

CURRICULUM VITAE
The Johns Hopkins University School of Medicine

December, 2017

William S. Anderson, Ph.D., M.D.

DEMOGRAPHIC AND PERSONAL INFORMATION

Current Appointments

2013-present Associate Professor of Neurosurgery, The Johns Hopkins University School of Medicine

2011-present Attending Neurosurgeon, The Johns Hopkins Hospital

Personal Data

The Johns Hopkins Hospital
Department of Neurosurgery, Meyer 8-181
600 N Wolfe Street
Baltimore, MD 21287
Phone: +1(443)287-1609
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Education and Training:

Undergraduate

1990 B.S., (*summa cum laude*), Physics, Texas A&M University

Doctoral Graduate

1992 M.A., Physics, Princeton University

1997 Ph.D., Physics, Princeton University

2001 M.D., The Johns Hopkins University

Postdoctoral

2001-02 Intern, General Surgery, The Johns Hopkins Hospital

2002-08 Resident, Neurosurgery, The Johns Hopkins Hospital

Professional Experience:

2008- 10 Instructor of Surgery, Harvard Medical School

2008-10 Associate Surgeon, The Brigham and Women's Hospital

2011-13 Assistant Professor of Neurosurgery, The Johns Hopkins University School of Medicine

2011-pres Attending Neurosurgeon, The Johns Hopkins Hospital

2012-pres Core Faculty, Institute for Computational Medicine, The Johns Hopkins University,
Whiting School of Engineering

2013-pres Associate Professor of Biomedical Engineering, The Johns Hopkins University

RESEARCH ACTIVITIES

Peer Reviewed Original Science Publications:

1. **Anderson WS**, Armitage JC, Dunn E, Heinrich JG, Lu C, McDonald KT, Weckel J, Zhu Y. Electron attachment, effective ionization coefficient, and electron drift velocity for CF₄ gas mixtures. *Nucl Instr Meth* 1992;A323:273-279.
2. Young AR, **Anderson WS**, Calaprice FP, Cates GD, Jones GL, Krieger DA, Vogelaar RB. Laser oriented 36K for time reversal symmetry measurements. *Phys Rev C* 1995; 52:R464-R467.
3. **Anderson WS**. Development of a Test of Time Reversal Invariance in 19Ne Beta Decay. Doctoral dissertation. Princeton University 1997.
4. **Anderson WS**, Sheth RN, Bencherif B, Frost JJ, Campbell JN. Naloxone increases pain induced by topical capsaicin in healthy human volunteers. *Pain* 2002;99:207-216.

5. Kim JH, Veldhuijzen D, **Anderson WS**, Lee J-I, Lee H-T, Ohara S, Lenz FA. Pain and temperature encoding in the human thalamic somatic sensory nucleus (ventra caudal – Vc): Inhibition-related bursting mediates sensations evoked by somatic stimuli. *Thal Rel Sys* 2005; 3(4):305-314.
6. Ohara S, **Anderson WS**, Lawson HC, Lee HT, Lenz FA. Endogenous and exogenous modulators of potentials evoked by a painful cutaneous laser (LEPs). *Acta Neurochir* 2006;99:77-79.
7. **Anderson WS**, Ohara S, Lawson HC, Treede R-D, Lenz FA. Plasticity of pain-related neuronal activity in the human thalamus. *Prog Brain Res* 2006;157:353-364.
8. **Anderson WS**, Kudela P, Cho RJ, Bergey GK, Franaszczuk P. Studies of stimulus parameters for seizure disruption using neural network simulations. *Biol Cybern* 2007;97:173-194.
9. **Anderson WS**, Lawson HC, Belzberg AJ, Lenz FA. Selective denervation of the levator scapulae muscle: an amendment to the Bertrand procedure for the treatment of spasmodic torticollis. *J Neurosurg* 2008;108:757-763.
10. **Anderson WS**, Kossoff EH, Bergey GK, Jallo GI. Implantation of a responsive neurostimulator in patients with refractory epilepsy. *Neurosurg Focus* 2008;25(3):E12.
11. **Anderson WS**, Weinberg S, Kudela P, Bergey GK, Franaszczuk PJ. Phase dependent stimulation effects on bursting activity in a neural network cortical simulation. *Epi Res* 2009;84:42-55.
12. **Anderson WS**, Weiss N, Lawson HC, Ohara S, Rowland L, Lenz FA. Demonstration of imagined- and phantom-movement related neuronal signals in human thalamus. *Neuroreport* 2011;22(2):78-82.
13. Truccolo W, Donoghue J, Hochberg L, Eskandar E, Madsen JR, **Anderson WS**, Halgren E, Cash SS. Single neuron dynamics during human focal seizures. *Nature Neurosci* 2011;14(5):635-641.
14. Santaniello S, Burns SP, Madsen J, Singer J, **Anderson WS**, Sarma SV. Quickest detection of seizure onsets in drug-resistant patients: An optimal control approach. *Epilepsy and Behavior* 2011;22:49-60.
15. **Anderson WS**, Azhar F, Kudela P, Bergey GK, Franaszczuk PJ. Epileptic seizures from abnormal networks: Why some seizures defy predictability. *Epi Res* 2012;99(3):202-213.
16. Peyrache A, Dehghani N, Eskandar E, Madsen J, **Anderson WS**, Donoghue J, Hochberg L, Halgren E, Cash S, Destexhe A. Spatio-temporal dynamics of neocortical excitation and inhibition during human sleep. *PNAS* doi: 10.1073/pnas.1109895109.
17. Chen LL, Madhavan R, Rapoport BI, **Anderson WS**. A method for real-time cortical oscillation detection and phase-locked stimulation. *Conf Proc IEEE Eng Med Biol Soc* 2011;2011:3087-3090.
18. Azhar F, **Anderson WS**. Prediction of single neuron spikes in sensorimotor cortex may reflect generic properties of locally connected networks. *Neural Comp* 2012;24(10):2655-2677.
19. Bansal A, Singer J, **Anderson WS**, Golby A, Madsen J, Kreiman G. Temporal stability of visually selective responses in intracranial field potentials recorded from human occipital and temporal lobes. *J Neurophysiol* 2012;108(11):3073-3086.
20. Lewis LD, Weiner VS, Mukamel EA, Donoghue JA, Eskandar EN, Hochberg L, Madsen JR, **Anderson WS**, Cash SS, Brown EN, Purdon PL. Rapid fragmentation of neuronal networks at the onset of propofol-induced unconsciousness. *PNAS* doi:10.1073/pnas.121090109.
21. Hotson G, Fifer MS, Acharya S, **Anderson WS**, Thakor NV, Crone NE. Electrographic decoding of ipsilateral reach in the setting of contralateral arm weakness from a cortical lesion. *Conf Proc IEEE Eng Med Biol Soc* 2012;2012:4104-4107.
22. Burns SP, Sritharan D, Jouny C, Bergey G, Crone N, **Anderson WS**, Sarma SV. A network analysis of the dynamics of seizure. *Conf Proc IEEE Eng Med Biol Soc* 2012;2012:4684-4687.
23. Chen LL, Madhavan R, Rapoport BI, **Anderson WS**. Real-time brain oscillation detection and phase-locked stimulation using autoregressive spectral estimation and forward prediction. *IEEE Trans Biomed Eng* 2013;60(3):753-762. PMID: 21292589.
24. Fifer M, Hotson G, Brock W, Wang Y, Johannes M, Katyal K, Helder J, Para M, Vogelstein RJ, **Anderson W**, Thakor N, Crone N. Intuitive online ECoG control of reaching and grasping with the modular prosthetic limb. *Trans Neural Systems Rehab Eng* 2014;22(3):695-705.
25. McMullen D, Hotson G, Fifer MS, Katyal KD, Wester BA, McGee TG, Harris A, Johannes MS, Vogelstein RJ, **Anderson WS**, Thakor NV, Crone NE. Demonstration of a semi-autonomous hybrid brain-machine interface using human intracranial EEG, eye tracking, and computer vision to control a robotic upper limb prosthetic. *IEEE Trans Neural Sys Rehab Eng* 2014;22(4):784-796.
26. Hao S, Subramanian S, Jordan A, Yaffe R, Santaniello S, Jouny C, Bergey G, **Anderson WS**, Sarma SV. Computing network-based features from intracranial EEG time series data: Application to seizure focus localization. *Conf Proc IEEE Eng Med Biol Soc* 2014;2014:5812-5815.
27. Basu I, Kudela P, **Anderson WS**. Determination of seizure propagation across microdomains using spectral measures of causality. *Conf Proc IEEE Eng Med Biol Soc* 2014;2014:6349-6352.
28. Tang H, Buia C, Madhavan R, Crone N, Madsen J, **Anderson WS**, Kreiman G. Spatiotemporal dynamics underlying object completion in human ventral visual cortex. *Neuron* 2014;83(3):736-748.

29. Eliades S, Crone N, **Anderson W**, Ramadoss D, Lenz F, Boatman-Reich D. Adaptation of auditory high-gamma responses in human cortex. *J Neurophysiol* 2014;**112**(9):2147-2163.
30. Burns SP, Santaniello S, Yaffe RB, Jouny C, Crone N, Bergey G, **Anderson WS**, Sarma SV. Network dynamics of the brain and influence of the epileptic seizure onset zone. *PNAS* 2014; **111**(49):E5321-E5330.
31. Madhavan R, Millman D, Tang H, Crone NE, Lenz FA, Tierney TS, Madsen JR, Kreiman G, **Anderson WS**. Decrease in gamma-band activity tracks sequence learning. *Front Syst Neurosci* 2014;**8**:222.
32. Singer J, Madsen J, **Anderson W**, Kreiman G. Sensitivity to timing and order in human visual cortex. *J Neurophysiol* 2015;**113**(5):1656-1669.
33. Veerakumar A, Cheng JJ, Sunshine A, Zorowitz RD, **Anderson WS**. Baclofen dosage after traumatic spinal cord injury: A multi-decade retrospective analysis. *Clin Neurol Neurosurg* 2015;**129**:50-56.
34. Hotson G, Fifer MS, Acharya S, Benz H, **Anderson WS**, Thakor NV, Crone NE. Coarse electrocorticographic decoding of ipsilateral reach in patients with brain lesions. *PLOS One* 2014;**9**(12):e115236.
35. Qureshi A, Cheng J, Sunshine A, Wu A, Pontone G, Cascela N, Lenz F, Grill S, **Anderson WS**. Postoperative symptoms of psychosis after deep brain stimulation in Parkinson's patients. *Neurosurg Focus* 2015;**38**(6):E5.
36. Holroyd KB, Fosdick L, Smith G, Leoutsakos J-M, Munro C, Oh E, Drake K, Rosenberg PB, **Anderson WS**, Salloway S, Pendergrass C, Burke A, Wolk DA, Tang-Wai DF, Ponce FA, Assad WF, Sabbagh M, Okun MS, Baltuch G, Foote KD, Targum S, Lozano AM, Lyketsos CG. Deep brain stimulation targeting the fornix for mild Alzheimer Dementia: Design of the Advance randomized controlled trial. *Clin Trials*: Accepted, April 2015.
37. McMullen DP, Rosenberg P, Cheng J, Smith GS, Lyketsos C, **Anderson WS**. Bilateral cortical encephalomalacia in a patient implanted with bilateral deep brain stimulation for Alzheimer's Disease: Case report. *Alzheimer Dis Assoc Disord* 2015 PMID: PMC4592682.
38. Basu I, Kudela P, Korzeniewska A, Franaszczuk P, **Anderson WS**. A study of the dynamics of seizure propagation across micro domains in the vicinity of the seizure onset zone. *J Neural Eng* 2015;**12**(4):046016.
39. Ponce FA, Asaad W, Foote KD, **Anderson WS**, Cosgrove GR, Baltuch GH, Beasley K, Fosdick L, Oh ES, Targum SD, Smith GW, Lyketsos CG, Lozano AM. Bilateral fornix deep brain stimulation for Alzheimer's disease: Surgical safety in the ADvance trial. *J Neurosurg* doi/abs/10.3171/2015.6.JNS15716.
40. Kudela P, **Anderson WS**. Computational modeling of subdural cortical stimulation: A quantitative spatiotemporal analysis of action potential initiation in a high density multicompartment model. *Neuromod: Tech Neural Interface* 2015;**18**(7):552-565.
41. Liu CC, Chien JH, Kim JH, Chuang YF, Cheng DT, **Anderson WS**, Lenz FA. Cross-frequency coupling in deep brain structures upon processing the painful sensory inputs. *Neurosci* 2015;**303**:412-421.
42. Wang Y, Fifer M, Flinker A, Korzeniewska A, Cervenka M, **Anderson W**, Boatman D, Crone N. Spatial-temporal functional mapping (STFM) of language with online spectral analysis of electrocorticography. *Neurol* 2016; doi: pii: 10.1212/WNL.0000000000002525.
43. Wei Z, Gordon CR, Bergey GK, Sacks JM, **Anderson WS**. Implant site infection and bone flap osteomyelitis associated with the NeuroPace responsive neurostimulation system. *World Neurosurg* 2015; doi:10.1016/j.wneu.2015.11.106.
44. Hotson G, McMullen D, Fifer M, Johannes M, Para M, Armiger R, **Anderson W**, Thakor N, Brock W, Crone N. Individual finger control of the modular prosthetic limb using high-density electrocorticography in a human subject. *J Neural Eng* 2016;**13**(2):026017.
45. Sacre P, Sarma SV, Guan Y, **Anderson WS**. Electrical neurostimulation for chronic pain: On selective relay of sensory neural activities in myelinated nerve fibers. *Conf Proc IEEE Eng Med Biol Soc* 2015;**2015**:4705-4708.
46. Tang H, Yu H-Y, Chou C-C, Crone NE, Madsen JR, **Anderson WS**, Kreiman G. Cascade of neural processing orchestrates cognitive control in human frontal cortex. *eLife*: 2015-19739, Accepted, Feb, 2016.
47. Salimpour Y, Wei Z, Phan D, **Anderson WS**. Does transcranial direct current stimulation actually deliver DC stimulation. *Brain Stimulation* doi: 10.1016/j.brs.2016.04.008.
48. Lozano AM, Fosdick L, Chakravarty MM, Leoutsakos JM, Munro C, Oh E, Drake KE, Lyman CH, Rosenberg PB, **Anderson WS**, Tang-Wai DF, Pendergrass JC, Salloway S, Asaad WF, Ponce FA, Burke A, Sabbagh M, Wolk DA, Baltuch G, Okun MS, Foote KD, McAndrews M, Giacobbe P, Targum SD, Lyketsos CG, Smith G. *J Alzheimers Dis* 2016; doi:10.3233/JAD-160017.
49. Taylor J, **Anderson WS**, Brandt J, Mari Z, Pontone GM. Neuropsychiatric complications of Parkinson disease treatments: Importance of multidisciplinary care. *Am J Geriatr Psych* 2016; doi: 10.1016/j.jagp.2016.08.017.
50. Babajani-Feremi A, Wheless JW, Papanicolaou JW, Wang Y, Fifer MS, Flinker A, Korzeniewska A, Cervenka MC, **Anderson WS**, Boatman-Reich DF, Crone NE. Spatial-temporal functional mapping of language at the bedside with electrocorticography. *Neurol* 2016;**87**(24):2604.
51. Boothe DL, Yu AB, Kudela P, **Anderson WS**, Vettel J, Franaszczuk PJ. Impact of neuronal membrane damage on the local field potential in a large scale simulation of cerebral cortex. *Front Neurol* 2017;**8**:236.
52. Gordon CR, Santiago GF, Huang J, Bergey GK, Liu J, Armand M, Brem H, **Anderson WS**. First in-human experience with complete integration of neuromodulation device within a customized cranial implant. *Operative Neurosurg*: 2017 Oct 6.

53. Salimpour Y, Chang-Chia L, Webber WR, Mills KA, **Anderson WS**. Subdural recordings from an awake human brain for measuring current intensity during transcranial direct current stimulation. Conf Proc IEEE EMBS 2017;2017:1110-1113.
54. Sadashivaiah V, Sacre P, Guan Y, **Anderson WS**, Sarma SV. Modeling electrical stimulation of mammalian nerve fibers: A mechanistic versus probabilistic approach. Conf Proc IEEE EMBS 2017;2017:3868-3871.
55. Salimpour Y, Chien J-H, Liu C-C, Lee S, Guadix S, Mills KA, **Anderson WS**. Touch-free reaching task for Parkinson's disease patients: A motion sensing approach. Conf Proc IEEE EMBS 2017;2017:3918-3921.
56. Gault JM, Davis R, Cascella NG, Saks ER, Corripio-Collado I, **Anderson WS**, olincy A, Thompson JA, Pomarol-Clotet E, Sawa A, Daskalakis ZJ, Lipsman N, Abosch A. Approaches to neuromodulation for schizophrenia. J Neurol Neurosurg Psych 2017; doi: 10.1136/jnnp-2017-316946.

Extramural Funding:

Current

- | | |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9/1/2017-8/31/2020 | Neuronal Mechanisms of Human Episodic Memory
1U01NS103792
NIH-NINDS U01 (Brain Initiative)
\$122,137/yr X 3 years
PI: U. Rutishauser
Co-PI, 5% |
| 9/1/2016-8/31/2019 | Subthalamic and Corticosubthalamic Coding of Speech Production
1U01NS098969
NIH-NINDS U01 (Brain Initiative)
\$32,466/yr X 3 years
PI: M. Richardson
Co-PI (with M. Richardson & N Crone), 5% |
| 8/1/2016-5/31/2020 | Towards Pain Control: Synergizing Computational and Biological Approaches to Develop a Tractable Model of the Dorsal Horn Circuit
R01AT009401
NIH/NSF CRCNS
\$57,847/yr X 4 years
PI: S. Sarma
Co-PI (with S. Sarma and Y Guan), 8% |

Previous

- | | |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9/30/2012-8/31/2017 | Deep Brain Stimulation for Alzheimer's Disease
1R01AG042165-01A1 PAR-11-100
NIH R01
\$461561/yr X 5 years
PI: A.M. Lozano, C.G. Lyketsos
Co-I, 8% |
| 8/1/2014-7/31/2017 | Multi-scale Dynamics of Cortical Adaptation for Human Auditory Detection
W911NF-12-R-0012-02 Proposal No. 65459-LS
\$58,580/yr X 3 years
CoPI (with D. Boatman): W.S. Anderson, 10% |
| 4/1/2010-3/31/2015 | Computational Modeling of Epileptic Activity Using a Hybrid Compartment Technique
NIH-NINDS K08 (1K08NS066099-01A1)
NIH / NINDS
\$1,378,890
PI: W.S. Anderson, 50% |
| 10/1/2012-9/30/2015 | Biophysical Model of Cortical Dynamics
W911NF-12-R-0012
Department of the Army |

\$276,390
PI: W.S. Anderson, 1%

- 1/1/2014-12/31/2015 Active Computational Modeling of Spinal Cord Stimulation
The Neurosurgery Pain Research Institute at Johns Hopkins Award
\$80,000/yr X 2 years
PI: W.S. Anderson, 0%
- 9/1/2014-8/31/2015 A Novel Tool for Seizure Localization in Medically Refractive Epilepsy
Coulter Foundation Translational Research Award
\$100,000 X 1 year
CoPI (with S. Sarma & N. Crone): W.S. Anderson, 7.5%
- 7/1/2005-6/30/2006 Studies of Stimulus Parameters for Seizure Disruption using Neural Network Simulations
Research and Training Fellowship for Clinicians
Epilepsy Foundation
\$50,000
PI: W.S. Anderson, 100%
- 8/1/2008-7/31/2011 BWH Startup Fund (W. Stanley Anderson Research Fund)
The Brigham and Women's Hospital Department of Neurosurgery
\$300,000
PI: W.S. Anderson, 50%
Funds to support the development of computational simulation work, and functional neurosurgery laboratory.
- 4/1/2010-3/31/2012 The Impact of Interictal Spike Events on Visual Object Recognition
Charles H. Hood Foundation Child Health Research Award
The Charles H. Hood Foundation
\$150,000/yr
PI: W.S. Anderson, 1%
- 10/1/2010-9/30/2011 Memory Alteration through Theta Phase-Locked Electrical Stimulation
CIMIT Innovation Grant
Center for Integration of Medicine & Innovative Technology
\$70,000
PI: W.S. Anderson, 1%
Grant relinquished to G. Kreiman, Children's Hospital Boston upon move to Johns Hopkins
- 11/1/2011-8/31/2013 A Study of Spasticity and Pain in Spinal Cord Injury Patients
The Neurosurgery Pain Research Institute at Johns Hopkins Award
\$107,256
PI: W.S. Anderson, 0%

Research Program Building / Leadership:

- 08/ 2008-12/ 2010 Director of Epilepsy Research, Department of Neurosurgery, Brigham and Women's Hospital, Boston, MA
- 01/2011 – present Studies in Deep Brain Stimulation. Performing deep brain stimulation procedures for a variety of experimental protocols: (Obsessive Compulsive Disorder, Schizophrenia, Alzheimer's Disease, Tourette Syndrome, and Dystonia).
- 01/ 2011 – present Studies in Seizure Evolution and Dynamics. Performing computational modeling of evolving epileptiform activity in cortex. Comparative human brain recordings are being made using a wide variety of microelectrode recording systems in our Phase II invasively monitored epilepsy patient population.

IRB Activity:

1. JHM IRB NA_00037463 Reclaim DBS Therapy for Obsessive Compulsive Disorder. PI: **W.S. Anderson**. Approved 3/15/2012. Expires 2/22/2018.

2. JHM IRB NA_00073086 Thalamic Deep Brain Stimulation for the Treatment of Refractory Tourette Syndrome. PI: **W.S. Anderson**. Approved 11/29/2012. Expires 5/7/2018. FDA IDE approval granted 9/6/2012. IDE # G120131.
3. JHM IRB NA_00042065 Deep Brain Stimulation in Treatment Resistant Schizophrenia. P.I.: **W.S. Anderson**. Approved 6/12/2012. Expires 1/30/2018. FDA IDE approval granted 4/29/2011. IDE # G110033.
4. JHM IRB NA_00068826 Humanitarian Device Exemption for Deep Brain Stimulation for the Treatment of Dystonia. P.I.: **W.S. Anderson**. Approved 2/2/2012. Expires 6/7/2018.
5. JHM IRB NA_00046436 Computational Modeling of Epileptic Activity Using a Hybrid Compartment Technique. P.I.: **W.S. Anderson**. Approved 3/17/2011. Expires 10/10/2018.
6. JHM IRB NA_00068392 Retrospective Determination of Spasticity Predictors in Spinal Cord Injury Patients. P.I.: **W.S. Anderson**. Approved 12/16/2011. Expires 7/13/2018.
7. JHM IRB NA_00083392 Spike Train and Local Field Potential Analysis of Microelectrode Recordings Derived from Deep Brain Stimulation Surgeries. P.I.: **W.S. Anderson**. Approved 4/17/2013. Expires 2/1/2018.
8. JHM IRB00040308 Real Time Detection and Phase Locked Stimulation During Electrographic Rhythmic Activity in Invasively Monitored Epilepsy Patients. P.I.: **W.S. Anderson**. Approved 11/21/2014. Expires 7/5/2018.
9. JHM IRB00129916 A Survey-Based Study of Dry-Eye Associated Ocular Pain Occurring with other Chronic Pain Syndromes. P.I.: **W.S. Anderson**. Approved 5/12/2017. Expires 5/10/2018.

EDUCATIONAL ACTIVITIES

Educational Publications:

Invited Review Articles

1. **Anderson WS**, Lenz FA. Surgery insight: Deep brain stimulation for movement disorders. *Nature Clin Pract Neurol* 2006;**2**(6):310-320.
2. **Anderson WS**, Winberry J, Liu CC, Shi C, Lenz FA. Microelectrode recordings in neurosurgery. *Contemp Neurosurg* 2010;**32**:1-8.
3. **Anderson WS**, Lenz FA. Review of motor and phantom related imagery. *Neuroreport*, Accepted for Publication, September, 2011.

Reviews

1. **Anderson WS**, Jallo GI. Intrathecal baclofen therapy and the treatment of spasticity. *Neurosurg Quart* 2007; **17**:185-192.
2. **Anderson WS**, Lenz FA. Lesioning and stimulation as surgical treatments for psychiatric disorders. *Neurosurg Quart* 2009;**19**(2):132-143.
3. **Anderson WS**, Brandt J. The role of neuropsychological evaluation in epilepsy surgery candidates. *Neurosurg Quart* 2014; accepted.

Editorials

1. **Anderson WS**. Dopamine and memory: The proof! *Neurosurgery* 2009;**65**(6):N8.
2. **Anderson WS**. Inhibiting neural regeneration: PTPsigma gets in the way. *Neurosurgery* 2010;**66**(2):N10-11.
3. **Anderson WS**. Riding the waves: Intrinsic theta generation in the hippocampus. *Neurosurgery* 2010;**66**(4):N15-16.
4. **Anderson WS**. Finding meaning in the noise: cortical neuron spike prediction. *Neurosurgery* 2010;**66**(6):N13-14.
5. **Anderson W**. Exciting neurons: Controversies in cortical stimulation. *Neurosurgery* 2010;**67**(2):N20-N21.
6. **Anderson S**. Motor cortex oscillations – Enhancements observed during motion preparation. *Neurosurgery* 2010;**67**(4):N22-N23.
7. **Anderson S**. Theta phase-locked spike timing in the hippocampus: predicting strong memories. *Neurosurgery* 2010;**67**(6):N17-N19.
8. **Anderson S**. Red light, green light: Start / stop signals in nigrostriatal circuits. *Neurosurgery* 2011;**68**(2):N15-N16.
9. **Anderson WS**, Kreiman G. Neuroscience: What we cannot model, we do not understand. *Curr Biol* 2011; **21**(3):R123-R125.
10. **Anderson S**. Wiring the basal ganglia: Direct and indirect pathway glutamatergic innervation in mouse striatum. *Neurosurgery* 2011;**68**(4):N22-N23.
11. **Anderson WS**. False memory creation in lesioned rats: Déjà vu all over again. *Neurosurgery* 2011;**68**(6):N20-N21.
12. **Anderson WS**, Golby AJ. Editorial Comment on: "Motor cortex stimulation improves local cerebral glucose metabolism in the ipsilateral thalamus in patients with poststroke pain: Case report." *Neurosurgery* 2011;**69**:E469.
13. **Anderson WS**. A new mouse model of dystonia. *Neurosurgery* 2011;**69**:N14-N15.
14. **Anderson WS**, Lenz FA. A small step forward for spinal cord injury patients? *Nat Rev Neurol* 2011;accepted for publication.

15. Cheng JJ, **Anderson WS**. Changing neural networks with brain machine interfaces – Neuronal firing adaptations to BMI learning. *Neurosurgery* 2011;**69**(4):N18-N19.
16. Cheng JJ, **Anderson WS**. Enhancing memory via stimulation: A promising new technique? *Neurosurgery* 2011;**69**(6):N14-N16.
17. Cheng JJ, **Anderson WS**. Drowsy mice: Induced spindling and thalamic bursting studied via an optogenetic technique. *Neurosurgery* 2012;**70**(2):N18-N19.
18. Madhavan R, **Anderson WS**. State of the art in subdural grid design: A new flexible active electrode array. *Neurosurgery* 2012;**70**(4):N16-18.
19. Cheng JJ, **Anderson WS**. Higher field magnetic resonance imaging studies of mesial temporal pathology: A pathology and imaging correlative study. *Neurosurgery* 2012;**70**(6):N14-N15.
20. Cheng JJ, **Anderson WS**. Deep brain stimulation of entorhinal cortex shows early promise for enhancement of memory function. *Neurosurgery* 2012;**71**(2):N24-25.
21. Cheng JJ, **Anderson WS**. The role of the basal ganglia in decision making: A new fMRI study. *Neurosurgery* 2012;**71**(4):N14-N15.
22. Hotson G, **Anderson WS**. Bypassing the spinal cord: Functional electrical stimulation guided by electrocorticography decoding. *Neurosurgery* 2012;**71**(6):N17.
23. **Anderson WS**. Robotic arm control using extracellular action potential recordings in tetraplegic patients. *Neurosurgery* 2013;**72**(2):N14-15.
24. **Anderson WS**. Seeing is believing? A study of signal distortion produced by commercial cortical microelectrode recording elements. *Neurosurgery* 2013;**72**(4):N14-N15.
25. **Anderson W**. Putting on the brakes: Evidence for seizure inhibition and resistance in human microelectrode recordings. *Neurosurgery* 2013;**72**(6):N13-N14.
26. **Anderson W**. A computational model of neuronal spiking and cognitive tasks. *Neurosurgery* 2013;**73**(2):N13-14.
27. Badugu S, **Anderson W**. Dopamine as the fountain of youth?: Restoring decision making ability in older adults. *Neurosurgery* 2013;**73**(4):N19-20.
28. Boone C, **Anderson W**. Virtual taxi drivers: Network interactions underlying memory retrieval. *Neurosurgery* 2013;**73**(6):N16-17.
29. **Anderson WS**, Boatman D. Intrinsic cortical signal gain: Optogenetic silencing reveals active role of cortical amplification during sensory input. *Neurosurgery* 2014;**74**(2):N22-N23.
30. Basu I, **Anderson W**. Lies and statistics: Study advocates caution in interpreting tests of human neural responses. *Neurosurgery* 2014;**74**(4):N14-N15.
31. Basu I, **Anderson W**. Bilateral representation of sensory-motor transformations. *Neurosurgery* 2014;**75**(2):N15-N17.
32. Basu I, **Anderson W**. Bipolar vs monopolar stimulation for cortical mapping: Which is better? *Neurosurgery* 2014;**75**(4):N16-17.
33. Chien JH, **Anderson W**. Understanding transcranial magnetic stimulation: A new study of high-temporal-resolution cortical single-neuron responses with extensive artifact reduction. *Neurosurgery* 2014;**75**(6):N12-N13.
34. Cheng JJ, **Anderson WS**. Closed-loop deep brain stimulation successfully modulates hippocampal activity in an animal model. *Neurosurg* 2015;**76**(4):N13-15.
35. Şimşek H, **Anderson WS**. Review of: A case of lung cancer with brain metastases diagnosed after epileptic seizure. *J Clin Anal Med* 2015;doi: 10.4328/JCAM.3530.
36. Boone C, Salimpour Y, **Anderson WS**. Boo! Fear generalization in the primate amygdala. *Neurosurg* 2015;**76**(6):N11-N12.
37. Simsek H, **Anderson WS**. Cognitive impairment after deep brain stimulation surgery. *Neurosurg* 2015;**77**(2):N12-N13.
38. Salimpour Y, **Anderson WS**. Deep brain stimulation therapy in Parkinson's disease: The role of cortical phase-amplitude coupling reduction. *Neurosurg* 2015;**77**(4):N17-N19.
39. Boone C, **Anderson WS**. Single neuron markers of memory retrieval confidence. *Neurosurg* 2015;**77**(6):N19-20.
40. Kudela P, **Anderson WS**. High-resolution computational modeling of somatosensory cortex. *Neurosurg* 2016;**78**(4):N13-N14.
41. Boone C, Goodwin CR, **Anderson WS**. Iatrogenic Alzheimer Disease? Amyloid- β protein transmission between humans. *Neurosurg* 2016;**78**(6):N17-N18.
42. Chien V J-H, Wojtasiewicz T, **Anderson WS**. Analytical tools for functional connectivity: A new review. *Neurosurg* 2016;**79**(2):N16-N17.
43. Boone C, Wojtasiewicz T, **Anderson WS**. Characterization of a wearable dry electroencephalography system. *Neurosurg* 2016;**79**(4):N10-N11.
44. Negoita S, Boone C, **Anderson WS**. Directionality of medial prefrontal cortex and hippocampal interactions is task-dependent. *Neurosurg* 2016;**79**(6):N22-N24.
45. Purvis TE, Boone C, **Anderson WS**. Development of a clinically useful algorithm for tractography-based ventral intermediate nucleus targeting. *Neurosurg* **80**(5):N24-25.

46. Guadix S, **Anderson WS**. How do we decide? Macaque orbitofrontal cortex neurons encode available options independently in subjective decisions. *Neurosurg* **80**(3):N14-N16.

Case Reports

1. Raza SM, **Anderson WS**, Eberhart CG, Wolinsky J-P, Gokaslan Z. The application of surgical cordectomy in the management of an intramedullary/extramedullary atypical meningioma: case report and literature review. *J Spinal Disord Tech* 2005;18:449-454.
2. **Anderson WS**, Wang PP, Rigamonti D. Case of microarteriovenous malformation induced trigeminal neuralgia treated with radiosurgery. *J Headache Pain* 2006;7: 217-221.
3. Bookland M, **Anderson WS**, Biser-Rohrbaugh A, Jallo GI. Primary pineal malignant melanoma. *Pediatr Neurosurg* 2007;43(4):303-308.
4. **Anderson WS**, Moore LE, Ford E, Rigamonti D. Fatal case of intracerebral hemorrhage during gamma knife treatment for metastases. *Clin Neurol Neurosurg* 2008;110(8):838-842.
5. **Anderson WS**, Kiyofuji S, Conway JE, Busch C, North RB, Garonzik IM. Case of dysphagia and neuropathic facial pain treated with motor cortex stimulation. *Neurosurgery* 2009;65(3):E626.
6. Sure D, Dunn I, Norden A, **Anderson WS**. Intracerebral hemorrhage secondary to thrombocytopenia in a patient treated with temozolomide. *Clin Neurol Neurosurg* 2010; 112(8):741-742.
7. Vaitkevicius H, Erdemli HE, **Anderson WS**, Zamani AA, Friedlander RM, Folkerth RD. Biopsy neuropathology of cerebral ischemia associated with a developmental venous anomaly. *Clinical Neurol Neurosurg* 2013;**115**(5):621-623.
8. McMullen DP, Rosenberg P, Cheng J, Smith GW, Rosenberg P, Lyketsos C, **Anderson WS**. Bilateral cortical encephalomalacia in a patient implanted with bilateral deep brain stimulation for Alzheimer's disease: Case Report. *Alzh Dis Assoc Disord*: Accepted, Feb. 2015.
9. Salimpour Y, Ellison T, Neufeld N, **Anderson WS**, Zorowitz R. Intra-operative computed tomography confirmation of intrathecal drug delivery system catheter. *J Spine and Neurosurg*: Accepted, Feb. 2016.
10. Taylor J, Anderson WS, Brandt J, Mari Z, Pontone G. Neuropsychiatric complications of Parkinson's disease treatments: The importance of multidisciplinary care. *Am J Geri Psych*: Accepted, Aug. 2016.

Book Chapters, Monographs

1. Calaprice FP, **Anderson WS**, Jones GL, Young AR. Tests of time reversal invariance in nuclear beta decay. *AIP Conference Proceedings* 1993 270:153.
2. Ohara S, Weiss N, Hua S, **Anderson S**, Lawson C, Greenspan, JD, Lenz FA. Allodynia due to forebrain sensitization demonstrated by thalamic microstimulation. In: *Hyperalgesia: Molecular approaches and clinical treatment*. Handwerker HO and Brune K eds. (IASP Press, Seattle, 2004).
3. **Anderson WS**, James C, Carson BS. Trigeminal, glossopharyngeal, and geniculate neuralgias. In: *Encyclopedia of Pain*. Schmidt RE and Willis WD eds. (Springer Verlag, Heidelberg, 2007), p 20.
4. **Anderson S**, Ohara S, Weiss N, Lenz FA. Angina pectoris, neurophysiology, and psychophysics. In: *Encyclopedia of Pain*. Schmidt RE and Willis WD eds. (Springer Verlag, Berlin, 2007), pp 90-91.
5. Fernandez A, Ohara S, Weiss N, **Anderson S**, Lenz FA. Lateral thalamic pain-related cells in humans. In: *Encyclopedia of Pain*. Schmidt RE and Willis WD eds. (Springer Verlag, Berlin, 2007), pp 1045-1047.
6. Weiss N, Ohara S, **Anderson S**, Lenz FA. Thalamus, receptive fields, projected fields, human. In: *Encyclopedia of Pain*. Schmidt RE and Willis WD eds. (Springer Verlag, Berlin, 2007), pp 2454-2456.
7. **Anderson WS**, Jallo GI. Pediatric spinal injury. In: *Neurotrauma and critical care of the spine*. Jallo J and Vaccaro AR eds. (Thieme, New York, 2008), Chapter 13.
8. **Anderson WS**. Optics. In: *Neuroendoscopy of the central nervous system*. Jallo GI, Conway JE, Bognar L eds. (Plural Publishing, San Diego, 2008), Chapter 2.
9. Kudela P, **Anderson WS**, Franaszczuk PJ, Bergey GK. Network models of epileptiform activity: explorations in seizure evolution and alteration. In: *Seizure prediction in epilepsy: From basic mechanisms to clinical applications*. Schelter B, Timmer J, Schulze-Bonhage A eds. (Wiley-VCH, Berlin, 2008), pp 61-81.
10. **Anderson WS**, Clatterbuck RE, Kobayashi K, Kim JH, Lenz FA. Lesions versus stimulation for functional neurosurgery. In: *Textbook of stereotactic and functional neurosurgery*. Lozano AM, Gildenberg PL, Tasker RR eds. (McGraw Hill, New York, 2009) pp. 1349-1358.
11. **Anderson WS**, Kim JH, Kobayashi K, Lenz FA. Surgical management of tremor. In: *Youman's neurological surgery*, 6th Ed. Winn HR ed. (Saunders, Philadelphia, 2009) In Press.
12. Von Coelln R, Kobayashi K, Kim JH, **Anderson WS**, Winberry J, Lenz FA. Thalamotomy. In: *Encyclopedia of movement disorders*. Kompoliti K, Verhagen ML eds. (Elsevier, Oxford: Academic Press, 2010) Vol. 3, pp. 226-229.
13. Cahill K, Belzberg A, **Anderson WS**. DREZ lesions. In: *Schmidek & Sweet Operative Neurosurgical Techniques*, 6th Ed. Quinones-Hinojosa A ed. (Elsevier, 2011) Chap. 130, In Press.
14. **Anderson WS**, Liu CC, Weiss N, Lenz FA. Thalamic bursting activity and chronic pain. In: *Encyclopedia of Pain*. 2nd Ed. Schmidt RE and Gebhart G eds. (Springer Verlag, Berlin, 2013) pp 3869-3872.

15. **Anderson WS**, Liu CC, Shi CQ, Lenz FA. Pain-related cells in human thalamus. In: Encyclopedia of Pain. 2nd Ed. Schmidt RE and Gebhart G eds. (Springer Verlag, Berlin, 2013) pp 1708-1711.
16. Weiss N, Liu CC, **Anderson WS**, Lenz FA. Pain-related plasticity of human thalamic receptive fields and projected fields. In: Encyclopedia of Pain. 2nd Ed. Schmidt RE and Gebhart G eds. (Springer Verlag, Berlin, 2013), pp 3929-3933.
17. Cheng J, Chien JH, Kobayashi K, Kim JH, Colloca L, **Anderson WS**, Lenz FA. Thalamotomy and Mesencephalotomy for the Treatment of Tremor and Chronic Pain. In: Neuroscience and Biobehavioral Psychology. Ed. Fielder P (Elsevier Oxford, UK, 2016) pp. 104..
18. Cheng JJ, **Anderson WS**, Lenz FA. Neurological indications for deep brain stimulation. In: Brain Stimulation: Methodologies and Interventions. Ed. Reti I. (John Wiley & Sons, Inc., Hoboken, NJ, 2015), pp 271-288.

Abstracts

1. Jones GL, **Anderson WS**, Calaprice FP, Lowry MM, Young AR. Measurement of the β -asymmetry of ^{19}Ne as a search for right handed weak currents. Bull Am Phys Soc 1993;38:1803.
2. **Anderson WS**, Jones GL, Calaprice FP, Lowry MM, Young AR. A new test of time reversal invariance in ^{19}Ne beta decay. Bull Am Phys Soc 1993;38:1803.
3. Shir Y, **Anderson WS**, Sheth RN, Raja SN, Belzberg AJ, Campbell JN. Soy enriched diets do not suppress hyperalgesia associated with inflammation in rats. Abstracts of the Society for Neuroscience, 30th Annual Meeting, 2000;26: Abstract ID#5799.
4. **Anderson WS**, Sheth RN, Bencherif B, Frost JJ, Campbell JN. Is acute pain modulated by endogenous opioid-mediated inhibition? Abstracts of the Society for Neuroscience, 30th Annual Meeting, 2000;26: Abstract ID#3815.
5. **Anderson WS**, Bergey GK, Kosoff E, Ritzl E, Jallo GI. Implantation of responsive neurostimulators in patients with refractory epilepsy. Abstracts of the Congress of Neurological Surgeons, 2005 Annual Meeting: Oral Poster.
6. **Anderson WS**, Lawson HC, Lenz FA. Selective denervation of the levator scapulae muscle: extension to the Bertrand procedure for spasmodic torticollis. Abstracts of the Congress of Neurological Surgeons (#525), 2006 Annual Meeting: Digital Poster.
7. **Anderson WS**, Kosoff E, Ritzl E, Jallo GI, Bergey GK. Two-year follow-up on a series of five patients with responsive neurostimulation implants for seizure control. Abstracts of the Congress of Neurological Surgeons (#112), 2006 Annual Meeting: Select Abstract.
8. **Anderson WS**, Franaszczuk P, Kudela P, Bergey GK. Neural network simulation of cortical stimulation for seizure control. Abstracts of the American Epilepsy Society, 2006 Annual Meeting. Poster Presentation, #1.088.
9. Kudela P, **Anderson WS**, Franaszczuk PJ, Bergey GK. Mechanism of recurrent neuronal bursting resulting from short-term synaptic depression. Abstracts of the American Epilepsy Society, 2006 Annual Meeting. Poster Presentation, #3.051.
10. **Anderson WS**, Kudela P, Bergey GK, Franaszczuk P. Neural network simulation of cortical stimulation for seizure control. Abstracts of the Congress of Neurological Surgeons (#146), 2007 Annual Meeting: Select Abstract.
11. Kudela P, **Anderson WS**, Franaszczuk PJ, Bergey GK. Studies of calcium current dysfunction in network models of epileptiform activity. Abstracts of the American Epilepsy Society, 2007 Annual Meeting. Poster Presentation, #IW.16.
12. **Anderson WS**, Kudela P, Bergey GK, Franaszczuk PJ. Spontaneous seizure onset, termination, and stimulation induced effects in a neural network cortical simulation. Abstracts of the American Epilepsy Society, 2007 Annual Meeting. Poster Presentation #3.152.
13. **Anderson WS**, Kiyofuji S, Conway JE, Busch C, North RB, Garonzik IM. Case of dysphagia and neuropathic facial pain treated with motor cortex stimulation. Abstracts of the North American Neuromodulation Society, 2008 Annual Meeting. Poster Presentation #2008-A-92-NANS.
14. Kudela P, **Anderson W**, Franaszczuk P, Bergey G. Network models of seizure dynamics: importance of calcium clearance systems. Abstracts of the American Epilepsy Society, 2008 Annual Meeting. Poster Presentation # IW.13 (8616).
15. Sure D, Dunn I, **Anderson WS**. Intracerebral hemorrhage secondary to thrombocytopenia in a patient treated with temozolomide. Abstracts of the Joint Meeting of the Society for Neuro-Oncology and the AANS/CNS Section on Tumors, 2009. Poster Presentation #563.
16. Azhar F, **Anderson WS**. The development of an intracranial, interictal spike event detection algorithm. CIMIT Innovation Congress 2009: Poster Competition. Boston, MA. October 28, 2009.
17. Azhar F, Kudela P, Franaszczuk P, **Anderson WS**. Epileptic seizures from abnormal neural networks: Impact on the existence of a preictal period and seizure predictability. Abstracts of the American Epilepsy Society, 2009 Annual Meeting. Poster Presentation # 3.148.
18. Kudela P, **Anderson WS**, Bergey G, Franaszczuk P. Simulations of epileptiform activity in neural network models of focal cortical pathology. Epilepsia 2009;50 (S11):36.

19. Donoghue JA, Truccolo W, Hochberg LR, Eskandar EN, **Anderson WS**, Madsen JR, Halgren E, Cash SS. Heterogeneous single-unit spiking patterns during focal seizures in patients with intractable epilepsy. Program No. 150.25/I38. 2010 Neuroscience Meeting Planner. San Diego, CA: Society for Neuroscience, 2010. Online.
20. Azhar F, Franaszczuk P, **Anderson WS**. Predicting Cortical Neuron Spike Patterns: Point Process Modeling of an Epilepsy Computational Simulation. Abstracts of the American Epilepsy Society, 2010 Annual Meeting. Poster Presentation # 1.048.
21. Azhar F, Vendrame M, Loddenkemper T, Reinsberger C, Parkerson KA, **Anderson WS**. Intracranial Interictal Spike Detection: Use of a Novel Wavelet Based Detection Scheme. Abstracts of the American Epilepsy Society, 2010 Annual Meeting. Poster Presentation # 1.110.
22. Chen LL, Madhavan R, Rapoport BI, **Anderson WS**. A method for real-time cortical oscillation detection and phase-locked stimulation. Abstracts of the 33rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EBMC '11). Abstract # 2019. Boston, MA: 2011.
23. Madhavan R, Millman D, Madsen JR, Golby AJ, Kreiman G, **Anderson WS**. Temporal theta oscillation enhancement predicts successful memory encoding. Abstracts of the American Epilepsy Society, 2011 Annual Meeting. Poster Presentation # 1.035.
24. Azhar F, Vendrame M, Loddenkemper T, Reinsberger C, Parkerson KA, **Anderson WS**. Intracranial interictal spike detection using pattern adapted wavelet methods. Abstracts of the American Epilepsy Society, 2011 Annual Meeting. Poster Presentation # 2.125.
25. Madhavan R, Millman D, Madsen JR, Golby AJ, **Anderson WS**, Kreiman G. Temporal theta oscillation enhancement predicts successful memory encoding. Program No. 45.19.L7. 2011 Neuroscience Meeting Planner. Washington, DC: Society for Neuroscience, 2011. Online.
26. Dehghani N, Peyrache A, Eskandar E, Madsen J, **Anderson W**, Donoghue J, Halgren E, Destexhe A, Cash S. Relationship between excitatory and inhibitory neuronal activity and local field potentials during human sleep. Program No. 451.05.K11. 2011 Neuroscience Meeting Planner. Washington, DC: Society for Neuroscience, 2011. Online.
27. Peyrache A, Dehghani N, Eskandar E, Madsen J, **Anderson W**, Donoghue J, Halgren E, Cash SS, Destexhe A. Spatio-temporal dynamics of neocortical excitation and inhibition during human sleep. Program No. 451.06.K12. 2011 Neuroscience Meeting Planner. Washington, DC: Society for Neuroscience, 2011. Online.
28. Lewis L, Weiner V, Mukamel E, Donoghue J, Eskandar E, Madsen J, **Anderson W**, Hochberg L, Cash S, Brown EN. Human cortical neurons form functionally isolated networks during propofol-induced unconsciousness. Computational and Systems Neuroscience 2012. Abstract #469.
29. Subramanian S, Hao S, Santaniello S, Burns S, Jouny C, Bergey G, **Anderson S**, Sarma SV. Identifying signatures of epileptogenic zone using network centrality. Abstracts of the 34th Annual IEEE EMBS Conf, San Diego, CA. 2012.
30. Ahmed O, Truccolo W, Eskandar E, Madsen J, **Anderson W**, Cosgrove G, Potter N, Blum A, Hochberg L, Cash S. Human inhibitory single neurons switch off before dramatic increases in seizure amplitude. Abstracts of the American Epilepsy Society, 2012 Annual Meeting. Poster Presentation # 1.034.
31. Madhavan R, Madsen J, Eskandar E, Cash S, Kreiman G, **Anderson W**. Slow oscillations in the mesial temporal lobe predict successful short-term recall in a working memory task. Abstracts of the American Epilepsy Society, 2012 Annual Meeting. Poster Presentation # 1.078.
32. **Anderson W**, Bergey G, Franaszczuk P. Multicompartment computational model of laminar neocortex exhibiting epileptiform spiral waves. Abstracts of the American Epilepsy Society, 2012 Annual Meeting. Poster Presentation # 2.041.
33. Madhavan R, Tang H, Millman D, Crone N, Madsen J, **Anderson WS**, Kreiman G. Gamma band activity in the human parahippocampal gyrus predicts performance in a sequence task. Computational and Systems Neuroscience 2013. Abstract #139.
34. Sarma S, Burns S, Santaniello S, **Anderson WS**. State dynamics of the epileptic brain and the influence of seizure focus paper type. Computational and Systems Neuroscience 2013. Abstract #24.
35. Basu I, **Anderson W**. Study of seizure onset and propagation using intracranial EEG recorded using micro-electrodes. Abstracts of the American Epilepsy Society, 2013 Annual Meeting. Poster Presentation # 1.047.
36. McMullen D, Hotson G, Fifer M, Kaytal K, Wester B, Johannes M, McGee T, Harris A, Ravitz A, **Anderson WS**, Thakor N, Crone N. Demonstration of a semi-autonomous hybrid brain-machine interface using human intracranial EEG, eye tracking, and computer vision to control a robotic upper limb prosthetic. 6th International Brain-Computer Interface Conference, Graz, Austria. Sept. 18, 2014.
37. Basu I, **Anderson W**. Seizure propagation across microdomains in epileptic patients undergoing intracranial monitoring. Abstracts of the American Epilepsy Society, 2014 Annual Meeting. Poster Presentation # 1.064.
38. Groomes L, Madhavan R, **Anderson WS**, Kreiman G. Cognitive consequences of interictal spikes. Abstracts of the American Epilepsy Society, 2014 Annual Meeting. Poster Presentation # 2.025.
39. Santaniello S, Burns SP, **Anderson WS**, Sarma S. Brain state dynamics and the role of the epileptogenic zone. Abstracts of the American Epilepsy Society, 2014 Annual Meeting. Poster Presentation # 2.025.

40. Benz HL, Guo M, Milsap G, Boatman-Reich D, **Anderson WS**, Thakor NV, Crone NE. Multi-scale connectivity dynamics of human speech production. *IEEE Eng in Med and Biol Soc*, 37th Annual Mtg. Milano, Aug., 2015.
41. Eliades SJ, Korzeniewska A, **Anderson WS**, Ramadoss D, Sanders L, Crone NE, Boatman-Reich D. Attention modulates single-trial adaptation of human high-frequency cortical auditory responses. Abstracts of the American Epilepsy Society, 2014 Annual Meeting. Abstract 5634.
42. Kudela P, **Anderson WS**. A Realistic Computer Model of Cortical Stimulation. 2014 Neuroscience Meeting Planner. Washington, DC: Society for Neuroscience, 2014. Online.
43. Tang H, Yu H-Y, Chou C-C, Madsen J, **Anderson WS**, Kreiman G. Dynamics of Human Anterior Cingulate Cortex Responses during Cognitive Control. 2014 Neuroscience Meeting Planner. Washington, DC: Society for Neuroscience, 2014. Online.
44. Sacré P, **Anderson W**, Sarma S. Towards understanding mechanisms of pain transmission: A systems theoretic approach. Computational and Systems Neuroscience Meeting, 2014. Abstract ID 447.
45. Lyketos CG, Smith G, Fosdick L, Leoutsakos J-M, Munro C, Oh E, Drake K, Rosenberg PB, **Anderson WS**, Salloway S, Pendergrass C, Burke A, Wolk DA, Tang-Wai DF, Ponce FA, Asaad WF, Sabbagh M, Okun MS, Baltuch G, Foote KD, Targum SD, Lozano AM. Deep brain stimulation targeting the fornix for mild Alzheimer's disease: Initial results of the ADvance randomized controlled trial. Alzheimer's Association International Conference, Platform Presentation, Washington, D.C., 2015.
46. Boothe DL, Yu AB, Kudela P, Vettel JM, **Anderson WS**, Franaszczuk PJ. Impact of blast-dependent cellular damage on the local field potential (LFP) in a large scale simulation of the cortex. 2015 Neuroscience Meeting Planner. Chicago, IL: Society for Neuroscience, 2015. Online.
47. Sacré P, Guan Y, **Anderson WS**, Sarma SV. Modulation of pain transmission in the dorsal horn circuit: From ionic channels to capabilities of information transfer. 2015 Neuroscience Meeting Planner. Chicago, IL: Society for Neuroscience, 2015. Online.
48. Sacré P, Sarma SV, Guan Y, **Anderson WS**. Electrical neurostimulation for chronic pain: On selective relay of sensory neural activities in myelinated nerve fibers. *IEEE Eng in Med and Biol Soc*, 37th Annual Mtg. Milano, Aug., 2015.
49. Lyketos CG, Smith G, Fosdick L, Leoutsakos J-M, Munro C, Oh E, Drake K, Rosenberg PB, **Anderson WS**, Salloway S, Pendergrass C, Burke A, Wolk DA, Tang-Wai DF, Ponce FA, Asaad WF, Sabbagh M, Okun MS, Baltuch G, Foote KD, Targum SD, Lozano AM. Deep brain stimulation targeting the fornix for mild Alzheimer's disease: Initial results of the ADvance randomized controlled trial. *Clinical Trials on Alzheimer's Disease (CTAD)*, Platform Presentation, Barcelona, Spain, Nov 5-7, 2015.
50. Wang Y, Fifer MS, Flinker A, Korzeniewska A, Cervenka MC, Boatman-Reich D, **Anderson WS**, Crone NE. Comparison of electrocorticography and electrocortical stimulation in mapping classical language areas: A region of interest approach. 2015 Neuroscience Meeting Planner. Chicago, IL: Society for Neuroscience, 2015. Online.
51. Chien J-H, Lenz FA, Schmid A-C, Kim J-H, Cheng DT, **Anderson WS**, Liu C-C. Contextual fear conditioning in humans using painful laser. 2015 Neuroscience Meeting Planner. Chicago, IL: Society for Neuroscience, 2015. Online.
52. Salimpour Y, **Anderson WS**. Transcranial direct current stimulation on deeply stimulated brain: A computational approach. *Neuromodulation 2015, New York City. Brain Stim 2017*; doi: 10.1016/j.brs.2016.11.048.
53. Beeman D, Kudela P, Boatman-Reich D, **Anderson W**. Understanding adaptation in human auditory cortex with modeling. *BMC Neuroscience 2017*, **18**(Suppl 1):P5.
54. Beeman D, Kudela P, Boatman-Reich D, **Anderson W**. Effects of short term synaptic plasticity on stimulus specific adaptation in auditory cortex: A modeling study. 2017 Neuroscience Meeting Planner. Washington, DC: Society for Neuroscience, 2017. Online.
55. Salimpour Y, Mills KA, **Anderson WS**. Investigating possible mechanisms of action of transcranial electric stimulation in Parkinson's disease. 2017 Neuroscience Meeting Planner. Washington, DC: Society for Neuroscience, 2017. Online.
56. Salimpour Y, Mills KA, **Anderson WS**. Dynamic monitoring of phase-amplitude coupling for phase-dependent stimulation. 2017 Neuroscience Meeting Planner. Washington, DC: Society for Neuroscience, 2017. Online.
57. Sheth NM, Jacobson MW, Zbijewski W, Kleinszig G, Vogt S, **Anderson WS**, Weiss C, Osgood G, Siewerdsen JH. Imaging performance of CMOS and a-Si:H flat-panel detectors for C-arm fluoroscopy and cone-beam CT. *SPIE Medical Imaging 2018*.

Teaching

Classroom Instruction

- | | |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2009 | The Surgical Treatment of Movement Disorders, Integrative Mind-Brain Medicine Lecture Series for Medical Students. 1 hour lecture. The Brigham and Women's Hospital, Boston. |
| 2010 | The Surgical Treatment of Epilepsy, Integrative Mind-Brain Lecture Series for Medical Students. 2-1 hour lectures. The Brigham and Women's Hospital, Boston. |

Fall 2016 CME 580.432 JHU Introduction to Computational Medicine. 5-1 hour lectures on NeuroModeling with P. Kudela.

Clinical Instruction

- 2008-10 Temporal Lobe Anatomy, Cadaveric Course for Neurosurgery Residents. Two hour lecture and demonstration / year. Harvard Medical School.
- 2009-10 Stereotactic Frame Placement. Clinical Course for Neurosurgery Residents. One hour lecture and demonstration / year. The Brigham and Women's Hospital, Boston.
- 2010 DBS Electrophysiology. Clinical Course for Neurosurgery Residents. One hour lecture and demonstration. The Brigham and Women's Hospital, Boston.

Mentoring

- 2009-12 Feraz Azhar, Ph.D., Post-doctoral scholar, funded under a Hood Foundation Award (Anderson PI). Dr. Azhar developed interictal spike detection algorithms, and assisted with computational modeling studies of epilepsy.
- 2010-12 Radhika Madhavan, Ph.D., Post-doctoral scholar, funded under a NIH/NINDS K08 award (Anderson PI). Dr. Madhavan developed a real-time data acquisition and processing system for the study of intrinsic theta activity in the temporal lobe and surrounding structures.
- 2012-13 Avi Sunshine, B.S., Research Assistant, funded by the Neurosurgery Pain Research Institute at Johns Hopkins (Anderson PI). Avi performed a retrospective analysis of the use of baclofen in patients suffering spinal cord injury. He is also performed a correlative study in deep brain stimulation patients, comparing the active electrode contact with postoperative psychotic symptoms.
- 2012-14 Ishita Basu, Ph.D., Post-doctoral scholar, funded under a NIH/NINDS K08 award (Anderson PI). Dr. Basu performed microelectrode recordings from human cortex during seizures, and compared the recordings with computational epilepsy models.
- 2014-16 Pierre Sacre, PhD. Post-doctoral scholar funded by the Neurosurgery Pain Research Institute at Johns Hopkins (Anderson PI). Performing a computational modeling study of spinal cord stimulation effects on dorsal column fiber activity.
- 2015-16 Yousef Salimpour PhD. Research Associate funded by the Dept. of Neurosurgery. Performs human recordings in epilepsy and movement disorder patients. Studying theta phase dependent stimulation and its effects on memory, and the subcortical effects of cortical stimulation.

CLINICAL ACTIVITIES

Certification

Medical, other state / government licensure

2005-2008

2010-pres Maryland Board of Physicians D62853

2008-11 Massachusetts Board of Registration in Medicine 235659 License expired 1/22/2011.

Boards, other specialty certification

2012 American Board of Neurological Surgery (Board Certified, FAANS).

Clinical (Service) Responsibilities

- 08/2008-12/ 2010 Associate Surgeon, The Brigham and Women's Hospital
Supervised the Functional Neurosurgery Program including movement disorder surgery, epilepsy surgery, and the surgical treatment of pain and spasticity.
- 06/2015-present Director – Functional Neurosurgery Division, The Johns Hopkins Hospital
Division of Functional Neurosurgery, performing movement disorder surgery, epilepsy surgery, and the surgical treatment of pain and spasticity.

SYSTEM INNOVATION AND QUALITY IMPROVEMENT ACTIVITIES

System Innovation and Quality Improvement efforts outside of JHM:

- 08/ 2008-12/ 2010 The Brigham and Women's Hospital Department of Neurosurgery. Co-Chair (with Dr. Edward Laws, M.D.), New Equipment Evaluation and Approval Committee. Made recommendations on faculty requests for operating room equipment procurement and changes to the hospital administration. Recommendations based on equipment pricing, redundancy, safety issues. Streamlined procurement

process, and centralized contact point for outside industry representatives to reduce their influence.
5% Effort.

ORGANIZATIONAL ACTIVITIES

Institutional Administrative Appointments

2008-09 Neurosciences Clinical Planning Workgroup, Brigham and Women's Hospital, Member.
2008-10 Work Life Committee, Brigham and Women's Hospital, Member.

Editorial Activities

Editorial Board appointments
2009-2017 Associate Editor, Neurosurgery, Science Times.

Journal ad-hoc peer review activities

2006- IEEE Transactions on Biomedical Engineering
2006- Brain Research
2006- Journal of Neurophysiology
2008- Physical Review Letters
2008- Neurosurgery
2008- Clinical Neurology and Neurosurgery
2009- Epilepsy Research
2009- Center for Integration of Medicine and Innovative Technology, Grant Review
2010- Journal of Neurology, Neurosurgery, and Psychiatry
2010- Indo-US Science & Technology Forum, Grant Review
2011- Epilepsia
2012- PLOS ONE.

Advisory Committees, Review Groups/Study Sections

2008-2012 Member, Congress of Neurological Surgeons Fellowship Committee
2011-2012 Member, American Epilepsy Society Treatments Committee-Surgery Workgroup
2013-2015 Reviewer, NIH/CSR ETTN(10) Small Business Review Panel

Professional Societies

2002- present Member, Congress of Neurological Surgeons
2002-present Member, American Association of Neurological Surgeons
2007-present Member, American Epilepsy Society
2009-present Member, American Society for Stereotactic and Functional Neurosurgery
2012-present Diplomate, American Board of Neurological Surgery

Conference Organizer, Session Chair

2014-present Organizer, Functional Neurosurgical Society Meetings.

Consultantships

Advisory Boards – Longeviti, LLC; NeuroLogic, Globus Medical

RECOGNITION

Awards, Honors

1986-90 Lechner Fellow, undergraduate merit scholarship, Texas A&M University
1988-90 Gathright Scholar, undergraduate academic award, Texas A&M University
1990-93 National Science Foundation Fellowship, graduate school scholarship (Princeton University), The National Science Foundation.
2001 *Phi Beta Kappa*, honors society, The Johns Hopkins University School of Medicine
2001 *Alpha Omega Alpha*, honors society, The Johns Hopkins University School of Medicine
2005 William Gowers Fellowship, training research award (The Johns Hopkins University School of Medicine, American Epilepsy Society)
2005-07 NIH Loan Repayment Program, medical school loan repayment stipend (The Johns Hopkins Hospital Epilepsy Research Laboratory), National Institutes of Health.

2007 Harvey Cushing Hunterian Research Award, residency research recognition, The Johns Hopkins Hospital Department of Neurosurgery.

Invited Talks, Panels

- 1993 **Anderson WS**, Calaprice FP, Jones GL, Lowry MM, Young AR. A new test of time reversal invariance in ^{19}Ne beta decay. Talk given at the Workshop on Symmetry Tests in Semi-Leptonic and Leptonic Weak Interactions, Louvain-la-Neuve, Belgium.
- 2007 **Anderson WS**. The computer as a tool in understanding the brain. Talk given at the *Congreso Neurociencias*, Hospital Metropolitano, Quito, Ecuador. Presentations also included: Neurosurgical treatment of spasmodic torticollis, Deep brain stimulation in Parkinson's disease, and Neurostimulation in epilepsy.
- 01/29/08 **Anderson WS**. Spontaneous seizure onset, termination, and stimulation induced effects in a neural network cortical simulation. Neurology Grand Rounds. National Institutes of Health, Bethesda, MD.
- 02/07/08 **Anderson WS**. Neural network studies of seizure dynamics and cortical stimulation. Neurosurgery Grand Rounds, Brigham and Women's Hospital, Boston MA.
- 12/06/08 **Anderson WS**. Neural Network cortical simulations – Studying stimulation and intrinsic bursting properties. Special Interest Group on Engineering and Epilepsy. American Epilepsy Society Annual Meeting, Seattle, WA.
- 02/19/09 **Anderson WS**. Neural Network Cortical Simulations-Studying Stimulation and Intrinsic Bursting Properties. Epilepsy Research Seminar, Division of Epilepsy & Clinical Neurophysiology, Children's Hospital, Boston, MA.
- 04/14/09 **Anderson WS**. Spinal Cord Stimulation Restores Locomotion in Animal Models of Parkinson's Disease, Journal Club Discussion. Harvard NeuroDiscovery Center. Boston, MA.
- 09/09/10 **Anderson WS**. The Surgical Treatment of Movement Disorders. Neurosurgery Grand Rounds, Brigham and Women's Hospital, Boston MA.
- 10/07/09 **Anderson WS**. The Surgical Treatment of Movement Disorders. Harvard Medical School, Integrative Mind-Brain Medicine Lecture Series. Brigham and Women's Hospital, Boston, MA.
- 01/27/10 **Anderson WS**. The Computational Modeling of Epilepsy and Cortical Stimulation. University of Chicago School of Medicine, Department of Neurosurgery, Grand Rounds. Chicago, IL.
- 04/07/10 **Anderson WS**. The Surgical Treatment of Epilepsy. Harvard Medical School, Integrative Mind-Brain Medicine Lecture Series. Brigham and Women's Hospital, Boston, MA.
- 04/15/10 **Anderson WS**. The Computational Modeling of Epilepsy and Cortical Stimulation. The Johns Hopkins University School of Medicine, Department of Neurosurgery, Grand Rounds. Baltimore, MD.
- 07/07/10 **Anderson WS**. The Surgical Treatment of Epilepsy. Harvard Medical School, Integrative Mind-Brain Medicine Lecture Series. Brigham and Women's Hospital, Boston, MA.
- 09/09/10 **Anderson WS**. The Surgical Treatment of Movement Disorders. Neurosurgery Grand Rounds, Department of Neurosurgery, Brigham and Women's Hospital, Boston, MA.
- 09/16/10 Hayes M, **Anderson WS**. Deep Brain Stimulation for Movement Disorders. Hospital Grand Rounds, South Shore Hospital, Weymouth, MA.
- 03/31/11 **Anderson WS**. Neuroscience Buffet: Subcortical Recordings During Motor Imagery & Theta Phase-Specific Stimulation. The Johns Hopkins University School of Medicine, Department of Neurosurgery, Grand Rounds. Baltimore, MD.
- 06/07/11 **Anderson WS**. The Computational Modeling of Epilepsy and Cortical Stimulation. The Johns Hopkins Hospital, Divisions of Neuroscience Critical Care and Neuroanesthesiology, Weekly Conference. The Johns Hopkins Hospital, Baltimore, MD.
- 07/14/11 **Anderson WS**. Resident Education Lecture: The Anterior Temporal Lobectomy. The Johns Hopkins University School of Medicine, Department of Neurosurgery, Grand Rounds. Baltimore, MD.
- 11/12/11 **Anderson WS**. Deep brain stimulation surgery. The Johns Hopkins Medicine Symposium on Parkinson's Disease & Your Health. Martinsburg, WV.
- 11/21/11 **Anderson WS**. The Computational Modeling of Seizures. The Johns Hopkins University School of Medicine, Department of Neurology, Clinical Neuroscience Seminar.
- 04/12/12 **Anderson WS**. A review of deep brain stimulation for Parkinson's Disease, Part I. The Johns Hopkins University School of Medicine, Department of Neurosurgery, Grand Rounds.
- 05/03/12 **Anderson WS**. A review of deep brain stimulation for Parkinson's Disease, Part II. The Johns Hopkins University School of Medicine, Department of Neurosurgery, Grand Rounds.
- 06/05/12 **Anderson WS**. DBS for essential tremor: Frameless and iMRI options. International Essential Tremor Foundation: Patient Educational Seminar. Sheraton Baltimore North, Towson, MD.
- 09/24/12 **Anderson WS**. Clinical and therapeutic implications of cortical neural network modeling. Institute for Computational Medicine & Institute for Clinical and Translational Research – Symposium on Computational Medicine. Johns Hopkins Hospital.

- 02/02/13 **Anderson WS.** Computational modeling of the brain: exploring epilepsy and its treatment. Neuroscience Academic Conference, Neurology Grand Rounds. Winthrop-University Hospital, Mineola, New York.
- 06/12/13 **Anderson WS.** Clinical and therapeutic implications of cortical neural network modeling. The Johns Hopkins University Brain Science Institute Computational Neuroscience Working Group.
- 08/15/13 **Anderson WS.** Update on new deep brain stimulation studies. The Johns Hopkins University School of Medicine, Department of Neurosurgery, Grand Rounds.
- 08/20/13 **Anderson WS.** Clinical and therapeutic implications of cortical neural network modeling. US Army Research Laboratory. Aberdeen Proving Grounds, MD.
- 10/01/13 **Anderson WS.** Clinical and therapeutic implications of cortical neural network modeling. The Institute for Computational Medicine Distinguished Seminar Series. Johns Hopkins University.
- 05/13/14 **Anderson WS.** Clinical and Therapeutic Implications of Cortical Computational Modeling. University of California at Davis, School of Medicine, Department of Neurosurgery, Grand Rounds.
- 07/25/14 **Anderson WS.** Spinal Cord Stimulation Pearls, and the Failure Modes of the Baclofen Pump. CME Activity: Update in Functional Neurosurgery – 1st Meeting of the Migratory Functional Neurosurgery Society. The Johns Hopkins Hospital.
- 11/01/14 **Anderson WS.** Update in Functional Neurosurgery. CME Activity: Neurosurgery Updates Symposium. Suburban Hospital, Bethesda, MD.
- 11/06/14 **Anderson WS.** The Anterior Temporal Lobectomy. The Johns Hopkins University School of Medicine, Department of Neurosurgery, Grand Rounds.
- 11/14/14 **Anderson WS.** Clinical and Therapeutic Implications of Cortical Computational Modeling. 2nd Human Single Neuron Conference, Johns Hopkins Hospital.
- 2/25/15 **Anderson WS.** Computational Modeling of Epileptic Activity. The Inaugural Indo-US Translational Neuroscience Symposium: Biomarker Discovery and Validation, Johns Hopkins Hospital.
- 3/12/15 **Anderson WS.** Computational Studies of Human Cortex. Combined Neurology Neurosurgery Grand Rounds, Georgetown University Hospital.
- 7/17/15 **Anderson WS.** DBS Clinical Trials: Johns Hopkins Experience. CME Activity: Neuroscience Updates in Functional Neurosurgery – 2nd Meeting of the Migratory Functional Neurosurgery Society. University of Pittsburgh Medical Center, Pittsburgh, PA.
- 2/29/16 **Anderson WS.** Modeling techniques for studies of brain oscillations. Cosyne Workshop: Biophysical principles of brain oscillations and their meaning for information processing. Snowbird UT.
- 7/16/16 **Anderson WS.** Computational modeling of neocortex. 3rd Annual Migratory Functional Neurosurgery Meeting, Columbia University Medical Center, New York, NY.
- 10/8/16 **Anderson WS.** iMRIS in Functional Neurosurgery: Stereotactic Laser Ablation and DBS Lead Placement Techniques. 11th International MRI Symposium, Baltimore, MD.
- 10/11/16 **Anderson WS.** Computational modeling of cortex. NCCU Seminar Series, Johns Hopkins University School of Medicine, Baltimore, MD.
- 11/5/16 **Anderson WS.** Cranioplasty techniques in the context of functional neurosurgery. 2nd International Cranioplasty Symposium, Johns Hopkins School of Medicine, Baltimore, MD.
- 11/10/16 **Anderson WS.** Applied computational modeling of neocortex. 3rd International Meeting on Human Single Neuron Recordings. California Institute of Technology, Pasadena, CA.
- 2/2/17 **Anderson WS.** Applied Computational Modeling in Neurosurgery. The Johns Hopkins University School of Medicine, Department of Neurosurgery, Grand Rounds.
- 8/25/17 **Anderson WS.** Development of Phase-Dependent Stimulation Techniques. 4th Annual Functional Neurosurgery Meeting, Brown Alpert Medical School, Providence, RI.
- 11/4/17 **Anderson WS.** Neurostimulation for Epilepsy. 3rd Annual Selected Topics in Craniomaxillofacial Surgery: Shriners Hospital for Children, Boston, MA.
- 12/14/17 **Anderson WS.** Development of Phase-Dependent Stimulation Techniques. The Johns Hopkins University School of Medicine, Department of Neurosurgery, Grand Rounds.