J, Parra L. On the Role of Electric Field Orientation in Optimal Design of Transcranial Electrical Stimulation *Conf Proc IEEE Eng Med Biol Soc.* 2012; 6426-9. doi: 10.1109/EMBC.2012.6347465. [PDF](#)

Caparelli-Daquer E, Zimmermann TJ, Mooshagian E, Parra L, Rice J, Datta A, Bikson M, Wassermann EA. Pilot Study on Effects of 4x1 High-Definition tDCS on Motor Cortex Excitability. *Conf Proc IEEE Eng Med Biol Soc.* 2012; 735-8. doi: 10.1109/EMBC.2012.6346036. [PDF](#)

Bikson M, Rahman A, Datta A, Fregni F, Merabet L. High-Resolution Modeling Assisted Design of Customized and Individualized Transcranial Direct Current Stimulation Protocols. *Neuromodulation: Technology at the Neural Interface.* 2012; 15:306-315 [PDF](#)

Elwassif MM, Datta A, Rahman A, Bikson M. Temperature control at DBS electrodes using a heat sink: experimentally validated FEM model of DBS lead architecture. *Journal of Neural Engineering* . 2012; 8(4) [PDF](#)

Borckardt JJ, Bikson M, Frohman H, Reeves ST, Datta A, Bansal V, Madan A, Barth K, George MS. A Pilot Study of the Tolerability and Effects of High-Definition Transcranial Direct Current Stimulation (HD-tDCS) on Pain Perception. *Journal of Pain* . 2012; 13(2): 112-120 [PDF](#)

Peterchev AV, Wagner TM, Miranda PC, Nitsche MA, Paulus W, Lisanby SG, Pascual-Leone A, Bikson M. Fundamentals of transcranial electric and magnetic stimulation dose: definition, selection, and reporting practices. *Brain Stimulation* 2012; 5:435-53 [PDF](#)

Bikson M, Reato D, Rahman A. Cellular effects of electric and magnetic fields: insights animal models and in slice. In *Transcranial Brain Stimulation (Frontiers in Neuroscience)* 2012 ed. Carolo Miniussi, Walter Paulus, Paolo M. Rossini. CRC Press. ISBN 978-1439875704 p55-92 [PDF](#)

Bikson M, Datta A. Guidelines for precise and accurate models of tDCS. *Brain Stimulation* 2012; 5:430-4 [PDF](#)

Brunoni AR, Nitsche MA, Bolognini N, Bikson M et al. Clinical research with transcranial direct current stimulation (tDCS): Challenges and Future Directions. *Brain Stimulation* 2012; 5(3): 175-95 [PDF](#)

2011

Dasilva AF, Volz MS, Bikson M, Fregni F. Electrode positioning and montage in transcranial direct current stimulation. *JOVE* . 2011; (51) [video](#)

Turkeltaub PE, Benson J, Hamilton RH, Datta A, Bikson M, Coslett HB. Left lateralizing transcranial direct current improves reading efficiency. *Brain Stimulation* 2011; 5:201-7 [PDF](#)

Dmochowski JP, Datta A, Bikson M, Su Y, Parra LC. Optimized multi-electrode stimulation increases focality and intensity at target. *Journal of Neural Engineering* . 2011; 8(4) [PDF](#)

Datta A, Baker J, Bikson M, Fridriksson F. Individualized model predicts brain current flow during transcranial direct-current stimulation treatment in responsive stroke patient. *Brain Stimulation* 2011; 4: 169-74 [PDF](#) [Pub Med](#) [HTML](#)

Halko M, Datta A, Plow E, Scaturro J, Bikson M, Merabet L. Neuroplastic changes following rehabilitative training correlate with regional electrical field induced with tDCS. *NeuroImage* . 2011; 57: 885-891 [PDF](#)

Mendonca ME, Santana MB, Baptista AF, Datta A, Bikson M, Fregni D, Araujo CP. Transcranial DC Stimulation in Fibromyalgia: Optimized cortical target supported by high-resolution computational models. *Journal of Pain* . 2011; 12(5):610-617 [PDF](#) [COVER](#)

Minhas P, Datta A, Bikson M. Cutaneous perception during tDCS: Role of electrode shape and sponge salinity. *Clinical Neurophysiology* . 2011; 122:637-638 [PDF](#)

Bikson M, Datta A, Elwassif M, Bansal V, Peterchev AV. Introduction to Electrotherapy Technology. in *Brain Stimulation in the Treatment of Pain*. ed.

Helena Knotkova, Ricardo Crucianim, and Joav Merrick. Nova Science, New York 2011 ISBN 978-1-60876-690-1 [PDF](#)

2010

Reato D, Rahman A, Bikson M, Parra L. Low-intensity electrical stimulation affects network dynamics by modulating population rate and spike timing. *Journal of Neuroscience*. 2010; 30(45):15067-79 [PDF](#)

Servais EL, Rizk NP, McGwyver LO, Rusch VW, Bikson M, Adusumilli PS. Real-time intraoperative detection of tissue hypoxia in gastrointestinal surgery by Wireless Pulse Oximetry (WiPOX). *Surgical Endoscopy*. 2010; 25(5):1383-9

Datta A, Rahman A, Scaturro J, Bikson M. Electrode montages for tDCS and weak transcranial electrical stimulation Role of "return" electrode's position and size. *Clinical Neurophysiology*. 2010; 121:1976-1978 [PDF](#)

Minhas P, Patel J, Bansal V, , Ho J, Datta A, Bikson M. Electrodes for high-definition transcutaneous DC stimulation for applications in drug-delivery and electrotherapy, including tDCS. *Journal of Neuroscience Methods* . 2010; 190(2):188-97 [PDF](#)

Datta A, Bikson M, Fregni F. Transcranial direct current stimulation in patients with skull defects and skull plates: High-resolution computational FEM study of factors altering cortical current flow. *Neuroimage* . 2010; 52(4):1268-78 [PDF](#)

Sunderam S, Gluckman B, Reato D, Bikson M. Toward rational design of electrical stimulation strategies for epilepsy control. *Epilepsy & Behavior* . 2010; 17:6-22 [PDF](#)

Lopez-Quitero SV, Datta A, Amaya R, Elwassif M, Bikson M, Tarbell JM. DBS-relevant electric fields increase hydraulic conductivity of in vitro endothelial monolayers. *Journal of Neural Engineering* . 2010; 7(1) [PDF](#)

2009

Radman T, Ramos RL, Brumberg JC, Bikson M. Role of cortical cell type and morphology in sub- and suprathreshold uniform electric field stimulation. *Brain Stimulation*. 2009; 2(4):215-228. [PDF](#)

Datta A, Bansal V, Diaz J, Patel J, Reato D, Bikson M. Gyri -precise head model of transcranial DC stimulation: Improved spatial focality using a ring electrode versus conventional rectangular pad. *Brain Stimulation*. 2009; 2(4):201-207. [PDF](#)

Datta A, Elwassif M, Bikson M. Establishing safety limits for transcranial direct current stimulation *Clinical Neurophysiology* . 2009; 120:1033-1034 [PDF](#)

Bikson M, Datta A, Elwassif M. Bio-heat transfer model of transcranial DC stimulation: Comparison of conventional pad versus ring electrode *IEEE EMBS*. 2009 [PDF](#)

2008

Bikson M, Bulow P, Stiller JW, Datta A, Battaglia F, Karnup SV, Postolache TT. Transcranial direct current stimulation for major depression: a general system for quantifying transcranial electrotherapy dosage. *Current Treatment Options in Neurology*. 2008; 10:377-85. [PDF](#)

Datta A, Elwassif M, Battaglia F, Bikson M. Transcranial current stimulation focality using disc and ring electrode configurations: FEM analysis. *Journal of Neural Engineering*. 2008; 5:163-174. [PDF](#)

An JH, Radman T, Su Y, Bikson M. Effects of glucose and glutamine concentration in the formulation of the artificial cerebrospinal fluid (ACSF). *Brain Research*. 2008; 1218:1586-93 [PDF](#)

Su Y, Radman T, Vaynshteyn J, Parra LC, Bikson M. Effects of high-frequency stimulation on epileptiform activity in vitro: ON/OFF control paradigm. *Epilepsia*. 2008; 49:1586-93 [PDF](#)

2007

Radman T, Su Y, An JH, Parra L, Bikson M. Spike timing amplifies the effect of electric fields on neurons: Implications for endogenous field effects *Journal of Neuroscience*. 2007; 27:3030-3036. [PDF](#)

Fox JE, Bikson M, Jefferys JG. The effect of neuronal population size on the

development of epileptiform discharges in the low calcium model of epilepsy.
Neuroscience Letters. 2007; 411:158-61.
