STEPHEN I. HELMS TILLERY, PH.D.

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BACKGROUND

EDUCATION & RESEARCH

B.S. in Psychology, Arizona State University, cum laude with Honors, 1987
Ph.D. in Neuroscience, University of Minnesota, 1994

August 1994 – July 1999: Post-doctoral fellow with Peter L. Strick, Ph.D. Studies focused on contribution of cerebellum and basal ganglia to cognitive processing.

June 1994 - August 1994: Post-doctoral fellow with John F. Soechting Ph.D. Completing thesis research projects

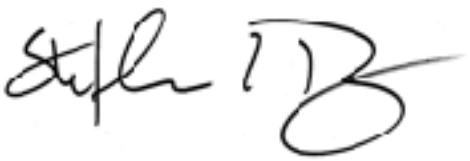
1988- June 1994: Graduate student in Neuroscience program at University of Minnesota
Advisors: John F. Soechting, Ph.D, and T.J. Ebner, M.D. Ph.D..

1987-1988: Research Assistant in Department of Neurobiology at Barrow Neurological Institute.
Mentor: James R. Bloedel, M.D. Ph.D.

1987-1988: Honor's student at Arizona State University
Mentors: Gregory O. Stone, Ph.D., Peter Killeen, Ph.D.

POSITIONS HELD

June 2017 - present: Lincoln Center Professor for Neural Engineering, Research and Ethics
June 2012 - August 2015: Chair, Graduate studies in BME
June 2012 - present: Associate Professor, SBHSE, ASU.
July 2008 - present: Research Assistant Professor, Barrow Neurological Institute, Phoenix, AZ
January 2007 - present: Affiliated faculty, Dept. of Psychology, ASU.
March 2006 - June 2010: Affiliated faculty, Dept. of Kinesiology, ASU
January 2006 - May 2012: Assistant Professor, SBHSE, ASU.
July 2002 - March 2006: Research Associate, The Biodesign Institute, ASU.
July 2001 - December 2005: Research Assistant Professor, Harrington Bioengineering, ASU
July 1999 - July 2001: Research Associate, Harrington Dept. of Bioengineering, ASU.
August 1994 - July 1999: Research Associate, Central New York Research Corporation,



October 30, 2017

PUBLICATIONS & RESEARCH SUPPORT

THROUGHOUT PUBLICATIONS, MENTEES ARE UNDERLINED, 1 INDICATES PH.D. ADVISEE, 2 INDICATES M.S. ADVISEE, 3 INDICATES UNDERGRADUATE ADVISEE, 4 INDICATES A POST-DOCTORAL ADVISEE, † INDICATES SENIOR AUTHOR

PEER REVIEWED MANUSCRIPTS

CITATION COUNT FROM RESEARCH GATE, MARCH 7, 2017
TOTAL: 2884
H-INDEX: 19

1. McAndrew R, SI Helms Tillery (2016). Laboratory primates: their lives in and after research. *Temperature* **3**(4): 502-508. http://dx.doi.org/10.1080/23328940.2016.1229161
2. Overstreet CK, RB Hellman, RD Ponce Wong, VJ Santos, **SI Helms Tillery** (2016) Discriminability of Single and Multichannel Intracortical Microstimulation within Somatosensory Cortex (2016) *Frontiers in Bioengineering and Biotechnology*, 4: 91. doi: 10.3389/fbioe.2016.00091
3. Armenta Salas M, SI Helms TIllery (2016) Uniform and non-uniform perturbations in brain-machine interface task elicit similar neural strategies. (2016) *Frontiers in Systems Neuroscience* August 23. http://dx.doi.org/10.3389/fnsys2016.00070
4. Wahnoun R[4], M Benson, **SI Helms Tillery**, PD Adelson † (2015) Delineation of somatosensory finger areas using vibrotactile stimulation, and ECoG study. *Brain and Behavior*, 5(10): doi: 10.1002/brb3.369
5. Hellman RB, E Chang, J Tanner, **SI Helms Tillery**, VJ Santos † (2015) A robot hand testbed designed for enhancing embodiment and functional neurorehabilitation of body schema in subjects with upper limb impairment or loss. *Frontiers in Human Neuroscience*, **9**:26. doi: 10.3389/fnhum.2015.00026.
6. Overstreet CK[1,4], JD Klein, **SI Helms Tillery** † (2013) Computational modeling of direct neuronal recruitment during intracortical microstimulation in somatosensory cortex. *Journal of Neural Engineering.* **10(6)**: 066016

   Citations: 8
   Impact Factor: 3.282
7. Rincon-Gonzalez L[1], SN Naufel[2], VJ Santos, **SI Helms Tillery** †. (2012) Interactions between tactile and proprioceptive representations in haptics. *Journal of Motor Behavior*, **44(6)**: 391-401. http://dx.doi.org/10.1080/00222895.2012.746281

   Citations: 4
   Impact Factor: 1.64
8. McAndrew, RM, JL Lingo-VanGilder[2], SN Naufel[2] , **SI Helms Tillery** †. (2012) Individualized recording chambers for non-human primate neurophysiology. *Journal of Neuroscience Methods*, **207(1)**: 86-90. doi:10.1016/j.jneumeth.2012.03.014

   Citations:
   Impact Factor: 2.26

9. Rincon-Gonzalez L[1], CA Buneo, **SI Helms Tillery** †. (2011) The proprioceptive map of arm position is systematic and stable, but idiosyncratic. *PLoS ONE*, **6(11)**: e25214. doi:10.1371/journal.pone.0025214

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Citations: 27
Impact Factor: 4.35

10. Rincon-Gonzalez L[1], JP Warren[1,4], DM Meller[1], **SI Helms TIllery** †. (2011) Haptic interaction of touch and proprioception: implications for neuroprosthetics. *IEEE Trans Neural Sys Rehab Eng*., **19(5)**: 490-500.

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Citations:
Impact factor: 2.7

11. Warren JP[1,4], **SI Helms Tillery** †. (2011) Tactile perception: do distinct subpopulations explain differences in mislocalization rates of stimuli across fingertips? *Neuroscience Letters* **505(1)**: 1-5. doi:10.1016/j.neulet.2011.04.057

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Citations:
Impact factor: 1.93

12. Warren JP[1,4], M Santello, **SI Helms Tillery** †. (2011) Effects of fusion between tactile and proprioceptive input on a tactile illusion. *PLoS ONE*, **6(3)**: e18073. doi:10.1371/journal.pone.0018073

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Citations: 8
Impact factor: 4.35

13. Warren JP[1,4], M Santello, **SI Helms Tillery** †. (2010) Electrotactile stimuli delivered across fingertips inducing the cutaneous rabbit effect. *Experimental Brain Research*, **206(4)**: 419-426

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Citations: 11
Impact factor: 2.23

14. Tufail, Y, A Matyushov, N Baldwin[1], ML Tauchmann, J Georges, A Yoshihiro[1], **SI Helms Tillery**, WJ Tyler †. (2010) Transcranial pulsed ultrasound stimulates intact brain circuits. *Neuron,* **66(5)**: 681-694 DOI: 10.106/j.neuron.2010.05.008

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Citations: 201
Impact Factor: 18.4

15. Warren J[1], LM Bobich[1], JD Sweeney, M Santello,, **SI Helms Tillery** † (2008) Receptive field characteristics under electrotactile stimulation of the fingertip. *IEEE Transactions on Neural Systems and Rehabilitation Engineering.* **16(4)**: 410-415

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Citations: 18
Impact factor: 2.7

16. Stukel JM, JP Parks[2], MR Caplan, **SI Helms Tillery** † (2008) Temporal and spatial control of neural effects following intracerebral microinfusion. *J Drug Targeting*, **16(3)**: 198-205.

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Citations: 2
Impact factor: 2.03

17. Bobich LR[1], J Warren[1], **SI Helms Tillery**, , JD Sweeney, M Santello †. (2007) Spatial localization of electrotactile stimuli on the fingertip in humans. *Somatosensory & Motor*

Research, **24(4)**: 179-188.

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Citations: 13
Impact factor: 0.81

18. Wahnoun R, J He ǂ, **Sl Helms Tillery**. (2006) Selection and parameterization of cortical neurons for neuroprosthetic control. *Journal of Neural Engineering*, **3**: 162-171

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Citations: 85
Impact factor: 3.282

This paper showed that neurons in the region of cortex that controls arm movements fired during imagined movements. This work has enabled research on neuroprosthetics separate from movement

19. Fan J, J He ǂ, **Sl Helms Tillery**. (2005) Control of hand orientation and arm movement during reaching and grasping. *Experimental Brain Research*, 171(3): 283-296.

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Citations: 64
Impact factor: 2.23

20. Tao K, J He ǂ, **Sl Helms Tillery** (2005) Determining natural arm configuration along a reaching trajectory. *Experimental Brain Research*: 167(3): 352-381.

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Citations: 9
Impact factor: 2.23

21. **Helms Tillery, Sl** ǂ, DM Taylor (2004) Signal acquisition and analysis for cortical control of neuroprosthetics. *Current Opinion in Neurobiology*, 14: 758-762.

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Citations: 29
Impact factor: 0.94

22. Taylor DM, **Sl Helms Tillery**, AB Schwartz ǂ (2003) Information conveyed through brain-control: cursor versus robot. *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 11: 195-199.

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Citations: 170
Impact factor: 2.7
This was the first demonstration of a monkey directly controlling a robotic arm.

23. **Helms Tillery Sl**, DM Taylor, AB Schwartz ǂ (2003). Training in cortical control of neuroprosthetic devices improves signal extraction from small neuronal ensembles. *Reviews in the Neurosciences*, 14: 107-119.

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Citations: 69
Impact factor: 2.53

24. Taylor DM, **Sl Helms Tillery**, AB Schwartz ǂ (2002). Direct cortical control of 3d neuroprosthetic devices. *Science*, 296: 1829-1832.

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Citations: 1521
Impact factor: 28.10

This seminal paper was the first example of a monkey controlling a device in three dimensions from brain signals. This demonstration opened the way to substantial work, including the first clinical applications of neuroprosthetic technology

25. Schwartz AB ǂ, D Taylor, **Sl Helms Tillery** (2001). Extraction algorithms for cortical control of arm prosthetics. *Current Opinion in Neurobiology*, 11: 701-707.

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Citations: 186
Impact factor: 0.94

This review paper discussed approaches to recording and extracting neural signals for prosthetic control

26. **Helms Tillery SI**, JF Soechting, TJ Ebner † (1996). Somatosensory cortical activity in relation to arm posture: nonuniform spatial tuning. *Journal of Neurophysiology*, 76: 2423-2438.

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Citations: 35
Impact factor: 4.00

27. **Helms Tillery S**I, TJ Ebner, JF Soechting † (1995). Task dependence of primate arm postures *Experimental Brain Research*, 104: 1-11.

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Citations: 35
Impact factor: 2.23

28. **Helms Tillery SI**, M Flanders, JF Soechting † (1994). Errors in kinesthetic transformations for hand apposition. *NeuroReport*, 6: 177-181.

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Citations: 32
Impact factor: 3.08

29. Flanders M, **SI Helms Tillery**, JF Soechting †(1991). Early stages in a sensorimotor transformation. *Behavioral and Brain Sciences*,15: 309-362.

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Citations: 249
Impact factor: 2.03

30. **Helms Tillery SI**, M Flanders, JF Soechting † (1991). A coordinate system for the synthesis of visual and kinesthetic information. *Journal of Neuroscience*, 11: 770-778.

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Citations: 31
Impact factor: 8.66

31. Soechting JF, **SIH Tillery**, M Flanders † (1990). Transformation from head- to shoulder-centered representation of target direction in arm movements. *Journal of Cognitive Neuroscience*, 2:32-43.

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Citations: 91
Impact factor: 4.06

32. **Tillery SI**, BE Lehnert † (1986b). Immunohistological identification of Factor VIII related antigen in frozen sections of rat lung. *Laboratory Animal Science*, 36:65-67.

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Citations: 3

33. **Tillery SI**, BE Lehnert † (1986a). Age-body weight relationships to lung growth in Fischer-344 rats as indexed by lung-weight measurements. *Laboratory Animals*, 20: 189-19

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Citations: 12

MANUSCRIPTS SUBMITTED OR IN PREPARATION

1. Meller, DM[1]. Naufel, S[2] , **SI Helms Tillery**. Somatosensory cortical activity during reaching and grasp: combined processing of tactile and movement-related signals. *Under revision*

2. Ashmont KR, JF Kerrigan, MM Troester, R Jarrar, **SI Helms Tillery**, PD Adelson, B Greger (2015). An algorithmic adjunct to visual inspection: using Empirical Mode Decomposition to detect seizures. *Under Review*.

INTELLECTUAL PROPERTY AND PATENTS

1. Helms Tillery, Stephen I (2015) Somatomotor cortical mapping for neurosurgical planning. Disclosure filed 5/15/2015.

RESEARCH SUPPORT

CURRENT FUNDING

1. Transdermal Electrical Neuromodulation for Performance Optimization. DARPA Targeted Neuroplasticity Training N66001-17-2-4018. SI Helms Tillery (PI). Total budget over 4 years: $5,299,873.

2. DExterous hand control through Fascicular Targeting (DEFT). DARPA/Nerves Incorporated. SI Helms Tillery (ASU PI), Sub-contract with Nerves, Inc. Total budget over 5.0 years: $513,359, 1/1/2015-6/1/2017.

PAST FUNDING

1. Neural correlates of cooperative manipulative actions. Arizona Biomedical Research Commission. C Buneo (PI). $100,000 10/23/14-10/22/15.
   Role: Co-I
2. CPS: Small: Cyber-physical system challenges in man-machine interfaces: context-dependent control of smart artificial hands through enhanced touch perception and mechatronic reflexes. NSF (Cyber Physical Systems). V Santos (PI). First year support: $93,600. Total support over 3 years: $275,000. 2009-2012
   Role: Co-I.
3. The adaptability of cortex in learning modified control algorithms for neuroprosthetics. NIH R01, NINDS/NIBIB/NICHHD. First year support. $266,583. Total support over 4 years: $1,066,332. 7/1/08 - 6/30/12.
   Role PI.
4. A practical brain-computer interface based on micro-ECoG technology. Arizona Biomedical Research Commission. D Adelson (PI), $52,375. 7/1/10-6/30/13.
   Role: Co-I
5. The role of basal ganglia in learning to control neuroprosthetics. Arizona Biomedical Research Commission. First year support: $50,000. Total support over three years: $150,000. 7/1/08 - 6/30/11.
   Role: PI
6. Cortical control of a dextrous prosthetic hand. NIH Bioengineering Research Partnership. First year support: $113,269. Total support over 5 years: $600,089. 9/16/07-8/31/11.
   Role: PI on ASU subcontract
7. Prairie Technologies 2-Photon Microscope. NIH/NCCR (SIG) High End Instrumentation grant. B Smith (PI), $418,785.
   Role: Co-I .
8. PharmaScan 70/16 In-Vivo Spectroscopy/Imaging System. NIH NCRR High End Instrumentation Program. R. Jung (PI). $809,550.
   Role: Co-I
9. Teaming plan for revolutionizing prosthetics. DARPA/USC/JHUAPL Consortium, J He (PI): $908,909.
   Role: Co-I

Intramural

1. Cooperative neural control of real and virtual devices: towards metamonkeys, metamen, and metawarfighters. *First year support: $10,000. Role: Co-I*
2. Selective modulation of basal ganglia excitability: a potential gene therapy for Parkinson's

Disease: ASU/UA TRIF. Two year support: $182,000. Role: ASU PI
3. High density neural recordings for DBS mapping studies. ASU/Mayo seed grants, V. Evidente (PI). One year support: $31,400
Role: ASU Co-I

NON-ARCHIVAL PUBLICATIONS

PEER-REVIEWED CONFERENCE PROCEEDINGS

Note that in engineering disciplines, these 4 page mini-papers are an important part of our publishing corpus

1. Hellman, R.B., Chang, E., Tanner, J., Helms Tillery, S.I., and Santos, V.J., (2014) A robot hand testbed for enhancing embodiment and functional neurorehabilitation of body scheme in upper limb amputees. Myoelectric Controls Symposium, New Brunswick, Canada, Aug. 18-22.
2. Teplitzky, B[3], **SI Helms Tillery**, E Vu (2009). Miniaturized multichannel recording systems for chronic neural recordings in small animals. *Biomedical Engineering Society 2009 Annual Meeting*
3. Seyedmadani, K[3], **SI Helms Tillery** (2009). The design of a cost-efficient prosthetic gripper. *Biomedical Engineering Society 2009 Annual Meeting*
4. Warren JP[1], M Santello, **SI Helms Tillery** (2009). Electrotactile inducement of the cutaneous rabbit effect (CRE) across human fingertips. *2009 UC Systemwide Bioengineering Symposium*
5. Rincon Gonzalez, L[1], Y Tufail, GE Jabbour, **SI Helms Tillery,** WJ Tyler (2009). Channelrhodopsin-2 expressing neurons stimulated with blue organic LEDs. *Biomedical Engineering Society 2009 Annual Meeting*
6. Hunn D[2], **SI Helms Tillery** (2008) A computational model of the basal ganglia as a rewarded activity selection circuit with non-specific output. *Computational Neuroscience Society Annual Meeting*
7. Hunn D[2], N Baldwin[1], **SI Helms Tillery** (2007) A simulation of basal ganglia as a pattern recognition circuit. *International Basal Ganglia Society IXth Meeting, P-37, pg 82.*
8. Warren JP[1], LM Raleigh[1], **SI Helms Tillery**, M Santello, JD Sweeney (2007) Factors determining the electrotactile receptive field of the human fingertip. *Biomedical Engineering Society 2007 Annual Meeting*.
9. Kiggins, J[3], T Ingalls, J James, M Santello, **SI Helms Tillery** (2005) Bow-arm kinematics in trained and untrained violin playing. *The Neurosciences and Music, II.*
10. Wahnoun, R, **S Helms Tillery**, J He (2004) Neuron selection and visual training for population vector based cortical control. *Conference Proceedings IEEE Engineering in Medicine and Biology Society*, 6: 4607-4610.
11. Schwartz AB, **SI Helms TIllery**, DM Taylor (2003). Cortical control of natural arm movement. *First International IEEE EMBS Conference on Neural Engineering*.
12. **Helms Tillery SI**, DM Taylor, AB Schwartz (2003). The general utility of a neuroprosthetic device under direct cortical control. *Proceedings of the Engineering in Medicine and Biology 25th Annual Meeting*.
13. Fan J, **SI Helms Tillery**, J He (2003). Hand orientation and perturbation effects during reach and grasp. *Proceedings of the Engineering in Medicine and Biology 25th Annual Meeting*
14. Tao K, **SI Helms Tillery**, J He (2003). Determining natural arm configuration along reaching trajectory. *Proceedings of the Engineering in Medicine and Biology 25th Annual Meeting*.
15. Lin WS, **SI Helms Tillery**, J He (2003). Stability of chronic multichannel neural recordings. *Proceedings of the Engineering in Medicine and Biology 25th Annual Meeting*.
16. **Helms Tillery SI**, PR Rousche, K Hausmann[2], D Hall, A Panitch, M Beaumont, DR Kipke (2001). Nerve growth factor dependent changes in electrophysiology measured in a

neurotrophic electrode. *Proceedings of the Engineering in Medicine and Biology 22nd Annual Meeting.*

17. Hausmann K[2], M Beaumont, SE Sakyima-Elbert, DR Kipke, A Panitch (2001) Physiological evidence for the efficacy of NGF-fibrin as a bioactive electrode media. *Biomedical Engineering Society Annual Meeting Abstracts*.

BOOK CHAPTERS

1. Buneo CA, **SI Helms Tillery**, Santello M, Santos VJ, Artemiadis P (2014) *Neuro-Robotics: From Brain Machine Interfaces to Rehabilitation Robotics*. Trends in Augmentation of Human Performance 2, P Artemiadis (ed). Springer Science+Business Media, Dordrecht.
2. Bensmaia S, **SI Helms Tillery** (2011) Tactile feedback from the hand. *The Springer Hand Book*, V Santos, R Balasubramian (eds).
3. Middleton FA, **SI Helms Tillery** (2002) The cerebellum. *Encyclopedia of Cognitive Science*, L Nadel (ed).
4. Bloedel JR, **SI Helms Tillery** (1990). Effect of practice on the kinematics of reaching movements made to moving targets. In: *Tutorials in Motor Science*, J Requin and GE Stehlmach eds., Kluwer Academic Publishers, Dordrecht.

INVITED LECTURES

1. "The development of a peripheral neural interface for somatosensory prostheses". Frontiers in Interdisciplinary Neuroscience and Technology: Sensations to Emotions. Zhejiang University, Hangzhou, China. Nov. 3, 2017.
2. "What concerns a primate scientist, and what prevents us from retiring our research subjects". AALAS National Meeting, Austin, TX. Oct. 16, 2017.
3. "Engineering the brain: what could possibly go wrong?" Ethics@Twilight Fall Lecture Series. Aug. 31, 2017.
4. "Towards a somatosensory prosthesis". Affinity Research Collaborative seminar series, Beth Israel Deaconess Hospital, Harvard Medical School. Dec. 6, 2013.
5. "Postural effects on tactile physiology and perception". Tactile Research Group. Seattle, Washington, November 3, 2011.
6. "Haptics and neuroprosthetics: coding of tactile and proprioceptive signals in SI neurons". Society for the Neural Control of Movement. San Juan, Puerto Rico, April 27, 2011.
7. "Muscle-free behavior: Analysis of neuroprosthetic control." Four Corner Association for Behavior Analysis. Sedona, AZ, April 7, 2009.
8. "Is striatum a pattern recognition system?" Motor control workshop. Vienna, Austria. October 5, 2008
9. "Functional implications of dopamine-driven pattern recognition in striatum" Basal ganglia dynamics vs .basal ganglia function and dysfunction. Workshop at Computational Neuroscience Annual Meeting, Portland, OR. July 23, 2008.
10. "Cortical Neuroprosthetics at ASU: State of the art and future directions" WestBEC 2006. Phoenix, AZ. November 10, 2006.
11. "Decoding for recoding: Neural signals for neuroprosthetics." ASU/BNI 1st Annual Neurosciences Symposium. Phoenix, AZ. November 4, 2006.
12. "Cortically controlled neuroprosthetics." Institute Politecnico Nacional, Mexico City, MX, October 5, 2006.

13. “Cortical neuroprosthetics.” Tecnologico de Monterrey, Monterrey, MX. April 1, 2006
14. “Multi-channel recording in the primate basal ganglia: methods for DBS implant” Mayo Clinic, Scottsdale, AZ. October 5, 2005.
15. “Neuroprosthetics at Arizona State University.” Video lecture to Tecnologico de Monterrey, Monterrey, MX. September 22, 2005.
16. “Music and the brain.” Arizona Science Center, Adults’ Night Out. June 2, 2005.
17. “Issues in cortical neuroprosthetic design”. Harrington Dept. of Bioengineering Lecture series, Arizona State University. March 4, 2005.
18. “The basal ganglia contribution to ... “. Doings. University of Arizona Dept. of Physiology. March 20, 2004.
19. “Your brain on music.” Art Ventures in Engineering, Arizona State University and the City of Tempe. March 13, 2004.
20. “Cortically controlled neuroprosthetics at ASU”. President’s Community Enrichment Programs, Journeys of the Mind. ASU Foundation. March 10, 2004.
21. “Physiological evidence for closed- and segregated-loops in basal ganglia.” Neuroscience Seminar Series, Barrow Neurological Institute. January 27, 2004.
22. “Correlated activity between nuclei of the basal ganglia.” Harrington Dept. of Bioengineering Lecture Series. October 10, 2003.

PRESENTATIONS AT PROFESSIONAL MEETINGS

1. Ashmont KR, J Kerrigan, M Troester, R Jarrar, S Helms Tillery, PD Adelson, B Greger (2016). An algorithmic adjunct to visual inspection: using an empirical mode decomposition based algorithm to detect seizures. Society for Neuroscience 2016 Annual Meeting.
2. Hearn TN, JC Tanner, J LaChapelle, J Burns, J Grainger, E Keefer, J Cheng, S Helms Tillery (2016) Viability of a novel micro-electrocorticography electrode array design for intrasulcal implantation in Macaca mulatta primaryy somatosensory cortex. Society for Neuroscience 2016 Annual Meeting.
3. Tanner JC, Hearn T, S Helms Tillery (2016). Creating a localized and dynamic somatotropin map of area 3b using cutaneous vibratory stimulation. Society for Neuroscience 2016 Annual Meeting.
4. Cui RJ, M Armenta Salas, SI Helms Tillery (2015) Changes in LFP power during motor learning in brain-machine interface. Society for Neuroscience 2015 Annual Meeting.
5. Armenta Salas M, SI Helms Tillery (2015) Neural ensemble dynamics during brain-machine interface controlled motor-like task. Society for Neuroscience 2015 Annual Meeting.
6. Tanner JC, CK Overstreet, SI Helms Tillery (2014). Stochastic facilitation of prosthetic derived sensory stimulation in primaters. Society for Neuroscience 2014 Annual Meeting
7. Ashmont KR, R Wahnoun, P Adelson, SI Helms Tillery, B Greger (2014). Empirical mode decomposition as a seizure detection tool. Society for Neuroscience 2014 Annual Meeting
8. Armenta Salas M, SI Helms Tillery (2014). Neural ensemble response to learning challenges in brain-machine interfaces. Society for Neuroscience 2014 Annual Meeting
9. Armenta Salas M, D Dunning, SI Helms Tillery (2013) Individual and population adaptation in neuronal ensemble during BMI controlled task. Society for Neuroscience 2013 Annual Meeting
10. Overstreet CK, RB Hellman, RD Ponce Wong, VJ Santos, SI Helms Tillery (2013). Discrimination of multichannel ICMS driven by a tactile sensor. Society for Neuroscience 2013 Annual Meeting

11. Tanner JC, N Newman, N Zautra, SI Helms Tillery (2013). Psychophysical limitations and biases in the perception of tactile direction. Society for Neuroscience 2013 Annual Meeting
12. Wahnoun R[4]., **SI Helms Tillery**, PD Adelson (2012). Finger and task specific activation in electrocorticographic recordings of pediatric epileptic patients for brain-machine interface. *Society for University Neurosurgeons*.
13. McAndrew R, J Lingo, SN Naufel[2], **SI Helms Tillery** (2011). Personalized recording chambers for non-human primate cortical recordings. *American Association for Laboratory Animal Science 62nd Annual Meeting.*
14. Armenta Salas M[1], DM Meller[1], **SI Helms Tillery** (2011) Kinematics of a primate reach-to-grasp task with a robot-enhanced virtual environment. *Society for Neuroscience 41st Annual Meeting*
15. Robert, JS, SN Naufel[2], **SI Helms Tillery** (2011) Evaluating resource use in neural prosthetics research. *Society for Neuroscience 41st Annual Meeting.*
16. Mougharbel, EH[3], CK Pierce, DL Frear, **SI Helms Tillery** (2011) Haptic size discrimination. *Society for Neuroscience 41st Annual Meeting.*
17. Naufel, SN[2], VJ Santos, **SI Helms Tillery** (2011). Single-unit responses in somatosensory cortex to precision grip of textured surfaces. *Society for Neuroscience 41st Annual Meeting*
18. Rincon-Gonzalez, L[1], **SI Helms Tillery** (2011). The structure of the proprioceptive-visual mapping of hand location is stable across hands, tasks, and time. but is individually constructed. *Society for Neuroscience 41st Annual Meeting*
19. Pierce, CK[1], **SI Helms Tillery** (2011). Discrimination of electrical stimulation in the primate somatsensory cortex. *Society for Neuroscience 41st Annual Meeting.*
20. Naufel, SN[2], VJ Santos, **SI Helms Tillery** (2010). Evaluating neural response in somatosensory cortex for textured surfaces. *Society for Neuroscience 40th Annual Meeting*
21. Engler-Chiurazzi EB, C Tsang, A Garcia, S Mennenga, M Andrews, J Acosta, J Talboom, B Braden, B Camp, N Peartree, C Zay, S Holloway, B Teplitzky[3], V Santos, **S Helms Tillery**, M McBeath, H Bimonte-Nelson (2010) Generating new synapses at the first Arizona State University Brain Fair for Children: teaching that “Knowledge is power” *Society for Neuroscience 40th Annual Meeting*
22. Pierce CK[1], **SI Helms Tillery** (2010) Somatosensory discrimination in the non-human primate fingertip. *Society for Neuroscience 40th Annual Meeting*
23. Baldwin NA[1], RJ Brackney, **SI Helms Tillery** (2010) Using medial forebrain bundle stimulation ot reinforce spatial-temporal patterns of neuron firing in the frontal cortex. *Society for Neuroscience 40th Annual Meeting*
24. Rincon-Gonzalez L, Y Tufail, **SI Helms Tillery**, WJ Tyler (2010) Activation of channelrhodopsin-2 neurons using organic LEDs: An in vitro and in vivo validation. *Society for Neuroscience 40th Annual Meeting*.
25. Meller, DM[1], **SI Helms Tillery** (2009). Single-unit firing rates in primate primary somatosensory cortex correlate with kinematic measures of the hand. *Society for Neuroscience 39th Annual Meeting.*
26. Pierce, CK[1], **SI Helms Tillery** (2009). Learning of three-dimensional visuomotor rotations. *Society for Neuroscience 39th Annual Meeting.*
27. Warren JP[1], Santello M, **SI Helms Tillery** (2009). The impact of hand posture on the cutaneous rabbit effect (CRE) induced across the fingertips with electrotactile stimulation. *Society for Neuroscience 39th Annual Meeting.*
28. Naufel, S[3], VJ Santos, **SI Helms Tillery** (2009). Evaluating performance in object discrimination tasks for neuroprosthetic research. *Society for Neuroscience 39th Annual Meeting.*
29. Baldwin, N[1], **SI Helms Tillery** (2009). The enhancement of cortical patterns with associated medial forebrain stimulation. *Society for Neuroscience 39th Annual Meeting.*

30. Bobich, LR[1], B Poston, **SI Helms Tillery**, M Santello (2009) Cutaneous reflexes of hand muscles during mult-digit force production *Society for Neuroscience 39th Annual Meeting.*
31. Wahnoun, R[4], **SI Helms Tillery**, J He (2009). Targeted adaptation to the neuroprosthesis? *Society for Neuroscience 39th Annual Meeting.*
32. Rincon Gonzalez, L[1], Y Tufail, GE Jabbour, **SI Helms Tillery**, WJ Tyler (2009) Stimulation of channelrhodopsin-2 expressing neurons using organic LEDs. *Society for Neuroscience 39th Annual Meeting.*
33. Lee D., DYP Henriques, X Li, **SI Helms Tillery**, DD Song, H Poizner (2009) Reaching to kinesthetically defined targets in Parkinson's disease: Effects of deep brain stimulation therapy. *Society for Neuroscience 39th Annual Meeting*.
34. Rincon, L[1], D Diaz, M Santello, **SI Helms Tillery** (2008). The effect of tactile stimulation on the estimate of hand location is different in right and left hands. *Society for Neuroscience 38th Annual Meeting*
35. Tyler, WJ, PM Finsterwald, **SI Helms Tillery**, M Santello (2008) Synapticoustics: remote control of central synaptic transmission using pulsed hypersonic energy. *Third International Conference on Body Area Networks*.
36. Tyler, WJ, **SI Helms Tillery**, G Jabbour, M Santello, GB Raupp (2008) Optical control of neuronal activity using organic light-emitting diodes: implications for the integration of flexible display technology to modulate brain function. *Third International Conference on Body Area Networks*.
37. **Helms Tillery SI**, D Hunn[2], N Baldwin[1] (2007) A model of the basal ganglia as a reward-based pattern recognition and support system. *Society for Neuroscience 37th Annual Meeting Abstracts.*
38. Rincon L[1], JP Warren[1], DA Diaz, G Bodeen, M Santello, **SI Helms Tillery** (2007) The effect of tactile and electrotactile stimulation on the estimate of hand location in dominant and non-dominant hands. *Society for Neuroscience 37th Annual Meeting Abstracts.*
39. Baldwin N[1], BP Olson, J Si, **SI Helms Tillery** (2007) Testing a bulk flow model of inactivation following a muscimol injection. *Society for Neuroscience 37th Annual Meeting Abstracts*
40. Hunn D[2], **SI Helms Tillery** (2006) A comprehensive simulation of the primate basal ganglia. *WestBEC 2006*.
41. Mirtalaei S, **SI Helms Tillery** (2006) Optimization of data processing for use in neural interfaces. *WestBEC 2006*.
42. Rincon L.[1], DA Diaz, JP Warren[1], SI Helms Tillery, M Santello (2006) The effect of tactile and electrotactile stimulation on the estimate of hand location. *WestBEC 2006*.
43. Warren JP[1], LM Raleigh[1], **SI Helms Tillery**, M Santello, JD Sweeney (2006) Effect of electrode size, spacing, and frequency of electrotactile stimuli on tactile sensation and spatial discrimination on the fingertip. *WestBEC 2006*.
44. Hunn D[2], **SI Helms Tillery** (2006) A comprehensive simulation of the basal ganglia. *1st Annual ASU/BNI Neurosciences Symposium*.
45. Wahnoun R, J He, **SI Helms Tillery** (2006) Motor cortical unit behavior under two alternating tasks in a virtual reality environment. *Society for Neuroscience 36th Annual Meeting Abstracts*.
46. Warren JP[1], LM Raleigh[1], **SI Helms Tillery**, M Santello, JD Sweeney (2006) Effect of electrotactile stimulus parameters on tactile sensation and spatial discrimination. *Society for Neuroscience 36th Annual Meeting Abstracts*.
47. He J, J Fan, **SI Helms Tillery** (2006) Motor cortical encoding of planned hand orientation in a 3-d reach-to-grasp task. *Society for Neuroscience 36th Annual Meeting Abstracts*.
48. Raleigh LM[1], JP Warren[1], **SI Helms Tillery**, M Santello, JD Sweeney (2005) Comparison of discriminability in electrotactile and mechanical stimulation of the fingertip. *Society for Neuroscience 35th Annual Meeting Abstracts*.

49. Wahnoun R, **SI Helms Tillery**, J He (2003). Assessing the amount of cortical learning in neural control of prosthetics. *Society for Neuroscience 33rd Annual Meeting Abstracts*.
50. Taylor DM, **SI Helms Tillery**, AB Schwartz (2003). Information transfer rates in brain-machine interfaces. *Society for Neuroscience 33rd Annual Meeting Abstracts*.
51. **Helms Tillery SI**, J Parks (2003). Identified functional connectivity between cortical neurons and elements of basal ganglia. *Society for Neuroscience 33rd Annual Meeting Abstracts*.
52. **Helms Tillery SI**, DM Taylor, AB Schwartz (2002). A maximum likelihood measure applied to signals used in controlling a neural prosthesis. *Society for Neuroscience Annual Meeting Abstracts*.
53. **Helms Tillery SI,** WS Lin, AB Schwartz (2001) Stimulus-response matching in training primates to use a neuroprosthetic device. *Society for Neuroscience Annual Meeting Abstracts*.
54. **Helms Tillery SI**, DM Taylor, R Isaacs, AB Schwartz (2000). Online control of a prosthetic arm from motor cortical signals. *Society for Neuroscience Annual Meeting Abstracts*
55. **Helms Tillery SI**, TJ Ebner, JF Soechting (1994). Differential processing of vertical and horizontal components of arm posture in SI. *Society for Neuroscience Annual Meeting Abstracts*.
56. **Helms Tillery SI**, JF Soechting, TJ Ebner (1992). Discharge of parietal cortical neurons during a variety of hand and arm tasks. I. General Characteristics. *Society for Neuroscience Annual Meeting Abstracts.*
57. Soechting JF, **SI Helms Tillery**, TJ Ebner (1992). Discharge of parietal cortical neurons during a variety of hand and arm tasks. II. Quantitative Analysis. *Society for Neuroscience Annual Meeting Abstracts*.
58. Soechting JF, M Flanders, **SI Tillery** (1989) Sensorimotor transformations for arm movements: serial and parallel processes. *Society for Neuroscience Annual Meeting Abstracts*.
59. Bloedel JR, **SI Tillery**, AJ Pellionisz (1988). Experimental-theoretical analysis of the intrinsic geometry of limb movements. *Society for Neuroscience Annual Meeting Abstracts.*
60. **Tillery SI**, JR Bloedel (1988). Effects of repetition on arm trajectories directed towards moving targets. *Society for Neuroscience Annual Meeting Abstracts*.
61. **Tillery SI**, NH Combs (1987). The problem of internal representations: concepts, implications, and a proposed metric. *First International Congress on Neural Networks Abstracts*.
62. Kowluru A, BE Lehnert, RA Kowluru, **SI Tillery**, MW Bitensky (1986). Effects of hyperglycemic glucosylation on alveolar macrophage cytoskeleton and function. *Endocrine Society Annual Meeting*.
63. Lehnert BE, RA Kowluru, A Kowluru, **SI Tillery**, MW Bitensky (1985). Alterations in alveolar macrophage cytoskeletal proteins and functions during Diabetes Mellitus. *American Thoracic Society Meeting*.
64. **Tillery SI**, ML Cheal (1985). Development of attention in the Mongolian Gerbil: facilitation by eye-opening. *American Psychological Ass Abstracts*

PUBLIC APPEARANCES

March 1, 2012, “Futures@ASU: Synthetic telekinesis”. EMERGE2012, ASU.

April 24, 2011. “Body image in neuroprosthetics.” TEDx ASU West.

Dec 14, 2010. “Brain-computer interface”. Horizon. PBS KAET Channel 8.

May 24, 2010. “Tele-kinetic monkeys -- melding biology and robotics”. Warring Futures, a Future Tense Event. New America Foundation, Washington D.C.

OTHER PUBLICATIONS

1. **SI Helms Tillery** (2012) The use of animals in the biosciences. *AEMB Newsletter*.
2. Naufel SN[2], J Collins, **SI Helms Tillery** (2012) Resource use in the biosciences. *AEMB Newsletter*, 10(1): 6-7.
3. **SI Helms Tillery** (2002). An incident while enjoying life – on the edge. *AZ Mountaineer*, Feb., 2003. [description of a climbing trip with potentially deadly situation]
4. **S. Tillery** (1996) Animal research is a key part of medical discovery process, Guest Editorial, Syracuse Post-Standard, July 22.
5. Steinmetz PN, **SI Helms Tillery** (1994) Animal models: some empirical worries. *Public Affairs Quarterly*, 8(3): 287-298. [An analysis of common antivivisectionist claims, published in rebuttal to a previous *PAQ* paper].

TEACHING

CLASSES

- BME 194: C Programming for biomedical engineers
- BME 200: Conservation principles in bioengineering
- BME 521: Neuromuscular control systems.
- BME 598: Human systems neuroscience
- BME 598: Cellular & molecular neuroscience
- BME 598: Special Topics: Readings in neurophysiology
- HON 398: Neural Transhumanism: technological and ethical issues in neuroprosthetics

MENTORING

DOCTORAL

2015
- Taylor Hearn, Biomedical Engineering
- Justin Tanner, Ph.D. Biomedical Engineering -- provisional
- Kari Rich, Ph.D. Biomedical Engineering -- provisional
- Michelle Armenta Salas, Ph.D. Biomedical Engineering

2014
- Nathan Baldwin. Ph.D. Bioengineering. IGERT Fellowship awardee. Effect of muscimol injection in putamen on activity in cerebral cortex.

2013
- Cynthia K Pierce, Ph.D. Bioengineering. Delivering tactile sensation via cortical stimulation.
- Liliana Rincon, Ph.D. Bioengineering. Channelrhodopsin-2 system for generating light-evoked patterned neural activity.
- Flavio Da Silva, Ph.D. Psychology. Reinforcement schedules and learning in primate models of neuroprosthetics.

2009
- Jay Warren. Ph.D. Bioengineering. *Discrimination of electrotactile stimulus location on and across fingertips*.
- David Meller. Ph.D. Bioengineering. *Characterization and decoding of cutaneous feedback from the hand.*
- Lisa Raleigh. Ph.D. Bioengineering (with M. Santello, Kinesiology) *Electrical stimulation of the fingertip for studying cutaneous reflexe*s.
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MASTERS

Current
- Roy Patchin. M.S. Biomedical Engineering.

2015
- Markey Olson. M.S. Biomedical Engineering. ASU Biomedical Engineering Doctoral program

2011
- Stephanie Naufel. M.S. Biomedical Engineering. Northwestern University Biomedical Engineering Doctoral program

2008
- David Hunn. M.S. Bioengineering. Comprehensive computational model of the basal ganglia as a pattern recognition and support circuit

2007
- Jeremy Crandell. M.S Bioengineering. *Biomechanical parameters of the arm of a rhesus monkey* May, 2007.

2006
- Jason Parks. M.S Bioengineering. *Drug injection modeling for basal ganglia recordings.* April, 2006.

2004
- Kara Hausmann. M.S. Bioengineering. *Efficacy of brain-derived neurotrophic factor in chronic neural micro-electrodes*. Subsequent position: Research Associate, University of Colorado Health Sciences Center, Denver, CO.

UNDERGRADUATE

2014:
- Markey Olson, Senior, BIomedical Engineering, FURI Fellow

2014:
- Gabrielle Maestas, Junior, BIomedical Engineering, FURI Fellow
- Rachel Coar, Junior, Biomedical Engineering
- Jenessa Lancaster, Junior Biomedical Engineering
- Garrett McCann, Senior, Biomedical Engineering

2013:
- Darcy Frear. Senior, Biomedical Engineering. FURI Fellow
- Gabrielle Maestas, Junior, BIomedical Engineering, FURI Fellow
- Rachel Coar, Junior, Biomedical Engineering

2012:
- Elysar Mougharbel. Junior Biomedical Engineering, Grand Challenges Fellow, Haptic discrimination
- Caitlin Tennyson. Senior Biomedical Engineering. FURI Fellow.

2011:
- Brian Dekleva. B.S.E. Biomedical Engineering. Creation of a system for monitoring hand movements and tremor in parkinsonian primates. Northwestern University Biomedical Engineering Doctoral program
- Ben Teplitzky, B.S.E. Biomedical Engineering. University of Minnesota Biomedical Engineering Doctoral program
- Amber Dunning. B.S.E. Biomedical Engineering. USC Biomedical Engineering Doctoral program
- James LeBeau. B.S.E. Biomedical Engineering. ASU Electrical Engineering Doctoral program

2010:

- Stephanie Naufel. B.S. Bioengineering. FURI Undergraduate Fellowship awardee and Honors thesis. Fingertip forces during grasp

2009:

- Sam Elakkad. Senior Bioengineering. FURI Undergraduate Fellowship. Medical School.
- Ben Teplitzky. Sophomore Bioengineering. FURI Undergraduate Fellow. Recording in VTA in zebra finch.

2008

- Maria Bengtson. Senior Bioengineering. FURI Undergraduate Fellowship awardee. Control of bow motion in violin playing. Ph.D. Program in Biomedical engineering, Marquette University
- Jesse Miller. Sophomore Bioengineering. FURI Undergraduate Fellowship awardee. Interdependence of finger and wrist movements.
- Kimia Seyedmadani. Senior Bioengineering. FURI Undergraduate Fellowship awardee. Design of grasp objects for development of sensory neuroprostheses.

2007

- Diego Diaz. B.S. Bioengineering, ITESM, Monterey, Mexico.
- Lachlan Franquemont. B.S. Psychology. Subsequent position: Ph.D. Program in Neuroscience, Brown University.
- Liliana Rincon. B.S. Bioengineering. Subsequent position: Ph.D. program in Bioengineering, Arizona State University

2005

- Jennifer Schumacher. Capstone project: A captive neuron biosensor. Subsequent position: Ph.D. Program in Neuroscience, University of Minnesota

THESIS COMMITTEE MEMBERSHIP (*ITALICIZED TEXT IS FINAL THESIS TITLE*)

- Patrick McGurrin PhD Neuroscience.
- Kari Ashmont . PhD Biomedical Engineering.
- Randall Hellman. Ph.D. Mechanical Engineering. *Haptic Perception, Decision-making, and Learning for Manipulation with Artificial Hands*
- Shanta Bhodapatti. Ph.D. Chemical Engineering. *Nanobody based therapeutics for Alzheimer's Disease*.
- Srinath Kasturirangan. Ph.D. Chemical Engineering. *Antibody based therapeutics for Alzheimer's Disease*.
- Addie Hicks. Ph.D. Bioengineering. *Responses of cortical neurons to applied direct current electric fields in vitro*.
- Andrew Jaczynski. M.S.E. Bioengineering. *Biomechanical analysis of reverse total shoulder arthroplasty*.
- Manoshi Bhowmik-Stoker. Ph.D. Bioengineering. *Proprioceptive analysis of hip replacements.*
- Nathan Jackson. Ph.D. Bioengineering. *Neural recording in the brain using novel movable MEMS microelectrode arrays.*
- Alison Sitek. Ph.D. Bioengineering. *Tuning of deep brain stimulation to minimize side-effects.*
- Ryan Myers. Ph.D. Psychology. *Dopamine release and circling behavior following chronic amphetamine exposure.*
- Cecil Lozan Fortun. Ph.D. Kinesiology. Electrotactile stimulation of the tongue for restoration of vestibular function.
- Jamie Lukos. Ph.D. Kinesiology. Selection of grasp parameters to manage force application.
- Remy Wahnoun. Ph.D. Bioengineering. Effect of neuroprosthetic control on motor cortical neurophysiology.
- Christopher Thorp. M.S. Bioengineering, ASU, 2007. *The relative contributions of*

external noise sources in human intracranial microwire recordings.

- Jesse Martin. B.S. Bioengineering, ASU, 2007. *Neural response due to implanted microelectrodes*.
- Levi Good. Ph.D. Bioengineering, ASU, 2007. *Automated seizure prediction and control in a rat model of chronic epilepsy*.
- Xinying Cai. Ph.D. Bioengineering, ASU, 2007. *Adaptive modifications of cortical activity patterns during motor learning.*
- Tao Kang. Ph.D. Bioengineering, ASU, 2006. *Prediction of hand path and reach location from neuronal activity in dorsal premotor cortical area for neuroprosthetic control*
- Jing Fan. Ph.D. Bioengineering, ASU, 2006. *Cortical control of hand orientation during reach-to-grasp movements in three-dimensional space*.
- Jing Hu. Ph.D. Electrical Engineering, ASU, 2005. *Analysis of motor cortical control and adaptation in a brain-machine interface setting*.
- Melanie Paquette. Ph.D. Psychology, ASU, 2005. *Persistence of amphetamine-evoked rotational behavior during dopamine synthesis blockade early but not late after intranigral 6-OHDA: a sensorimotor analysis of function*

TEACHING AND EDUCATION WORKSHOPS

- National Effective Teaching Institute. June 2008. Three day workshop on effective methods for teaching undergraduate engineering courses. Attended under full support of IAFSOE Dean's Office along with fellow Assistant Professor Christopher Buneo.

SERVICE

NATIONAL SERVICE

Editorship

- Review Editor, Frontiers in Neuroscience

Ad-hoc manuscript review

- Brain Research
- Experimental Brain Research
- European Journal of Neuroscience
- IEEE Transactions on Biomedical Engineering
- Journal of Neural Engineering
- Journal of Neurophysiology
- Proceedings of the National Academy of Science
- Proceedings of the Royal Society of London, Series B

Standing proposal review

- NIH NRSA Review panel: ZRG1 F01-R (20) L: Brain Disorders and Clinical Neuroscience Fellowships
- NIH Special Emphasis panel: BDCN K-10: Clinical Neurophysiology, Devices, and Neuroprosthetics/Brain Disorders and Clinical Neurosciences/SBIR
- NSF IGERT pre-proposal evaluations.

Ad-hoc proposal review

- VA Merit Awards, 2017
- VA Spire Awards, 2016
- Innovation Canada, 2014
- Israel Science Foundation. February 2006
- Research Grants Council of Hong Kong. February, 2006.
- Dutch Social Science Research Council NWO Competitive Reviews, 2004.

Conference service

- Program Committee, IEEE Biomedical Robotics and Biomechatronics, 2008
- Session Chair, SfN Nanosymposium “Decoding Brain Machine Interfaces. 2015

Other national service

- National Citizens’ Technology Forum, NBIC content expert for “Human Enhancement, Identity & Biology”. March, 2008

COLLEGE/UNIVERSITY SERVICE

- Member, Deans Faculty Advisory Committee (2015-present)
- Member, SBHSE Director Search Committee (2011)
- Member, The Ira A Fulton School of Engineering Sabbatical Request Committee (2009)

- Member, DACT Director Search Committee (2008)
- Member, Animal Users Advisory Committee (2009-present)
- Member, Quality of Instruction Committee (2012-2014)

DEPARTMENT SERVICE

- Member, Graduate Committee, Biomedical Engineering (2015-present)
- Chair, Graduate Committee, Biomedical Engineering (2012-2015)
- Member, Harrington Dept. of Bioengineering Graduate Committee (2008-2010)
- Member, School of Biological and Health Systems Engineering Undergraduate Committee (2011-present)

SYNERGISTIC ACTIVITIES

ENGINEERING EDUCATION AND OUTREACH

April 2012. Speed-date-a-scientist event at Arizona Science Center as part of STEMFest, 2012

June 2008. National Effective Teaching Institute workshop. Engineering education pedagogy workshop which covered student learning styles, course preparation, learning objective formulation, lecture delivery, active learning methods, and student and class crisis management.

BIOETHICS

2012-2015t: Fellow for Engineering Ethics, Lincoln Center for Applied Ethics.

Spring, 2007. Bioethics and Bioengineering Interdisciplinary Research Cluster. Co-facilitation with Jason Robert of SoLS. Discussion of bioethical issues encountered in bioengineering, and in particular in neural engineering.

April, 2007. Guest panelist for “Values in Science”

PERFORMING ARTS

2015-present: Violin, *Dusty Tuffet*
2013-2014 Season: Concertmaster, *Tempe Symphony Orchestra*
March, 2012 - Rehearsal conductor, *Tempe Symphony Orchestra*
Summer 2008 - Invited composition for Dance MFA
April, 2007 “Neuroscientist” consultant for SITI theater production of “Hemispheric Disturbances”
Fall 2006 - Fall 2010: violin, guitar, and vocals for *Undercurrent*, a jazz and latin pop ensemble
Fall, 2004 - present: violin with *Tempe Symphony Orchestra*.
1994-1999: Violin, *Onondaga Community Orchestra*
Winter 1994: Associate Conductor for *Minneapolis Theater in the Round* production of “Into the Woods”
1989-1992: Violin, *Mississippi Valley Chamber Orchestra*

PROFESSIONAL AWARDS AND AFFILIATIONS

HONORS AND AWARDS

- 2012: Centennial Professor Honoree. ASU
- 1995-1997: National Association for Research in Schizophrenia and Depression Young Investigator Grant Award.
- 1995: Bacanar Research Award for Outstanding Dissertation.
- 1989-1993: NSF Graduate Fellowship.
- 1988-1989: University of Minnesota Graduate Fellowship
- 1987-1988: Clerkship at Barrow Neurological Institute, Phoenix, AZ
- 1982-1987: Violin scholarship, Arizona State University

PROFESSIONAL MEMBERSHIPS

- Society for Neuroscience
- International Basal Ganglia Society
- Society for the Neural Control of Movement
- The Performing Arts Medicine Association
- New York Academy of Sciences
- IEEE - Institute of Electrical and Electronics Engineers
- IEEE Engineering in Medicine and Biology Society
- BMES - Biomedical Engineering Society