

**CURRICULUM VITAE**  
**Samuel Sheng-Hung Wang, Ph.D.**

**Born:** May 4, 1967  
**Address:** Dept. of Molecular Biology, Princeton University, Princeton, NJ 08544  
**Telephone:** (609) 258-0388  
**FAX:** (609) 258-1028  
**E-mail:** sswang [at] princeton.edu  
**Web:** <http://synapse.princeton.edu>

**Research interests**

- 1) Neuroscience - a) The cerebellum and sensory integration; b) Brain architecture and evolution; c) Signal integration by single neurons.
- 2) Optical methods for observing and manipulating function in living brain tissue.

**Education and training**

1980-1982 Riverside Poly High School, Riverside, California  
1982-1986 B.S. with honor, Physics, California Institute of Technology  
1986-1993 Ph.D., Neurosciences, Stanford University (advisor: Stuart H. Thompson)  
1994-1995, 1996-1997 Postdoctoral fellow, Duke University (with George J. Augustine)  
1995-1996 Congressional Science Fellow, Senate Committee on Labor and Human Resources (with Senator Edward M. Kennedy)  
1997-1999 Postdoctoral Member of Technical Staff, Biological Computation Res. Dept., Bell Labs Lucent Technologies (with David W. Tank and Winfried Denk)  
2000-2006 Assistant Professor, Department of Molecular Biology, Princeton University  
2006- Associate Professor, Department of Molecular Biology and Princeton Neuroscience Institute, Princeton University

**Honors and memberships**

1986 Tau Beta Pi, national engineering honor fraternity  
1986- Society for Neuroscience, member  
1993 Grass Fellow, Marine Biological Laboratory, Woods Hole, Massachusetts  
2000-2002 Alfred P. Sloan Research Fellowship  
2000-2002 Rita Allen Foundation Scholar  
2004-2009 W.M. Keck Distinguished Young Scholar in Medical Research  
2004- National Science Foundation Career Development Award  
2009 AAAS/Subaru SB&F Prize for Excellence in Science Books

**Grant and fellowship support**

1989, 1991 Earl and Ethel Myers Fellowship in Marine Biology  
1990 Lerner-Gray Grant in Marine Zoology  
1991-1993 NIH predoctoral National Research Service Award  
1994-1997 NIH postdoctoral National Research Service Award  
1995-1996 Congressional Science and Engineering Fellow, American Association for the Advancement of Science (AAAS)  
2001-2004 Whitehall Foundation grant  
2002- NIH R01 NS045193: Synaptic learning rules in the mammalian cerebellum

- 2003-2005 National Association for Autism Research predoctoral support for Megan Sullivan
- 2004- National Science Foundation Career Development Award
- 2004-2008 Human Frontier Science Project grant (Principal Investigator)
- 2005- New Jersey Governor's Council on Autism Pilot Grant
- 2006 Writing residency at Rockefeller Foundation Study Center, Bellagio, Italy
- 2008-2010 Autism Speaks postdoctoral support for Ilker Ozden
- 2009-2011 NIH Challenge Grant (Co-investigator; PI, Lynn Enquist)
- 2009-2011 NIH Challenge Grant (Co-investigator; PI, David Tank)

**Research publications:**

S.S. Wang, G.A. Ricaurte, and S.J. Peroutka (1987)  $^3\text{H}$ -3,4-methylenedioxymethamphetamine (MDMA; "Ecstasy") interactions with brain membranes and glass fiber filter paper. *European Journal of Pharmacology* 138:439-443.

S.S.-H. Wang and S.J. Peroutka (1988) R-2,5-Dimethoxy-4- $^{77}\text{Br}$ -bromoamphetamine ( $^{77}\text{Br}$ -R(-)-DOB), a novel radioligand [that] labels a 5-HT binding site subtype. *Psychopharmacology* 94:431-432.

S.J. Peroutka, A. Hamik, M.A. Harrington, C.A. Mathis, P.A. Pierce, and S.S.-H. Wang (1988) R-2,5-dimethoxy-4- $^{77}\text{Br}$ -bromoamphetamine [ $^{77}\text{Br}$ -R(-)DOB] labels a novel 5-hydroxytryptamine binding site in brain membranes. *Molecular Pharmacology* 34:537-542.

S.S. Wang and S.J. Peroutka (1989) Historical perspectives. In *The Serotonin Receptors*. (Ed. E. Sanders-Bush). Humana Press, pp. 3-20.

S.S.-H. Wang and S. Thompson (1992) A-type potassium channel clusters revealed using a new statistical analysis of loose patch data. *Biophysical Journal*, 63:1018-1025.

C.A. Mathes, S.S.-H. Wang, H.M. Vargas, and S.H. Thompson (1992) Intracellular calcium release in N1E-115 neuroblastoma cells is mediated by the M1 muscarinic receptor subtype and is antagonized by McN-A-343. *Brain Research* 585:307-310.

S.S.-H. Wang, C.A. Mathes, and S.H. Thompson (1993) Membrane toxicity of the protein kinase C inhibitor calphostin A by a free-radical mechanism. *Neuroscience Letters*, 157:25-28. (published in error a second time as 156:145-148)

S.S.-H. Wang (1993) Modeling the apparent diffusion constant of calcium ions emanating from a channel: implications for calcium wave propagation. *Biological Bulletin*, 185:297-298.

S.S.-H. Wang and S.H. Thompson (1994) Measurement of changes in muscarinic and histaminergic receptor density in single neuroblastoma cells using calcium release desensitization. *Cell Calcium*, 15:483-496.

S.S.-H. Wang, A.A. Alousi, and S.H. Thompson (1995) The lifetime of inositol 1,4,5-trisphosphate in single cells. *Journal of General Physiology*, 105:149-171.

S.S.-H. Wang and S.H. Thompson (1995) Local positive feedback by calcium in the propagation of intracellular calcium waves. *Biophysical Journal*, 69:1683-1697.

DeBello, W.M., V. O'Connor, T. Dresbach, S.W. Whiteheart, S.S.-H. Wang, F.E. Schweizer, H. Betz, J.E. Rothman, and G.J. Augustine (1995) SNAP-mediated protein-protein interactions essential for neurotransmitter release. *Nature*, 373:626-630.

- S.S.-H. Wang and G.J. Augustine (1995) Confocal imaging and local photolysis of caged compounds: dual probes of synaptic function. *Neuron*, 15:755-760.
- M.E. Burns, S.A. Beushausen, G.J. Chin, D. Tang, W.M. DeBello, T. Dresbach, V. O'Connor, F.E. Schweizer, S.S.-H. Wang, S.W. Whiteheart, H. Betz, J.E. Rothman, and G.J. Augustine (1995) Proteins involved in synaptic vesicle docking and fusion. *Cold Spring Harb. Symp. Quant. Biol.* 60:337-348.
- G.J. Augustine, H. Betz, K. Bommert, M.P. Charlton, W.M. DeBello, T. Dresbach, J.M. Hunt, V. O'Connor, F.E. Schweizer, S.S.-H. Wang, and S.W. Whiteheart (1996) Molecular mechanisms of neurotransmitter secretion: functional studies at the squid giant synapse. In *Basic neuroscience in invertebrates*. (Ed. H. Koike, Y. Kidokoro, K. Takahashi, T. Kanaseki) Japan Scientific Societies Press.
- R. Kupferman, P.P. Mitra, P.C. Hohenberg, and S.S.-H. Wang (1997) Analytical calculation of intracellular calcium wave characteristics. *Biophysical Journal*, 72:2430-2444.
- A.E. Schivell, S.S.-H. Wang, and S.H. Thompson (1997) Behavioral modes arise from a random process in the nudibranch *Melibe*. *Biological Bulletin*, 192:418-425.
- D.L. Pettit\*, S.S.-H. Wang\*, K.R. Gee, and G.J. Augustine (1997) Chemical two-photon uncaging: a novel approach to mapping glutamate receptors. *Neuron*, 19:465-471.
- G.J. Augustine, E.A. Finch, and S.S.-H. Wang (1998) The spatial range of dendritic signals for cerebellar long-term depression: studies with local photolysis of caged compounds. In *Integrative aspects of calcium signalling*. (Ed. A. Verkhratsky and E.C. Toescu). Plenum Press.
- T. Furuta, S.S.-H. Wang, J.L. Dantzer, T.M. Dore, W.J. Bybee, E.M. Callaway, W. Denk, and R.Y. Tsien (1999) Brominated 7-hydroxycoumarin-4-ylmethyls: novel photolabile protecting groups with biologically useful cross-sections for two photon photolysis. *Proc. Natl. Acad. Sci. USA*, 96:1193-1200.
- S.S.-H. Wang and G.J. Augustine (1999) Calcium signaling in neurons: a case study in cellular compartmentalization. In *Calcium as a cellular regulator*. (Ed. E. Carafoli and C.B. Klee) Oxford University Press, pp. 545-566.
- G.J. Augustine, D.L. Pettit, and S.S.-H. Wang (1999) Spatially resolved flash photolysis via chemical two-photon uncaging. In *Imaging: a laboratory manual*. (Eds. R. Yuste, F. Lanni, A. Konnerth) Cold Spring Harbor Press.
- S.S.-H. Wang, L. Khiroug, and G.J. Augustine (2000) Quantification of spread of cerebellar long-term depression with chemical two-photon uncaging of glutamate. *Proc. Natl. Acad. Sci. USA*, 97:8635-8640.
- S.S.-H. Wang, W. Denk, and M. Häusser (2000) Coincidence detection in single dendritic spines mediated by calcium release. *Nature Neuroscience*, 3:1266-1273.
- D.A. Clark, P.P. Mitra, and S.S.-H. Wang (2001) Scalable architecture in mammalian brains. *Nature*, 411:189-193 (also see News & Views by Kaas and Collins, 411:141-142).
- S.S.-H. Wang, P.P. Mitra, and D.A. Clark (2002) How did brains evolve? *Nature*, 415:135 (also see Communications Arising by Sultan and Barton, 415:133-135).
- K.H. Harrison, P.R. Hof, and S.S.-H. Wang (2002) Scaling laws in the mammalian neocortex: does form provide clues to function? *Journal of Neurocytology*, 30:289-298.

- J. DeFelipe, G.N. Elston, I. Fujita, J. Fuster, K.H. Harrison, P.R. Hof, Y. Kawaguachi, K.A.C. Martin, K.S. Rockland, A.M. Thomson, S.S.-H. Wang, E.L. White, and R. Yuste (2002) Neocortical circuits: Evolutionary aspects and specificity versus non-specificity of synaptic connections. Remarks, main conclusions and general comments and discussion. *Journal of Neurocytology*, 30:387-416.
- S.S.-H. Wang and G. Major (2003) Integrating over time with dendritic wave-fronts. *Nature Neuroscience*, 6:906-908.
- M.J. Burish, H.Y. Kueh, and S.S.-H. Wang (2004) Brain architecture and social complexity in modern and ancient birds. *Brain, Behavior and Evolution*, 63:107-124.
- K.D. Wyatt, P. Tanapat, and S.S.-H. Wang (2005) Speed limits in the cerebellum: constraints from myelinated and unmyelinated parallel fibers. *European Journal of Neuroscience*, 31:2285-2290.
- D.H. O'Connor, G.M. Wittenberg, and S.S.-H. Wang (2005) Initiation of graded bidirectional synaptic plasticity by step-like unitary events. *Proc. Natl. Acad. Sci. USA*, 102:9679-9684. doi:10.1073/pnas.0502332102.
- D.H. O'Connor, G.M. Wittenberg, and S.S.-H. Wang (2005) Dissection of bidirectional synaptic plasticity into saturable unidirectional processes. *Journal of Neurophysiology*, 94:1564-1572. doi:10.1152/jn.00047.2005.
- M.R. Sullivan, A. Nimmerjahn, D.V. Sarkisov, F. Helmchen, and S.S.-H. Wang (2005) *In vivo* calcium imaging of circuit activity in cerebellar cortex. *Journal of Neurophysiology*, 94:1635-1643. doi:10.1152/jn.01013.2004.
- S. Shoham\*, D.H. O'Connor\*, D.V. Sarkisov, and S.S.-H. Wang (2005) Rapid neurotransmitter uncaging in spatially defined patterns. *Nature Methods*, 3:837-843. doi:10.1038/NMETH793.
- S.M. Thompson, J.P.Y. Kao, R.H. Kramer, K.E. Poskanzer, R.A. Silver, D. Digregorio, and S.S.-H. Wang (2005) Flashy science: controlling neural function with light (Mini-symposium review). *Journal of Neuroscience*, 25:10358-10365.
- G.M. Wittenberg and S.S.-H. Wang (2006) Malleability of spike-timing-dependent plasticity at the CA3-CA1 synapse. *Journal of Neuroscience*, 26:6610-6617. doi:10.1523/JNEUROSCI.5388-05.2006.
- D.V. Sarkisov and S.S.-H. Wang (2006) Alignment and calibration of a focal neurotransmitter uncaging system. *Nature Protocols*, 2:828-832. doi: 10.1038/nprot.2006.124.
- D.H. O'Connor, G.M. Wittenberg, and S.S.-H. Wang (2007) Contributions and timing of putative presynaptic and postsynaptic changes during unitary plasticity events at the CA3-CA1 synapse. *Synapse*, 61:664-678.
- D.V. Sarkisov, S.E. Gelber, J.W. Walker, and S.S.-H. Wang (2007) Synapse-specificity of calcium release probed by chemical two-photon uncaging of IP<sub>3</sub>. *Journal of Biological Chemistry*, 282:25517-25526.
- D.V. Sarkisov and S.S.-H. Wang (2007) Uncaging techniques combined with patch clamp recordings. In *Patch clamp methods: Advanced Techniques (Neuromethods)*, 2<sup>nd</sup> edition. Editor: W. Walz. Humana Press.

G.M. Wittenberg and S.S.-H. Wang (2007) Evolution and scaling of dendrites. In *Dendrites*, 2<sup>nd</sup> edition. Editors: M. Häusser, N. Spruston and G. Stuart. Oxford University Press.

D.V. Sarkisov and S.S.-H. Wang (2008) Order-dependent coincidence detection in cerebellar Purkinje neurons at the inositol trisphosphate receptor. *Journal of Neuroscience*, 28:133-142.

S.S.-H. Wang, J.R. Shultz, M.J. Burish, K.H. Harrison, P.R. Hof, L.C. Towns, M.W. Wagers, and K.D. Wyatt (2008) Functional trade-offs in white matter axonal scaling. *Journal of Neuroscience*, 28:4047-4056.

I. Ozden\*, H.M. Lee\*, M.R. Sullivan, and S.S.-H. Wang (2008) Identification and clustering of event patterns from *in vivo* multiphoton optical recordings of neuronal ensembles. *Journal of Neurophysiology*, 100:495-503.

S.S.-H. Wang (2008) Functional tradeoffs in axonal scaling: implications for brain function. *Brain, Behavior and Evolution*, 72:159-167.

F. Helmchen, S.S.-H. Wang, and W. Denk (2009) Multiphoton imaging in neuroscience. In *Biomedical Optical Imaging*. Editors: J.G. Fujimoto and D. Farkas. Oxford University Press.

T.M. Hoogland\*, B. Kuhn\*, W. Göbel, W. Huang, J. Nakai, F. Helmchen, S.J. Flint, and S.S.-H. Wang (2009) Volume-based glial calcium signals in the cerebellum. *Proc. Natl. Acad. Sci. USA*, 106:3496-3501.

I. Ozden\*, M.R. Sullivan\*, H.M. Lee, and S.S.-H. Wang (2009) Reliable coding emerges from coactivation of climbing fibers in microbands of cerebellar Purkinje neurons. *Journal of Neuroscience*, 29:10463-10473.

A.E. Granstedt, M.L. Szpara, B. Kuhn, S.S.-H. Wang, and L.W. Enquist (2009) Fluorescence-based monitoring of activity in virally traced neural circuits. *PLoS ONE*, 9:e6923.

E.F. Civillico, J.P. Rickgauer, and S.S.-H. Wang (2009) Targeting and excitation of photoactivatable molecules: design considerations for neurophysiology experiments. In *Applications of Photoactivatable Molecules for Biology*. Editors: J.J. Chambers and R.H. Kramer. In press.

T.M. Hoogland, and S.S.-H. Wang. In vivo monitoring of astrocytic signaling in the cerebellum with synthetic and genetically encodable fluorescent calcium indicators. In *Imaging: a laboratory manual*. (Eds. A. Konnerth, F. Helmchen, R. Yuste) Cold Spring Harbor Press. In press.

E.F. Civillico and S.S.-H. Wang. Construction of an AOD-based instrument for patterned ultraviolet photolysis of caged neurotransmitter. In *Imaging: a laboratory manual*. (Eds. A. Konnerth, F. Helmchen, R. Yuste) Cold Spring Harbor Press. In press.

\*The first two authors contributed equally to these works.

### **Book:**

Sandra Aamodt and Sam Wang: *Welcome To Your Brain: Why You Lose Your Car Keys but Never Forget How to Drive and Other Puzzles of Everyday Life*. Bloomsbury USA. In US English (March 2008) and 20 international translations. Winner of the 2009 AAAS/Subaru SB&F Prize for Excellence in Science Books. <http://welcometoyourbrain.com>.

### **Popular articles:**

Sandra Aamodt and Sam Wang: Exercise on the brain. *New York Times*, November 8, 2007, page A33 (op-ed).

Sandra Aamodt and Sam Wang: Ten amazing facts about your brain. *London Times*, March 28, 2008.

Sandra Aamodt and Sam Wang: Tighten your belt, strengthen your mind. *New York Times*, April 2, 2008, page A27 (op-ed).

Sam Wang: Autism myth lives on. *USA Today*, April 16, 2008.

Sam Wang and Sandra Aamodt: Your brain lies to you. *New York Times*, June 27, 2008, page A19 (op-ed).

Sam Wang and Sandra Aamodt: A vast left-handed conspiracy. *Washington Post*, July 6, 2008, page B02.

Sam Wang and Sandra Aamodt: How unscrupulous campaign strategists are taking advantage of a quirk in our brains – and what reporters can do to stop helping them (commentary). *Nieman Watchdog* online, August 25, 2008.

Sam Wang and Joshua Gold: Your brain's secret ballot. *New York Times*, October 28, 2008, page A23 (op-ed).

Sam Wang: Obama, don't fear secret racism - the Bradley effect is history. *New York Daily News* online, November 3, 2008.

The Princeton Election Consortium, a weblog of polling analysis and commentary at <http://election.princeton.edu>. The site attracted 1.3 million hits and considerable media coverage.

Sam Wang and Sandra Aamodt: Guest columnist for The Wild Side (<http://judson.blogs.nytimes.com/>), Olivia Judson's weblog at the *New York Times*. March 2009.

Sam Wang and Sandra Aamodt: Mugged by our genes? *International Herald-Tribune*, March 28-29, 2009, page 6 (op-ed).

Sam Wang: Postcards from the brain. *Physics World*, July 2009, pages 37-39.

Sam Wang (2009) Research highlight: a neuroscientist explores the energetic efficiency of the brain. *Nature*, in press, October 15.

#### **Selected recent meeting abstracts:**

E.F. Civillico, G.M. Wittenberg, D.H. O'Connor, D.V. Sarkisov, and S.S.-H. Wang (2007) Summation rules in the Purkinje cell dendritic arbor. Soc. Neurosci. Abstr.

B. Kuhn, T.M. Hoogland, I. Ozden, W. Huang, S. J. Flint, M.T. Hasan, and S.S.-H. Wang (2008) In vivo imaging of calcium indicator proteins in identified cell types of the cerebellum. Soc. Neurosci. Abstr.

T.M. Hoogland, I. Ozden, D.A. Dombeck, B. Kuhn, M.R. Sullivan, F. Collman, D.W. Tank, and S.S.-H. Wang (2008) Molecular layer interneuron activation and correlated climbing fiber synchrony in anesthetized and awake mobile rodents. Soc. Neurosci. Abstr.

I. Ozden, D.A. Dombeck, T. Hoogland, F. Collman, S.S.-H. Wang, D.W. Tank (2008) Optical monitoring of stimulus and movement-associated calcium transients in groups of cerebellar neurons in awake mobile mice. Soc. Neurosci. Abstr.

E.F. Civillico, D.H. O'Connor, G.M. Wittenberg, S.S.-H. Wang (2008) Spatial and temporal clustering requirements for local summation of excitatory input to Purkinje cell dendrites. Soc. Neurosci. Abstr.

E.R. Schneider, S.S.-H. Wang (2008) Post-inhibitory rebound in deep nuclear neurons as a putative readout mechanism for complex spike synchrony in Purkinje cells. Soc. Neurosci. Abstr.

B. Kuhn, I. Ozden, X.R. Sun, M.T. Hasan, S.S.-H. Wang (2009) A combinatorial genetic approach for cell type specific expression of fluorescent calcium indicator proteins delivered by recombinant adeno-associated viruses. Soc. Neurosci. Abstr.

E.R. Schneider, E.F. Civillico, S.S.-H. Wang (2009) Burst firing and dendritic calcium dynamics in identified cell types of the deep cerebellar nuclei. Soc. Neurosci. Abstr.

I. Ozden, D.A. Dombeck, T.M. Hoogland, F. Collman, S.S.-H. Wang, D.W. Tank (2009) Behavior-dependent representations of stimuli and movement in cerebellar neuronal ensembles of awake mobile mice. Soc. Neurosci. Abstr.

### **Inside activities**

#### **Teaching at Princeton University**

Fall 2000 Molecular Biology 508 - Neurobiology (Berry/Tsien/Wang)  
 Fall 2001 Molecular Biology 408 - Neurobiology (Berry/Gould/Wang)  
 Fall 2001 Molecular Biology 508 - Neurobiology (Berry/Wang)  
 Spring 2002 Molecular Biology 549 - Laboratory in Neurophysiology (Gelperin/Tank/Wang)  
 Fall 2002 Molecular Biology 408 - Cellular and Systems Neuroscience (Wang/Gould)  
 Fall 2003 Molecular Biology 408 - Cellular and Systems Neuroscience (Wang)  
 Fall 2004 Molecular Biology 408 - Cellular and Systems Neuroscience (Eggenschwiler/Wang/Haxby)  
 Fall 2005 Molecular Biology 408 - Cellular and Systems Neuroscience (Eggenschwiler/Wang)  
 Fall 2006 Molecular Biology 408 - Cellular and Systems Neuroscience (Wang)  
 Fall 2006 Molecular Biology 90 - Advanced Seminar in Cellular and Systems Neuroscience (Wang)  
 Fall 2008 Molecular Biology 408 - Cellular and Systems Neuroscience (Wang/Gould)  
 Spring 2009 Molecular Biology 214 - Introduction to Cellular and Molecular Biology (Bassler/Coller/Hughson/Rose/Shenk/Thieringer/Tilghman/Wang)  
 Fall 2009 Neuroscience 501 - Graduate core course in neuroscience (Tank/Gelperin/Wang/Brody/Ghazanfar/Gould/Eggenschwiler/Berry/Boulanger/Murthy/Enquist)  
 Spring 2010 Neuroscience 101 - Neuroscience and Everyday Life (Wang/Gelperin)  
 Spring 2010 Molecular Biology 214 - Introduction to Cellular and Molecular Biology

#### **Graduate students and postdoctoral research associates**

Dr. Dmitry Sarkisov (2000-2007)	Physics (Ph.D. '06)
Dr. Gayle Wittenberg *'03 (2001- (2003-2006)	Molecular Biology (Ph.D. '03) Council on Science and Technology, Teaching Fellow (now at Bristol-Myers Squibb)
Dr. Shy Shoham (2001-2005)	Lewis Thomas Fellow (now faculty, The Technion, Israel)
Kim Hatch Harrison (2002-Spring 2003)	Molecular Biology (M.A. '01; now teaching)

Dr. Daniel O'Connor (2002-2006)	Psychology / Molecular Biology (Ph.D. '06; now at CSHL)
Dr. Megan Sullivan (2002-2006)	Molecular Biology (Ph.D. '06)
Dr. Bernd Kuhn (2004-present)	
Dr. Ilker Ozden (2004-present)	Autism Speaks postdoctoral fellow
Dr. Tycho Hoogland (2005-2009)	Postdoc (now at Netherlands Institute for Neuroscience)
Dr. Eugene Civillico (2006-2009)	Patterson Trust postdoctoral fellow
Eve Schneider (2007-present)	Psychology
Richard Xiaonan Sun (2007-present)	Molecular Biology and UMDNJ M.D.-Ph.D. program
Alexander Kloth (2009-present)	Molecular Biology

### Undergraduate students

Damon Clark '01	Physics	Went to Harvard Univ. (Ph.D.)
	Clark's junior independent work was published in <i>Nature</i> .	
Jennifer Shultz '01	Molecular Biology	Went to Univ. of Iowa (M.D.)
	Shultz's senior year work received a departmental best thesis award and launched a major project.	
Mark Burish '02	Molecular Biology	Went to Vanderbilt Univ. (M.D./Ph.D.)
	Burish's senior thesis was published in <i>Brain, Behavior and Evolution</i> .	
Hao Yuan Kueh '02	Physics	Went to Harvard Univ. (Ph.D.)
Matthew Wagers '03	Molecular Biology	Went to Univ. of Maryland (Ph.D.)
Samuel Hall '03	Molecular Biology	Went to Wall Street
	Hall's senior thesis received a departmental best thesis award.	
Lily Johnston '05	Psychology	Going to medical school
Varun Phadke '05	Molecular Biology	Went to Harvard Medical School (M.D.)
	Phadke was the Class of 2005 valedictorian.	
David Matthews '05	Molecular Biology	Went to UCSD (Ph.D.)
Chelsea Meskunas '06	Molecular Biology	Going to medical school
Natalia Balko '07	Molecular Biology	
Jonathan Charlesworth '07	Molecular Biology	Went to UCSF (Ph.D.)
Justin Huynh '07	Molecular Biology	
Hyunyoung Megan Lee '08	Independent Concentration, Computational Biology	Went to U.Md. (M.D.)
Andrew Blucher '09	Molecular Biology	
Diya Das '12		

### University and departmental service

2000-present	Department of Molecular Biology Seminar Committee
2001	Fellow, Rockefeller College
2001	Symposium planner, Dynamics in Biological Networks (with S. Tilghman and S. Tavazoie)
2003-2007	Adviser, Forbes College
2003-present	Executive Committee, Program in Neuroscience
2005-2008	University Committee on Committees
2006-2010	University Committee on Public Lectures (chair, 2006-)
2006-2008	Curriculum Committee, Undergraduate Certificate in Neuroscience program
2007-present	Fellow, Forbes College
2008-present	Curriculum Committee, Program in Neuroscience
2008-present	Admissions Committee, Neuroscience Ph.D. Program
2008-present	Graduate Committee, Department of Molecular Biology
2008-present	Institutional Animal Care and Use Committee (chair)
2009-2010	Fellow, Old Dominion

## **Outside activities**

### **Invited talks and posters (Scientific meetings; talk given unless otherwise indicated)**

- 1997 Southern California Optical Biology Users Group, University of California, Irvine, CA.
- 2000 Neural Information and Coding Meeting, Grindelwald, *Switzerland*.
- 2001 Gordon Research Conference on Calcium Signaling, Oxford University, Oxford, *England*.
- 2002 Workshop on Single Cell Computation, University College London, London, *England*.
- 2003 Workshop on Constraints in Neural Systems Design, Computational Neuroscience (CNS 2003) Meeting, Alicante, *Spain*.
- 2003 Banbury Workshop, Optimization and Constraints in the Evolution of Brain Design, Cold Spring Harbor Laboratory, Cold Spring Harbor, NY.
- 2003 Keck Foundation/National Academy of Sciences Futures Initiative, Decisions, Signals and Meaning in Biology, Chemistry, Physics and Engineering, Beckman Center, Irvine, CA. (no talk)
- 2004 Monte Verità Workshop on Spike-Timing Dependent Plasticity (STDP), Monte Verità, Ascona, *Switzerland*.
- 2004 Third Astrobiology Science Conference, NASA Ames Research Center, Moffett Field, CA.
- 2004 Symposium on Optical Methods in Neuroscience, Microscopy and Microanalysis meeting, Savannah, GA.
- 2004 Workshop on Optimization and Neural Coding, Institute for Theoretical Physics, Santa Barbara, CA.
- 2004 Meeting on Brain Development, National Alliance for Autism Research, Fort Lauderdale, FL. (no talk)
- 2005 Keck Foundation Annual Meeting, Los Angeles, CA. (also 2007, 2008, 2009)
- 2005 Invited retreat speaker, Department of Neurobiology, University of California, Los Angeles, CA.
- 2005 Mini-symposium on controlling neural function with light. Chair, Scott M. Thompson. Society for Neuroscience meeting, Washington, DC.
- 2005 Session moderator, Gordon Research Conference on Neuroethology. Chairs, Nicholas Strausfeld and Catherine Carr. Magdalen College, Oxford University, Oxford, *England*.
- 2005 US National Academy of Science Frontier of Science Symposium. Principles of Brain Design. Beckman Center, University of California, Irvine, CA.
- 2006 Rita Allen Foundation 30<sup>th</sup> Anniversary Symposium, Institute for Advanced Study, Princeton NJ.
- 2006 Human Frontier Science Project Awardees Annual Meeting, Institut Pasteur, Paris, *France*. (poster)
- 2007 Karger Workshop on brain evolution, Society for Neuroscience meeting, San Diego, CA.
- 2008 Mini-School and Workshop on Multiple Time Scales in the Dynamics of the Nervous System, Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, *Italy*.
- 2008 Conference on Perceptual Learning, Motor Learning, and Automaticity, Netherlands Institute for Neuroscience, Amsterdam, *Netherlands*. (commemoration of the 200<sup>th</sup> anniversary of the Royal Netherlands Academy of Sciences)
- 2008 Conference on Learning and the Brain, MIT, Cambridge, MA.
- 2009 Banbury meeting on Searching for Principles Underlying Memory in Biological Systems, Cold Spring Harbor Laboratory, Cold Spring Harbor, NY.
- 2009 Meeting on Computational Cell Biology, Cold Spring Harbor Laboratory, Cold Spring Harbor, NY.
- 2009 Psi Chi Invited Speaker, Midwestern Psychological Association meeting, Chicago, IL.
- 2009 Society for Research on the Cerebellum, second annual meeting, Chicago, IL.

### **Invited talks (Research departments)**

- 1994 Department of Physiology, University of Colorado Health Sciences Center, Denver, CO.
- 1995 Department of Theoretical Physics, AT&T Bell Laboratories, Murray Hill, NJ.
- 1995 Laboratory of Theoretical and Physical Biology, National Institutes of Health, Bethesda, MD.
- 1999 Department of Neurobiology, Duke University Medical Center, Durham, NC.

- 1999 Department of Biomedical Engineering, Boston University, Boston, MA.
- 1999 Department of Developmental and Cell Biology, University of California, Irvine, CA.
- 1999 Department of Molecular Biology, Princeton University, Princeton, NJ.
- 1999 Department of Neurobiology and Behavior, University of California, Irvine, CA.
- 2000 Department of Neurology, Stanford University Medical Center, Stanford, CA.
- 2000 Department of Physiology, University College, London, *England*.
- 2000 Division of Neurophysiology, National Institute for Medical Research, London, *England*.
- 2000 Department of Biology, Morehouse College, Atlanta, GA.
- 2000 Max Planck Institute for Medical Research, Dept. Biomedical Optics, Heidelberg, *Germany*.
- 2000 Karolinska Institutet, Stockholm, *Sweden*.
- 2001 Sloan Center for Theoretical Neurobiology, Caltech, Pasadena, CA.
- 2001 Program in Neuroscience, Columbia University, New York, NY.
- 2001 Wyeth-Ayerst Research Laboratories, Princeton, NJ.
- 2002 Center for Neurobiology, Mount Sinai School of Medicine, New York, NY.
- 2002 Systems neuroscience seminar, Cold Spring Harbor Laboratory, Cold Spring Harbor, NY.
- 2002 Department of Physiology, New York Medical College, Albany, NY.
- 2003 Department of Physiology and Biophysics, University of Washington, Seattle, WA.
- 2003 Center for Cognitive Neuroscience, Duke University, Durham, NC.
- 2004 Baylor Medical College, Houston, TX. (Distinguished Neuroscientist Lecture Series)
- 2004 Max Planck Institute for Medical Research, Dept. Cell Physiology, Heidelberg, *Germany*.
- 2004 University of California, San Diego, CA.
- 2004 Salk Institute for Biological Studies, La Jolla, CA.
- 2004 Mathematical Biosciences Institute, Ohio State University, Columbus, OH.
- 2004 Neuroscience Program, University of Michigan, Ann Arbor, MI.
- 2004 Rowland Institute for Physics, Harvard University, Cambridge, MA.
- 2004 Department of Molecular and Cell Biology, Harvard University, Cambridge, MA.
- 2005 Center for Statistics in the Social Sciences, University of Washington, Seattle, WA.
- 2005 Department of Physiology and Biophysics, University of Washington, Seattle, WA.
- 2005 Department of Brain and Cognitive Sciences, MIT, Cambridge, MA.
- 2005 Learning and Memory Seminar, Dept. Neurobiology, University of California, Los Angeles, CA.
- 2005 Redwood Neuroscience Institute, Menlo Park, CA.
- 2005 Department of Neurobiology, Stanford University School of Medicine, Stanford, CA.
- 2005 Hopkins Marine Station, Stanford University, Pacific Grove, CA.
- 2005 Neuroscience Colloquium, Brown University, Providence, RI.
- 2005 CIMA, University of Navarra, Pamplona, *Spain*.
- 2006 Biological Chemistry Seminar Series, University of Pennsylvania, Philadelphia, PA.
- 2006 Vollum Institute, Oregon Health Sciences University, Portland, OR.
- 2006 Interdepartmental science seminar series, Delaware State University, Dover, DE.
- 2006 Department of Physiology, Anatomy and Genetics, Oxford University, Oxford, *England*.
- 2006 Instituto de Neurociencias de Alicante, Universidad Miguel Hernandez, Alicante, *Spain*.
- 2006 Max Planck Institute for Medical Research, Dept. Cell Physiology, Heidelberg, *Germany*.
- 2006 Mahoney Institute of Neurological Sciences colloquium, Univ. Pennsylvania, Philadelphia, PA.
- 2006 Translational Neuroscience Seminar Series, Mount Sinai School of Medicine, New York, NY.
- 2007 Neuroscience program, University of California San Diego, San Diego, CA.
- 2007 Biophysics seminar series, Rockefeller University, New York, NY.
- 2007 Keynote speaker, Robert Wood Johnson MD/PhD program retreat, UMDNJ, Piscataway, NJ.
- 2007 Seminars in Neuroscience series, West Virginia University, Morgantown, WV.
- 2008 Janelia Farm, Howard Hughes Medical Institute, Ashburn, VA.
- 2008 Department of Physiology, University College, London, *England*.
- 2009 Origins Institute, McMaster University, Toronto, *Canada*.
- 2009 Neuroscience Graduate Program seminar, McMaster University, Toronto, *Canada*.
- 2009 SUNY Downstate Medical Center, Brooklyn, NY.

2009 Department of Neuroscience, Johns Hopkins University School of Medicine, Baltimore, MD.

**Invited public outreach (selected)**

- 1997 National Association of Graduate-Professional Students, 12<sup>th</sup> annual meeting, New Orleans, LA.
- 2001 World Congress of Science Producers, Washington, DC.
- 2002 Policy Fellows' retreat, American Association for the Advancement of Science, Washington DC.
- 2002 Science on Saturdays lecture, Princeton Plasma Physics Laboratory, Princeton, NJ.
- 2004 Phi Beta Kappa induction dinner, Princeton University.
- 2005 Nassau Club, Princeton, NJ.
- 2005 Discussion panelist. Blurry vision: bridging the gap between science and the public. Princeton Dept. Molecular Biology and New York Academy of Sciences meeting. November 8, 2005.
- 2006 Princeton Alumni Council outreach trip, Seattle, WA.
- 2006 Princeton Tiger Talk for high school students, Princeton, NJ.
- 2007 Discussant, panel on career development, Society for Neuroscience, San Diego, CA.
- 2007 Princeton Alumni Council outreach trip, Los Angeles, CA.
- 2008 Smithsonian Associates, Washington, DC.
- 2008 Princeton Alumni Council outreach trip, Hong Kong, China.
- 2008 *Brainwave* series, discussion of creativity and the brain with Sandra Aamodt and director Julie Taymor, Rubin Museum of Art, New York, NY.
- 2008 authors@google, Mountain View, CA.
- 2008 Panel discussion on science writing: "Crystals, Quarks, Biomes and Genomes: How to Make Complex Science Compelling." Princeton University, Princeton, NJ.
- 2008 Panel discussion on the Challenges of the Brain, sponsored by *Discover* magazine/NSF/Franklin Institute. Philadelphia, PA.
- 2008 Renaissance Weekend, Charleston, SC.
- 2009 Princeton Regional Chamber of Commerce, Princeton, NJ.
- 2009 *Brainwave* series, discussion of science and Buddhism with Donald S. Lopez Jr., Rubin Museum of Art, New York, NY.
- 2009 Adventures of the Mind mentoring summit, Institute for Advanced Study, Princeton, NJ.

**Media appearances (selected)**

- 2001 National Public Radio, *Morning Edition*, interview with Joe Palca on brain evolution.
- 2004 Fox News, October 31, 2004, on meta-analysis of polls for the 2004 Presidential race.
- 2008 *Coast to Coast AM*, February 25, 2008, with George Noory on the brain.
- 2008 XM Satellite Radio, *Oprah and Friends*, April 7, 2008, with Dr. Mehmet Oz and Lisa Oz.
- 2008 National Public Radio, *Talk Of The Nation*, interview with Neal Conan on willpower.
- 2008 National Public Radio, *All Things Considered*, interview with Rick Kleffel on Welcome To Your Brain.
- 2008 BBC, *World Service NewsHour*, interview with Lyse Doucet on false beliefs.
- 2009 ABC, *Good Morning America Weekend*, January 25, 2009, on left-handed presidents.
- 2009 CNN, *Situation Room*, February 18, 2009, on left-handed presidents.
- 2009 Big Think, <http://bigthink.com>, May 2009.
- 2009 National Public Radio, *Talk Of The Nation*, interview with Neal Conan on false beliefs about Barack Obama's citizenship.

**Advisory committee and peer review service**

- ScienceCentral, consultant on neuroscience-related stories
- National Association for Autism Research, Medical Affairs Committee
- Marine Biological Laboratory, Methods in Computational Neuroscience course (admissions)
- Grant proposal reviewer, Netherlands Organization for Scientific Research

American Association for the Advancement of Science, Congressional Science and Engineering Fellowship Program (prescreening)  
Grant proposal reviewer, Human Frontier Science Project  
Task force member, American Psychological Association, report on Mental Health And The Whole Person, August 2005  
Grant proposal reviewer (ad hoc), National Institute for Mental Health (Centers for Intervention Development and Applied Research, ZMH1 ERB-L), October 2007  
Grant proposal reviewer, Autism Speaks (Pilot Study Grant Panel Meeting), February 2008  
Grant proposal reviewer (ad hoc), National Institute for Mental Health, March 2009  
Grant proposal reviewer (ad hoc), CEBRA, National Institutes on Drug Abuse, May 2009  
Grant proposal reviewer (ad hoc), Molecular Neurogenetics (MNG), October 2009  
(Nominated) Study section member, Molecular Neurogenetics (MNG) starting October 2010  
Peer reviewing for *Biophysical Journal*, *Brain*, *Behavior and Evolution*, *Brain Research*, *Chemical Biology*, *Current Biology*, *Frontiers in Neuroscience*, *J. Cell Biology*, *J. Neurophysiology*, *J. Neuroscience*, *J. Neuroscience Methods*, *J. Physiology*, *Mol. Cell. Neuroscience*, *Nature*, *Nature Biotechnology*, *Nature Methods*, *Nature Neuroscience*, *Neuron*, *PLoS One*, *PNAS*, *Science*

### **External teaching activities**

1985-1986 *Teaching section leader*, partial differential equations. Instructors: Dr. Herbert Keller and Dr. Philip Saffman, Department of Applied Mathematics, Caltech.  
Summer 1989 *Teaching assistant, video microscopy and image processing course*. Instructors: Dr. Stuart Thompson and Dr. Stephen Smith.  
Spring 1990 *Teaching assistant, undergraduate marine biology research projects*. Advised undergraduates on their research projects in physiology, ethology, and marine ecology. Instructors: Dr. Mark Denny and other Hopkins Marine Station faculty.  
Feb. 2000 *Invited lecturer, Karolinska Institutet, Stockholm, Sweden*. Gave graduate-level lectures on synaptic plasticity. Course organized by Dr. Abdel El Manira.  
Summer 2000, 2001 *Invited lecturer, Cold Spring Harbor Laboratory*. Summer course, Imaging Structure and Function in the Nervous System, organized by Dr. Karel Svoboda, Dr. Venkatesh Murthy, and Dr. Kerry Delaney.  
Mar.-Apr. 2008 *Workshop co-organizer, Kavli Institute for Theoretical Physics*. Program on Anatomy, Development, and Evolution of the Brain.  
Summer 2009 *Invited lecturer, Marine Biological Laboratory*. Summer course, Neurobiology, organized by Dr. Hollis Cline.

### **Additional experience and activities**

1984, 1985 *Physics and engineering research at Xerox Special Information Systems, Pasadena, California*. Anti-counterfeiting technology using thin-film materials. Supervisor: Dr. Paul F. Jacobs, Chief Scientist.  
1995-1996 *Legislative assistant, Rep. Lloyd Doggett (D-TX)*. Advised on matters coming before the House Science Committee; energy; and environment issues.  
1996 *Legislative fellow, Senator Edward M. Kennedy (D-MA)*. Advised Senate Committee on Labor and Human Resources on higher education, research policy, and K-12 education technology issues. Projects included speechwriting, reauthorization of the National Science Foundation and coordination of NetDay96, a day of wiring Massachusetts schools to the Internet.

2004, 2008 *Modeling the Presidential race using state polls*. Created a probabilistic model of the Electoral College using state-level polls. These calculations were published on line at <http://election.princeton.edu> and were able to predict the outcome of the 2004 election. In 2004 the site received up to 100,000 visitors per day and was covered in the *Wall Street Journal*. The 2008 site, the Princeton Election Consortium, received extensive media coverage.