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ACADEMIC AND PROFESSIONAL POSITIONS:

- 2016* Regents' Professor, Georgia State University, Atlanta, GA
- 2013* Distinguished University Professor, Georgia State University, Atlanta, GA
- 2008 - present* Professor, Neuroscience Institute, Georgia State University, Atlanta, GA
- 2007 - 2012* Co-director, Neural Systems and Behavior Course, Marine Biological Laboratory, Woods Hole, MA
- 2010 - 2012* President of the International Society for Neuroethology
- 2006 - present* Professor, Department of Biology, Georgia State University, Atlanta, GA
- 2004 - present* Director, Center for Neuromics, Georgia State University, Atlanta, GA (formerly the Center for Neural Communication and Computation).
- 1997 - 2006* Associate Professor, Department of Biology, Georgia State University, Atlanta, GA.
- 1992 - 1996* Research Assistant Professor, Department of Neurobiology and Anatomy, University of Texas Medical School, Houston, TX.
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EDUCATION AND POST-DOCTORAL EXPERIENCE:

- 1989 - 1992* **Post-doctoral Fellow**, Dept. of Biochemistry
Brandeis University, Waltham, MA. Advisor: Dr. I.B. Levitan.
- 1988* **Grass Fellow**, Marine Biological Laboratory, Woods Hole, MA
- 1983 - 1989* **Ph.D.**, Neurobiology and Behavior
Cornell University, Ithaca, NY. Advisor: Dr. R. M. Harris - Warrick.
Thesis title: "Motor pattern modulation by serotonergic sensory cells in the stomatogastric nervous system."
- 1981 - 1982* **M.S.**, Neurobiology and Physiology
Northwestern University, Evanston, IL. Advisor: Dr. R. Gesteland.
- 1978 - 1982* **B.A.**, Integrated Science (more information available upon request)
Northwestern University, Evanston, IL.

EDITORIAL POSITIONS:

2016 - present Editor, Encyclopedia of Invertebrate Neuroscience, Oxford University Press USA

2015 - present Neuroscience, Oxford Research Encyclopedias, Editorial Board

<http://neuroscience.oxfordre.com/page/editorial/editorial-board>

2014 - present *Journal of Neurophysiology*, Editorial Board

2009 - 2014 *Journal of Neurophysiology*, **Associate Editor**

2010 - present *Invertebrate Neuroscience*, Editorial Board

2009 - present *Brain, Behavior, and Evolution*, Editorial Board

2008 - present *Frontiers in Neuroscience: Neural Circuits*, Associate Editor

2008 - 2012 *Journal of Comparative Physiology A*, Advisory Editorial Board

2007 - present Scholarpedia.org, Editor of Invertebrate Neuroscience and Neuroethology

1999 - 2009 *Journal of Neurophysiology*, Editorial Board

1996 - 2003 *Trends in Neurosciences*, Advisory Editorial Board

GRANTS:

2016 IOS Preliminary Proposal: “EvoDevo of neural circuits underlying behavior in nudibranch molluscs” (approved for submission)

2016 Brains and Behavior Seed Grant, Georgia State University, “Evo-Devo of Neural Circuits”, \$28,500

2015 - 2019 NSF IOS-1455527 “Neural Mechanisms underlying Evolvability of Behavior”, \$880,000 (total costs).

2015 GSU Cloud Computing Grant “GANGLia: Gastropod Atlas of Neurons and Glia”

2014 - 2017 March of Dimes Foundation 6-FY14-441, “A novel animal model for studying individual variability in susceptibility to neural damage and the ability to functionally recover from it”, \$330,000 (total costs)

2014 - 2015 Brains and Behavior Seed Grant, Georgia State University, “A novel approach for identifying ligands of orphan receptors”, \$30,000

2012 - 2013 Brains and Behavior Seed Grant, Georgia State University, “Comparative analysis of neural circuit dynamics”, \$29,926.67

2011 - 2015 NSF- IOS-1120950 “Evolution of Neural Circuits for Locomotion”, \$725,000 (total costs)

2010 - 2012 NSF IOS-1011476 DOCTORAL DISSERTATION: Evolution of neural circuits underlying species-specific swimming behaviors in opisthobranch molluscs, (Co-PI, Joshua Lillvis), \$14,748

2010 - 2011 Brains and Behavior Seed Grant, Georgia State University “Comparative Expression of Serotonin Receptors”, \$23,739.62

- 2010 Evans Research Award to support research at MBL, "Neurophysiology of homologous neurons in sea slugs" \$12,860
- 2008 - 2012 NSF IOS-0814411 "Evolution of Neural Circuits for Locomotion", \$523,206 (total costs)
- 2008 - 2010 NSF IIS-0827418 "CRCNS data sharing: Comparative Neuromics of Gastropod Molluscs", \$222,504 (total costs)
- 2008 NSFIOS-0804011 "Neuroethology: Behavior, Evolution & Neurobiology 2008 Gordon Research Conference, to be held on August 10-15, 2008, in Magdalen College, Oxford, UK," (co-PI with Catherine Carr), \$30,000 (total costs)
- 2008 - 2009 Brains & Behavior Seed Grant, Georgia State University, "A model for functional recovery without nerve regeneration", \$20,193
- 2008 - 2009 Brains & Behavior Seed Grant, Georgia State University, "A data-driven model optimization strategy for synaptic plasticity", (R. Clewley, PI, Katz, Co-PI) \$28,611
- 2006 - 2008 NIH R21 MH76753 "NeuronBank: A database for identified neurons and synaptic connections", \$180,000 (total direct costs)
- 2005 - 2010 NIH R13 NS43190 "South East Nerve Net Conference", \$45,000 (total direct costs)
- 2005 - 2008 NSF IOB-0445768 "Evolution of Neural Circuits for Locomotion", \$363,495 (total direct costs).
- 2007 NSF ISO-0710917 "Gastropod Neuroscience Conference" \$11,000 (total direct costs)
- 2007 Center for Behavioral Neuroscience Venture grant "Development of an invertebrate system for studying drug reinforcement" (PI: R. Calin-Jageman), \$17,487
- 2005 - 2006 Brains & Behavior Seed grant, Georgia State University, "NeuronBank: Knowledgebase of Identified Neurons and Synaptic Connections", \$25,976
- 2005 Center for Behavioral Neuroscience Venture Grant "Georgia Aquarium Education Project" \$6300
- 2004 - 2005 Brains & Behavior Seed grant, Georgia State University, "Identified Neuron Database Project", \$36,000
- 2003 - 2007 NIH R01-NS035371 "Intrinsic neuromodulation of a small neuronal network", \$832,500 (total direct costs).
- 2003 GSU Research Equipment Award, \$25,000
- 2002 GSU Research Instrumentation Grant, \$50,000
- 2002 - 2005 NIH R13 NS43190-01 "South East Nerve Net Conference", \$21,600
- 2002 NIH R01 NS35371-11S1 "Intrinsic neuromodulation of a small neuronal network", Award Supplement \$15,000 direct costs
- 2001 Center for Behavioral Neuroscience, "Behavioral Functions of Homologous Neurons", \$36,000
- 1999 - 2003 NIH R01-NS35371 "Intrinsic neuromodulation of a small neuronal network", \$731,036

- 1999 NIH R01- NS35371-09S1 "Infrastructure Supplement for Intrinsic neuromodulation of a small neuronal network". \$25,000 + \$25,000 GSU cost sharing.
- 1998 GSU Research Program Enhancement #99-012/003/3
- 1995 - 1999 NIH R01-NS35371 "Intrinsic neuromodulation of a small neuronal network", \$318,903
- 1992 - 1995 NIH R01-MH49563 "Intrinsic neuromodulation of a small neuronal network"
- 1989 - 1992 NIH F32-MH009728 "The role of a neuropeptide in motor program control"
- 1984 Sigma Xi, Grant-in-Aid-of-Research
- 1982 Richter Research Grant for Masters Research, Northwestern University
-

AWARDS, HONORS AND SCHOLARSHIPS:

- 2013 Outstanding Senior Faculty Award, College of Arts and Sciences, GSU
- 2010 C. Ladd Prosser Lecture, University of Illinois
- 2004 Arbas Memorial Lecture, Div. of Neurobiology, University of Arizona
- 1993 American Physiological Society Travel Award
- 1990 Graham Hoyle Fellow, Winter Conference on Brain Research
- 1989 Young Investigator Award, International Society for Neuroethology
- 1988 Grass Foundation Fellowship, Marine Biological Lab, Woods Hole, MA
- 1987 Sage Fellowship, Cornell University
- 1987 Outstanding Teaching Assistant, Neurobiology and Behavior, Cornell University
- 1983 – 1987 NIH pre-doctoral training grant
- 1982 – 1983 German Academic Exchange Service (DAAD) Sonder-direktstipendium
- 1981 Richter Summer Scholar for independent research
Mentor: Dr. Melvin Cohen, Yale University (deceased)
- 1980 Yale University Undergraduate Research Program
Mentor: Dr. John Fenn (Nobel Laureate, deceased)
- 1978 Gerhardt Humanitarian Award
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PROFESSIONAL SOCIETIES:

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|---|------------------------------------|
| American Malacological Society | Sigma Xi |
| American Physiological Society | Society for Neuroscience |
| International Brain Research Organization | Society for the Study of Evolution |
| International Society for Neuroethology | J.B. Johnston Club |
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JOURNAL AND PROCEEDINGS PUBLICATIONS:

- 1) Senatore A, Boykin J, Tikir S, Tamvacakis AN, Ganupuru P, and **Katz PS** (in preparation) Orthologue-guided prediction of secreted proteins from transcriptome data reveals conserved gene expression levels of orthologous neuropeptide genes in the sea slug brain
- 2) Sakurai A, Tamvacakis AN, and **Katz PS** (2016) Recruitment of polysynaptic connections underlies functional recovery of a central pattern generator circuit after lesion. *eNeuro*, DOI: 10.1523/ENEURO.0056-16.2016, <http://eneuro.org/content/early/2016/07/25/ENEURO.0056-16.2016>
- 3) Sakurai A and **Katz PS** (2016) The central pattern generator underlying swimming in *Dendronotus iris*: A simple half-center network oscillator with a twist *J. Neurophysiol.* DOI: 10.1152/jn.00150.2016, <https://jn.physiology.org/content/early/2016/07/14/jn.00150.2016>
- 4) **Katz PS** (2016) “Model organisms” in the light of evolution. *Current Biology*, 26 (14) pR649–R650. DOI: <http://dx.doi.org/10.1016/j.cub.2016.05.071> [http://www.cell.com/current-biology/fulltext/S0960-9822\(16\)30604-2](http://www.cell.com/current-biology/fulltext/S0960-9822(16)30604-2)
- 5) **Katz PS** (2016) Phylogenetic plasticity in the evolution of molluscan neural circuits. *Current Opinion in Neurobiology*, doi:10.1016/j.conb.2016.07.004 <http://www.sciencedirect.com/science/article/pii/S0959438816300897>
- 6) **Katz PS** (2016) Evolution of central pattern generators and rhythmic behaviours. *Phil. Trans. Royal Soc. B*.371 (1685): 20150057. [PMID:26598733](https://pubmed.ncbi.nlm.nih.gov/26598733/), <http://rstb.royalsocietypublishing.org/content/371/1685/20150057>
- 7) Gunaratne CA and **Katz PS** (2016) Comparative mapping of GABA-immunoreactive neurons in the buccal ganglia of Nudipleura molluscs. *Journal of Comparative Neurology*. 524(6):1181-92 [PMID:26355705](https://pubmed.ncbi.nlm.nih.gov/26355705/), DOI: [10.1002/cne.23895](https://doi.org/10.1002/cne.23895).
- 8) Tamvacakis AN, Senatore A, **Katz PS** (2015) Identification of genes related to learning and memory in the brain transcriptome of the mollusc, *Hermisenda crassicornis*. *Learning and Memory*. 22(12):617-21 [PMID:26572652](https://pubmed.ncbi.nlm.nih.gov/26572652/), <http://learnmem.cshlp.org/content/22/12/617>
- 9) Sakurai A., **Katz PS** (2015) Phylogenetic and individual variation in gastropod central pattern generators. *Journal of Comparative Physiology A*. 201(9):829-39, [PMID: 25837447](https://pubmed.ncbi.nlm.nih.gov/25837447/), <http://link.springer.com/article/10.1007%2Fs00359-015-1007-6>
- 10) Senatore A, Edirisinghe N, **Katz PS** (2015) Deep mRNA sequencing of the *Tritonia diomedea* brain transcriptome provides access to gene homologues for neuronal excitability, synaptic transmission and peptidergic signalling. *PLoS One*. 10(2): e0118321. DOI:10.1371/journal.pone.0118321. [PMID: 25719197](https://pubmed.ncbi.nlm.nih.gov/25719197/) <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0118321>
- 11) Sakurai A, Gunaratne CA, **Katz PS** (2014) Two interconnected kernels of reciprocally inhibitory interneurons underlie alternating left-right swim motor pattern generation in the mollusk *Melibe*

- leonina*, Journal of Neurophysiology, 112(6):1317-28. doi: 10.1152/jn.00261.2014. PMID: 24920032
<http://jn.physiology.org/content/112/6/1317.long>
- 12) Sakurai A, Tamvacakis AN, **Katz PS** (2014) Hidden synaptic differences in a neural circuit underlie differential behavioral susceptibility to a neural injury, eLife 10.7554/eLife.02598 PMID: 24920390
<http://elifesciences.org/content/3/e02598>
 - 13) **Katz PS** and Lillvis JL (2014) Reconciling the deep homology of neuromodulation with the evolution of behavior, Current Opinion in Neurobiology.29: 39-47. PMID: 24878891
<http://dx.doi.org/10.1016/j.conb.2014.05.002>
 - 14) Gunaratne CA, Sakurai A, and **Katz PS** (2014) Comparative mapping of GABA-immunoreactive neurons in the central nervous systems of nudibranch molluscs, Journal of Comparative Neurology. 522(4): 794–810. PMID 24638845
<http://onlinelibrary.wiley.com/doi/10.1002/cne.23446/abstract>
 - 15) Striedter GF, Belgard TG, Chen CC, Davis FP, Finlay BL, Güntürkün O., Hale ME, Harris JA, Hecht EE, Hof PR, Hofmann HA, Holland LZ, Iwaniuk AN, Jarvis ED, Karten HJ, **Katz PS**, Kristan WB, Macagno ER, Mitra PP, Moroz LL, Preuss TM, Ragsdale CW, Sherwood CC, Stevens CF, Stüttgen MC, Tsumoto T, Wilczynski W (2014) NSF workshop report: Discovering general principles of nervous system organization by comparing brain maps across species. J Comp Neurol. 522(7):1445-53. **PMID: 24596113**, doi: 10.1002/cne.23568.
 - 16) Striedter GF, Belgard TG, Chen CC, Davis FP, Finlay BL, Güntürkün O., Hale ME, Harris JA, Hecht EE, Hof PR, Hofmann HA, Holland LZ, Iwaniuk AN, Jarvis ED, Karten HJ, **Katz PS**, Kristan WB, Macagno ER, Mitra PP, Moroz LL, Preuss TM, Ragsdale CW, Sherwood CC, Stevens CF, Stüttgen MC, Tsumoto T, Wilczynski W (2104) NSF Workshop Report: Discovering General Principles of Nervous System Organization by Comparing Brain Maps across Species, Brain Behavior and Evolution. 31: 1-8.
<http://www.karger.com/Article/Pdf/360152>
 - 17) Lillvis JL and **Katz PS** (2013) Parallel evolution of serotonergic neuromodulation underlies independent evolution of rhythmic motor behavior. Journal of Neuroscience. 33(6):2709-17. PMID: 23392697 doi: 10.1523/JNEUROSCI.4196-12.2013
<http://www.jneurosci.org/content/33/6/2709>
 - Featured in “This week in the journal”: <http://www.jneurosci.org/content/33/6/i.full#sec-2>
 - Featured on cover: <http://www.jneurosci.org/content/33/6.cover-expansion>
 - Featured in BrainFacts.org Image of the week:
<http://www.brainfacts.org/Brain-Basics/Cell-Communication/Articles/2013/Image-of-the-Week-A-Slugs-Life>
 - Lillvis awarded 2014 [Capranica Prize](#) for the paper by the International Society for Neuroethology

- 18) Newcomb JM, Sakurai A, Lillvis JL, Gunaratne CA, **Katz PS** (2012) Homology and homoplasy of swimming behaviors and neural circuits in the Nudipleura (Mollusca, Gastropoda, Opisthobranchia), Proceedings of the National Academy of Sciences. 1090 Suppl 1:10669-76. PMID: 22723353. doi: 10.1073/pnas.1201877109. <http://www.pnas.org/content/109/suppl.1/10669.long>
 - Featured on the cover of Volume 9, number 26: <http://www.pnas.org/content/109/26.toc>
- 19) Lillvis JL, Gunaratne CA, **Katz PS** (2012). Neurochemical and neuroanatomical identification of central pattern generator neuron homologues in Nudipleura molluscs. PLoS One 7 (2):e31737, 2012. PMID: 22363716 <http://dx.plos.org/10.1371/journal.pone.0031737>.
- 20) Jhala S, Tamvacakis AN, **Katz PS** (2011) Toward locating the source of serotonergic axons in the tail nerve of *Aplysia*, Invertebrate Neuroscience, 11(2): 91-96. PMID: 21877137, DOI 10.1007/s10158-011-0121-6.
- 21) Sakurai A, Newcomb JM, Lillvis JL, **Katz PS** (2011) Different roles for homologous interneurons in species exhibiting similar rhythmic behaviors, Current Biology, 21(12): 1036-1041. PMID: 21620707, doi:10.1016/j.cub.2011.04.040.
 - Highlighted in: Zwart M (2011) Sea slug swimming surprise, Journal Exp Biol 214(23): v. doi: 10.1242/jeb.050021, <http://jeb.biologists.org/content/214/23/v.1.full?etoc>
- 22) **Katz PS** (2011) Neural mechanisms underlying the evolvability of behavior, Philosophical Transactions of the Royal Society of London B. 366 (1574): 2086-2099. PMID: 21690127. doi: 10.1098/rstb.2010.0336. <http://rstb.royalsocietypublishing.org/content/366/1574/2086.abstract>
 - Rated 10 (Exceptional) by Faculty of 1000: Chittka L: 2011. F1000.com/13378957
- 23) Li W, Sunderraman R, and **Katz P**: A Visual Web Query System for NeuronBank Ontology. Proc. of the Workshop on Visual Interfaces to the Social and Semantic Web (VISSW 2011), Palo Alto, US, February 13, 2011, CEUR-WS.org, ISSN 1613-0073, online CEUR-WS.org/Vol-694/paper8.pdf.<http://CEUR-WS.org/Vol-694/paper8.pdf>
- 24) **Katz PS** (2010) The nature of neuroethology, Brain Behavior and Evolution, 73(3-4): 163-4 PMID: 21088378, DOI: 10.1159/000321719 <http://www.karger.com/Article/Abstract/321719>
- 25) **Katz PS** (2010) Comparative studies provide evidence for neural reuse, Behavioral and Brain Sciences, 33: 278-279. Target article: Anderson ML. (2010) Neural reuse: a fundamental organizational principle of the brain. Behav Brain Sci. 2010 Aug;33(4):245-66; discussion 266-313. PMID: 20964882. doi: 10.1017/S0140525X10000853.
- 26) **Katz PS**, Calin-Jageman RJ, Dhawan A, Frederick C, Guo S, Dissanayaka R, Hiremath N, .Ma W, Shen X, Wang HC, Yang H, Prasad S, Sunderraman R, Zhu Y (2010) NeuronBank: a tool for cataloging neuronal circuitry. Frontiers in Systems Neuroscience 4:9. PMID: 20428500, doi:10.3389/fnsys.2010.00009 <http://www.frontiersin.org/systemsneuroscience/paper/10.3389/fnsys.2010.00009/>

- 27) **Katz PS** (2009) Preface to molluscan neurobiology: recent advances and new vistas. *Brain Behavior and Evolution* 74 (3):159-163. PMID: 20029180.
<http://www.karger.com/Article/Abstract/258663>
- 28) Sakurai A, **Katz PS** (2009) Functional recovery following lesion of a central pattern generator. *Journal of Neuroscience* 29(42): 13115-13125. PMID: 19846699.
<http://www.jneurosci.org/cgi/content/full/29/42/13115>
- Featured in “This Week in the Journal”.
 - Rated 10 by Faculty of 1000 (Faculty of 1000 Biology: evaluations for Sakurai A & Katz PS J Neurosci 2009 Oct 21 29 (42): 13115-25)
- 29) **Katz PS** and Newcomb JM (2009) Brains of Beauties: The swimming styles of sea slugs demonstrate how malleable neural circuitry can be. *Natural History* 118 (4):36-41.
- 30) Sakurai A, **Katz PS** (2009) State-, timing-, and pattern-dependent neuromodulation of synaptic strength by a serotonergic interneuron. *Journal of Neuroscience*. 29(1):268-79. PMID: 19129403.
<http://www.jneurosci.org/cgi/content/full/29/1/268>.
- 31) Newcomb JM, **Katz PS**. (2009) Different functions for homologous serotonergic interneurons and serotonin in species-specific rhythmic behaviours. *Proceedings of the Royal Society B: Biological Sciences*. 276(1654):99-108. PMID: 18782747
<http://rspb.royalsocietypublishing.org/content/276/1654/99.abstract>
- 32) Hill ES, Sakurai A, **Katz PS**. (2008) Transient enhancement of spike-evoked calcium signaling by a serotonergic interneuron, *Journal of Neurophysiology*. 100(5):2919-28. PMID: 18815341
- 33) Clemens S, Calin-Jageman RJ, Sakurai A, and **Katz PS** (2007) Altering cAMP levels within a central pattern generator modifies or disrupts rhythmic motor output. *Journal of Comparative Physiology A*. 193(12):1265-71. PMID: 17972082
- 34) Sakurai A, Calin-Jageman RJ, and **Katz PS** (2007) The potentiation phase of spike timing-dependent neuromodulation by a serotonergic interneuron involves an increase in the fraction of transmitter release. *Journal of Neurophysiology*. 98(4):1975-87. PMID: 17686912
- Reviewed by Faculty of 1000 <http://www.f1000biology.com/article/id/1096014>
- 35) Calin-Jageman R, Tunstall M, Mensh B, and **Katz PS**, Frost WN (2007) Parameter space analysis suggests multi-site plasticity contributes to motor pattern initiation in *Tritonia*. *Journal of Neurophysiology* 98(4):2382-98. PMID: 17652417
- 36) E.S. Hill and **P.S. Katz** (2007) The role of membrane potential in calcium signaling during rhythmic bursting in *Tritonia* swim interneurons. *Journal of Neurophysiology*, 97(3): 2204-2214 PMID: 17229821
- 37) E.S. Hill and **P.S. Katz** (2007) The role of membrane potential in calcium signaling during rhythmic bursting in *Tritonia* swim interneurons. *Journal of Neurophysiology*, 97(3): 2204-2214.

- 38) R.J. Calin-Jageman, A. Dhawan, H. Yang, H.-C. Wang, H. Tian, P. Phoungphol, C. Frederick, J. Balasooriya, Y. Chen, S.K. Prasad, R. Sunderraman, Y. Zhu, and **P.S. Katz** (2007) Development of NeuronBank: A Federation of Customizable Knowledge Bases of Neuronal Circuitry, Proceedings of the 1st IEEE International Workshop on Service Oriented Technologies for Biological Databases and Tools - IEEE Services Computing Workshops (SOBDAT/SCW 2007). July 13, Salt Lake City, Utah.
- 39) R.J. Calin-Jageman, C. Xie, Y. Pan, A. Vandenberg & **P.S. Katz** (2007) NEURONgrid: A toolkit for generating parameter-space maps using NEURON in a grid environment. In LNCS Lecture Notes in Bioinformatics, v. 4463. I. Mandoiu and A. Zelikovsky (Eds.), pp. 182–191.
- 40) **P.S. Katz** (2007) Evolution and Development of Neural Circuits in Invertebrates. Current Opinion in Neurobiology, 17(1): 59-64. PMID: 17174546
- 41) J.M. Newcomb and **P.S. Katz** (2007) Homologues of serotonergic central pattern generator neurons in related nudibranch molluscs with divergent behaviors. Journal of Comparative Physiol. A. 193(4): 425-443. PMID: 17180703
 - Reviewed by Faculty of 1000 Biology <http://www.f1000biology.com/article/id/1081940>
- 42) W.B. Kristan and **P. Katz** (2006) Form and function in systems neuroscience. Current Biology. 16(19): R828-R831.
- 43) J.M. Newcomb, D.J. Fickbohm, and **P.S. Katz** (2006) Comparative mapping of serotonin-immunoreactive neurons in the central nervous systems of nudibranch molluscs. J. Comparative Neurology, 499(3): 484-505.
- 44) R.J. Calin-Jageman and **P.S. Katz** (2006) A distributed computing tool for generating neural simulation databases. Neural Computation. 18(12):2923-7
- 45) **P.S. Katz** (2006) Comparative Neurophysiology: An Electric Convergence in Fish [Dispatch]. Current Biology 16(9): R327-R330.
- 46) A. Sakurai, N.R. Darghouth, R.J. Butera, and **P.S. Katz** (2006) Serotonergic enhancement of a 4-AP-sensitive current mediates the synaptic depression phase of spike-timing dependent neuromodulation. Journal of Neuroscience. 26: 2010 - 2021
- 47) H. Tian, R. Sunderraman, R. Calin-Jageman, H. Yang, Y. Zhu, and **P.S. Katz** (2006) NeuroQL: A Domain-Specific Query Language for Neuroscience Data, Current Trends in Database Technology – EDBT 2006, Series: Lecture Notes in Computer Science. v. 4254: pp 613-634
- 48) H. Tian, Y. Wang, H. Yang, R. Sunderraman, **P.S. Katz** and Y. Zhu, (2005) “A novel neuron data model with domain specific query language”, Proceedings of the 27th Ann. Internl. Conference of the IEEE Engineering in Medicine and Biology Society, Sep. 1-4, 2005, Shanghai, China.
- 49) J. A. Pamplin, Y. Zhu, **P.S. Katz**, R. Sunderraman (2005) A 3D User Interface for Visualizing Neuron Location in Invertebrate Ganglia, Proceedings of the 4th International Workshop on Computer Graphics and Geometric Modeling, Lect. Notes in Computer Science, 3515: 347 – 350.

- 50) D.J. Fickbohm, N. Spitzer, **P.S. Katz** (2005) Pharmacological manipulation of serotonin levels in the nervous system of the opisthobranch mollusc *Tritonia diomedea*. Biol. Bulletin 209: 67-74.
- 51) **P.S. Katz**, A. Sakurai, S. Clemens, D. Davis (2004) The Cycle Period of a Network Oscillator is Independent of Membrane Potential and Spiking Activity in Individual Central Pattern Generator Neurons. Journal of Neurophysiology. 92(3):1904-17.
- 52) C.P. Lynn-Bullock, K. Welshhans, S.L. Pallas, **P.S. Katz** (2004) The effect of oral 5-HTP administration on 5-HTP and 5-HT immunoreactivity in monoaminergic brain regions of rats. J.Chemical Neuroanatomy. 27(2):129-138.
- 53) Sakuari, A. and **P.S. Katz** (2003) Spike Timing-Dependent Serotonergic Neuromodulation of Synaptic Strength Intrinsic to a Central Pattern Generator Circuit. Journal of Neuroscience. 23: 10745-10755.
 - Reviewed by Faculty of 1000 <http://www.f1000biology.com/article/id/1016612/>
- 54) **P.S. Katz** (2003) Synaptic gating: The potential to open closed doors. [Dispatch] Current Biology 13: R554 - R556.
- 55) S. Clemens and **P.S. Katz** (2003) G protein signaling in a neuronal network is necessary for rhythmic motor pattern production. Journal of Neurophysiology 89: 762-772
- 56) **P.S. Katz**, D.J. Fickbohm, and C.P. Lynn-Bullock (2001) Evidence that the swim CPG of *Tritonia* arose from a non-rhythmic neuromodulatory arousal system: Implications for the evolution of specialized behavior. American Zoologist. 41: 962-975.
- 57) D.J. Fickbohm, C.P. Lynn-Bullock, N. Spitzer, H.K. Caldwell, and **P.S. Katz** (2001) Localization and quantification of 5-hydroxytryptophan and serotonin in the central nervous systems of *Tritonia* and *Aplysia*. Journal of Comparative Neurology. 437:91-105.
- 58) **P.S. Katz** and S. Clemens (2001) Biochemical networks in nervous systems: Expanding neuronal information processing beyond voltage signals. Trends in Neurosciences. 24(1): 18-25.
- 59) S. Clemens and **P.S. Katz** (2001) Identified Serotonergic Neurons in the Tritonia Swim CPG Activate Both Ionotropic and Metabotropic Receptors, J.Neurophysiol. 85: 476-479.
- 60) D.J. Fickbohm and **P.S. Katz** (2000) Paradoxical actions of the serotonin precursor, 5-hydroxytryptophan, on the activity of identified serotonergic neurons in a simple motor circuit. J. Neuroscience, 20(4): 1622-1634.
- 61) **P.S. Katz** and R.M. Harris-Warrick (1999) The evolution of neuronal circuits underlying species-specific behavior. Current Opinion in Neurobiology, 9: 628-633.
- 62) **P.S. Katz** (1998) Comparison of extrinsic and intrinsic neuromodulation in two central pattern generator circuits in invertebrates. Experimental Physiology, 83:281-292.
- 63) **P.S. Katz** (1998) Neuromodulation Intrinsic to the Central Pattern Generator for Escape Swimming in Tritonia. Annals of the. N.Y. Academy of Science 860: 181-188.

- 64) **P.S. Katz** (1997) Extrinsic and Intrinsic Neuromodulation of Motor Systems: Physiological Mechanisms for Behavioral Flexibility. *Journal of Physiology (London)* 504.P: 2S.
- 65) **P.S. Katz** and W.N. Frost (1997) Removal of spike frequency adaptation via neuromodulation intrinsic to the Tritonia escape swim central pattern generator. *Journal of Neuroscience* 17(20): 7703-7713.
- 66) W.N. Frost and **P.S. Katz** (1996) Single neuron control over a complex motor program *Proc. Natl. Acad. Sci. USA* 93: 422-426.
- 67) **P.S. Katz** and W.N. Frost (1996) Intrinsic neuromodulation: Altering neuronal circuits from within. *Trends in Neurosciences* 19: 54-61.
- 68) **P.S. Katz** (1995) Intrinsic and extrinsic neuromodulation of motor circuits. *Current Opinion in Neurobiology* 5: 799-808.
- 69) **P.S. Katz** and W.N. Frost (1995) Intrinsic neuromodulation in the Tritonia swim CPG: Serotonin mediates both neuromodulation and neurotransmission by the dorsal swim interneurons, *J. Neurophysiology* 74: 2281-2294.
- 70) **P.S. Katz** and W.N. Frost (1995) Intrinsic neuromodulation in the Tritonia swim CPG: The serotonergic dorsal swim interneurons act presynaptically to enhance transmitter release from interneuron C2. *J. Neuroscience* 15: 6035-6045.
- 71) **P.S. Katz**, P.A. Getting, and W.N. Frost (1994) Dynamic neuromodulation of synaptic strength intrinsic to a central pattern generator circuit. *Nature* 367: 729-731. PMID: 8107867 <http://www.nature.com/nature/journal/v367/n6465/abs/367729a0.html>
- 72) **P.S. Katz**, M.D. Kirk and C.K. Govind (1993) Facilitation and depression at different branches of the same motor axon: Evidence for presynaptic differences in release. *Journal of Neuroscience* 13: 3075-3089.
- 73) **P.S. Katz** and I.B. Levitan (1993) Quisqualate and ACPD are Agonists for a glutamate-activated current in identified Aplysia neurons. *J. Neurophysiology* 69: 143-150.
- 74) **P.S. Katz** and R.M. Harris-Warrick (1991) Recruitment of crab gastric mill neurons into the pyloric motor pattern by mechanosensory afferent stimulation. *J. Neurophysiol.*, 65: 1442-1451.
- 75) **P.S. Katz** (1991) Neuromodulation and the evolution of a simple motor system, *Seminars in the Neurosciences*, 3: 379-389.
- 76) **P.S. Katz** and R.M. Harris-Warrick (1990) Neuromodulation of the crab pyloric central pattern generator by serotonergic / cholinergic proprioceptive afferents. *J. Neuroscience*. 10: 1495-1512.
- 77) **P.S. Katz** and R.M. Harris-Warrick (1990) Actions of identified neuromodulatory neurons in a simple motor system. *Trends in Neurosciences*, 13: 367-373.
- 78) R.M. Harris-Warrick, R.E. Flamm, B.R. Johnson, and **P.S. Katz** (1989) Modulation of neural circuits in crustacea. *Amer. Zool.* 29: 1305-1320.

- 79) **P.S. Katz**, M.H. Eigg, and R.M. Harris-Warrick (1989) Serotonergic / cholinergic muscle receptor cells in the crab stomatogastric nervous system: I. Identification and characterization of the gastropyloric receptor cells. *J. Neurophysiology* 62: 558-570.
- 80) **P.S. Katz** and R.M. Harris-Warrick (1989) Serotonergic / cholinergic muscle receptor cells in the crab stomatogastric nervous system: II. Rapid nicotinic and prolonged modulatory effects on neurons in the stomatogastric ganglion. *J. Neurophysiology* 62: 571-581.

BOOKS:

P.S. Katz, ed. (1999) *Beyond Neurotransmission: Neuromodulation and its importance for Information Processing*, Oxford University Press, New York. ISBN 0-19-852424-2

BOOK CHAPTERS AND ENCYCLOPEDIA ARTICLES:

- 1) **Katz PS** and Sakurai A (in preparation) "Neural control of gastropod locomotion", *Invertebrate Neuroscience Handbook*. Byrne JH (ed), Oxford University Press, New York, NY.
- 2) **Katz PS** (in press, copyright 2017) "Unanswered questions", "Chapter 39- Information Flow and the Neuron", in *Biology: The Dynamic Science (Textbook)*, Russell PJ, Hertz PE and McMillan B (authors), Publisher: Thomson Higher Education: Brooks/Cole, 4th edition. ISBN-10: 1305389891 | ISBN-13: 9781305389892.
- 3) **Katz PS**, Hale ME (in press) Evolution of motor systems. In *Fundamental concepts and new directions in motor control*. Hooper SL, Büschges A (eds). Wiley: Hoboken, NJ.
- 4) Newcomb JM, Sakurai A, Lillvis JL, Gunaratne, CA, **Katz PS** (2013) Homology and Homoplasy of Swimming Behaviors and Neural Circuits in the Nudipleura (Mollusca, Gastropoda, Opisthobranchia) In "In the Light of Evolution VI: Brain and Behavior" G. Striedter, J.C. Avise, and F.J. Ayala (eds). Chapter 9. pp153-174, National Academy of Sciences Press: Washington, DC. ISBN-13: 978-0-309-26175-3
http://www.nap.edu/openbook.php?record_id=13462&page=153
- 5) **Katz PS** (2010) The Tritonia Central Pattern Generator. In "Handbook of Brain Microcircuits" G. Shepherd and S. Grillner (eds). Chapter 45, pp 443-449. Oxford University Press: New York.
 - **Online:** DOI: 10.1093/med/9780195389883.003.0045
<http://oxfordmedicine.com/view/10.1093/med/9780195389883.001.0001/med-9780195389883-chapter-045>
- 6) **Katz PS** (2009): Tritonia Swim Network, *Scholarpedia.org* 4(5):3638.
(http://www.scholarpedia.org/article/Tritonia_swim_network)
- 7) **Katz PS** and Calin-Jageman R (2008) Neuromodulation. In "New Encyclopedia of Neuroscience" pp 497-503, (L. Squire, ed), Academic Press.
- 8) **Katz PS** (2007), Tritonia. *Scholarpedia*, 2(6):3504 (<http://www.scholarpedia.org/article/Tritonia>)

- 9) **Katz PS** (2007) “Unanswered questions”, “Chapter 37- Information Flow and the Neuron”, in *Biology: The Dynamic Science*, Authors: Russell, Wolfe, Hertz & Starr, Publisher: Thomson Higher Education: Brooks/Cole, 3rd edition.
 - (in press) “Unanswered questions”, “Chapter 39- Information Flow and the Neuron”, 4th ed.
- 10) **Katz PS** and Hooper SL (2007) Invertebrate Central Pattern Generators. In *“Invertebrate Neuroscience”* North G and Greenspan R (eds), Cold Spring Harbor Press, Chapter 11. pp 251-280.
- 11) **Katz PS** and Newcomb JM (2007) A Tale of Two CPGs: Phylogenetically polymorphic networks. In “Evolution of Nervous systems”, Volume 1. JH Kaas (ed), Academic Press, Oxford, UK. pp 367-374 (Manuscript available upon request)
- 12) **P.S. Katz** (1999) What are we talking about? Modes of Neuronal Communication, In *Beyond Neurotransmission: Neuromodulation and its importance for information processing*, **P.S. Katz** (ed.), Oxford Univ. Press, New York, pp 1-28.
- 13) **P.S. Katz** and D.H. Edwards (1999) Metamodulation: The control and modulation of neuromodulation, In *Beyond Neurotransmission: Neuromodulation and its importance for information processing*, **P.S. Katz** (ed.), Oxford Univ. Press, New York, pp 339-381.
- 14) O. Kiehn and **P.S. Katz** (1999) Making circuits dance: Neuromodulation of motor systems, In *Beyond Neurotransmission: Neuromodulation and its importance for information flow*, **P.S. Katz** (ed.), Oxford Univ. Press, New York, pp 275-317.
- 15) W.N. Frost, J.R. Lieb, Jr., M.J. Tunstall, B.D. Mensh, and **P.S. Katz** (1997) Integrate-and-Fire Simulations of Two Molluscan Neural Circuits, In: *Neurons, Networks, and Motor Behavior*. P.S.G. Stein, A.I. Selverston, D.G. Stuart, and S. Grillner, eds. MIT Press, Cambridge, MA, pp. 173-179.
- 16) **P.S. Katz** (1995) Neuromodulation and motor pattern generation in the crustacean stomatogastric nervous system, In: Neural Control of Movement. W.R. Ferrell, and U. Proske, eds. Plenum Press, NY, pp 277-283.
- 17) **P.S. Katz** and K. Tazaki (1992) Comparative and evolutionary aspects of the stomatogastric system, In: Dynamic Biological Networks: The Stomatogastric Nervous System. R.M. Harris-Warrick, E. Marder, A.I. Selverston, and M. Moulins eds., MIT Press, Cambridge, pp. 221-261.
- 18) Harris-Warrick RM, Flamm RE, Johnson BR, **Katz PS**, Kiehn O, Zhang B (1992) Neuromodulation of small neural networks in Crustacea. Neurotoxicology 1991: Molecular Basis of Drug and Pesticide Action, I.R. Duce, ed. Elsevier Applied Science, Essex, England, pp. 323-338.
- 19) R.M. Harris-Warrick and **P.S. Katz** (1990) Sensory modulation of motor pattern generators in the crab stomatogastric ganglion. In: Frontiers in Crustacean Neurobiology K. Wiese, et al. (ed). Birkenhauser Verlag, Basel, pp. 431-438.
- 20) **Katz PS** and Harris-Warrick RM (1989) A new role for proprioceptive feedback to CPGs: Neuromodulation by serotonergic/cholinergic mechanosensory afferents to the stomatogastric

ganglion of crabs. In: Erber, J., Menzel, R., Pfluger, H., and Todt, D., eds. *Neural Mechanisms of Behavior*. Stuttgart: Georg Thieme Verlag; p 229.

- 21) Harris-Warrick RM, Flamm RE, Johnson BR and **Katz PS** (1989) Modulation of neural circuits in crustacea. *Am. Zool.* 29: 1305-1320.

BOOK REVIEWS:

Katz PS (1993) Review of "Neurobiology of Motor Programme Selection: New Approaches to the Study of Behavioural Choice" *Trends in Neurosciences* 16: 249-250.

INTERVIEWS:

- 1) Katz P, Grillner S, Wilson R, Borst A, Greenspan R, Buzsáki G, Martin K, Marder E, Kristan W, Friedrich R, Chklovskii D. Vertebrate versus invertebrate neural circuits. *Curr Biol.* 2013 Jun 17;23(12):R504-6.
<http://www.cell.com/current-biology/fulltext/S0960-9822%2813%2900634-9#Summary>
- 2) Marx, V (2012) Rendering the brain-behavior link visible. *Nature Methods.* 9(10): 953-958.
- 3) Katz P (2006) Paul Katz, Personal Report: Q&A, *Current Biology* 16 (6): R190-191.

MEETING REVIEWS:

Katz PS (2014) The golden age of comparative neuroethology on display in Japan, *Brain Behavior and Evolution.* 84: 243-245. <http://www.karger.com/Article/FullText/367885>.

Katz PS (2010) Meeting Review: International Congress of Neuroethology Salamanca Spain, August 2 – 7, 2010. *Invertebrate Neuroscience.* 10 (2): 107. PMID: 21046423
<http://www.springerlink.com/content/4j10504q680769xp/>

Katz PS (1996) Neurons, Networks, and Motor Behavior. *Neuron* 16: 245-253.

SELECTED RECENT ABSTRACTS:

- 1) Senatore A, Boykin JW, Ganupuru P, **Katz PS** (2015) "High-level mRNA expression of orthologous secreted proteins is a feature of the sea slug brain" 205.10, Society for Neuroscience, Chicago, IL
- 2) Sakurai A, Senatore, A, **Katz PS** (2015) "Divergent neural mechanisms underlie homologous rhythmic behaviors" 421.22, Society for Neuroscience, Chicago, IL
- 3) Senatore A and **Katz PS** (2014) "Brain transcriptomes from six sea slug species provide insights into neural circuit evolution" 400.08, Society for Neuroscience, Washington DC.
- 4) Tamvacakis A.N., Senatore A, **Katz PS** (2014) "Identification of novel serotonin receptors in six species of sea slugs" 400.09, Society for Neuroscience, Washington DC.
- 5) **Katz PS**, Gunaratne CA, Sakurai A, Senatore A, Tamvacakis AN (2014) "A Diversity of Neuromodulatory Actions and Synaptic Connections Underlies the Evolution of Swimming Behaviors

- in Nudibranch Sea Slugs”, The 34th Annual Meeting of the J.B. Johnston Club for Evolutionary Neuroscience and the 26th Annual Karger Workshop in Evolutionary Neuroscience: Abstracts , Brain Behavior and Evolution, 84(1), 5.
- 6) Sakurai A and **Katz PS** (2013) “Homologues of interneurons in two different species have distinct functions in the generation of similar rhythmic motor patterns” 169.01 Society for Neuroscience, San Diego, CA.
 - 7) Gunaratne CA, Sakurai A and **Katz PS** (2013) “Three central pattern generators containing homologous neurons use different mechanisms to produce analogous behaviors” 169.02 Society for Neuroscience, San Diego, CA.
 - 8) Tamvacakis A and **Katz P** (2013) “Comparison of serotonin 1a and 2 receptor subtype mRNA expression across tissue, ganglia, and single neurons in the opisthobranch mollusc Tritonia diomedea” 223.05 Society for Neuroscience, San Diego, CA.
 - 9) Gunaratne CA and **Katz PS** (2012) “Homologous identified neurons: Identification and characterization in species exhibiting analogous and non-analogous rhythmic behaviors” 609.02 Neuroscience Meeting Planner. New Orleans, LA: Society for Neuroscience, 2012. Online.
 - 10) Sakurai A and **Katz PS** (2012) “Individual variability in synaptic properties reveals distinct mechanisms underlying susceptibility to and recovery from lesion of a central pattern generator” 46.23 Neuroscience Meeting Planner. New Orleans, LA: Society for Neuroscience, 2012. Online.
 - 11) Lillvis JL and **Katz PS** (2011) “Electrophysiological properties of homologous identified neurons do not display functional or phylogenetic consistency” 918.03 Neuroscience Meeting Planner. Washington, DC: Society for Neuroscience, 2011. Online.
 - 12) Sakurai A and **Katz PS** (2011) “Distinct neural circuit architectures produce analogous rhythmic behaviors in related species” 918.04 Neuroscience Meeting Planner. Washington, DC: Society for Neuroscience, 2011. Online.
 - 13) Gunarantne CA, Lillvis JL, and **Katz PS** (2011) “Identification of Homologues of Tritonia swim CPG neurons in other Nudipleura molluscs” 918.05 Neuroscience Meeting Planner. Washington, DC: Society for Neuroscience, 2011. Online.
 - 14) Sakurai A, Newcomb JM and **Katz PS** (2010) “Homologous interneurons have distinct functions in the generation of similar rhythmic motor patterns” 783.7 2010 Neuroscience Meeting Planner. San Diego, CA: Society for Neuroscience, 2010. Online.
 - 15) Lillvis, JL and **Katz PS** (2010) “Species differences in serotonergic neuromodulation related to locomotor behavior” 783.6 2010 Neuroscience Meeting Planner. San Diego, CA: Society for Neuroscience, 2010. Online.
 - 16) Lillvis, JL and **Katz PS** (2010) “Species differences in serotonergic neuromodulation related to locomotor behavior” International Congress of Neuroethology. – Winner of Best Poster Presentation.

- 17) Sakurai A and **Katz PS** (2009) "Synaptic properties predict individual susceptibility to and recovery from lesion of a central pattern generator" Society for Neuroscience Program No. 366.14. 2009 Neuroscience Meeting Planner. Chicago, IL: Society for Neuroscience, 2009. Online.
- 18) J.L. Lillvis and **P.S. Katz** (2008) "Identification of a FMRFamide-like immunoreactive neuron in the cerebral ganglion of *Aplysia californica*" Program #880.2, Neuroscience Meeting Planner. Washington, DC: Society for Neuroscience, 2008. Online
- 19) S. Jhala, A. Sakurai, J.L. Lillvis, **P.S. Katz** (2008) "Serotonergic innervation of the *Aplysia* tail nerve" Program #880.3, Neuroscience Meeting Planner. Washington, DC: Society for Neuroscience, 2008. Online
- 20) A. Sakurai, **P.S. Katz** (2008) "A serotonergic interneuron evokes both state-dependent and state-independent neuromodulatory actions" Program #574.3, Neuroscience Meeting Planner. Washington, DC: Society for Neuroscience, 2008. Online
- 21) **P.S. Katz**, A. Sakurai, E.S. Hill, C.A. Gunaratne (2008) "Interactions of state-dependent and state-independent neuromodulation account for spike-timing dependent neuromodulation" Program #574.4, Neuroscience Meeting Planner. Washington, DC: Society for Neuroscience, 2008. Online
- 22) J. Bentley-Sloan, A.B. Kohn, M. Citarella, E.V. Bobkova¹, R.E. Virata¹, R. Shaw, F. Yu, **P.S. Katz**, W. Farmerie, R. Gillette, L.L. Moroz (2008) "Toward evolutionary dynamic of neuronal transcriptomes: Insights from simpler nervous systems of gastropod molluscs" Program # 793.1, Neuroscience Meeting Planner. Washington, DC: Society for Neuroscience, 2008. Online
- 23) A. Sakurai, **P.S. Katz** (2007) Adaptive plasticity underlies functional recovery following lesion of a central pattern generator. Program No. 188.12 Society for Neuroscience, San Diego, CA.
- 24) Lillvis JL, Kohn AB, Yu, F, Shaw, R, Farmerie, W, Moroz LL, **Katz PS** (2007) Neuropeptide gene expression patterns in the gastropod mollusc, *Tritonia diomedea*. Program No. 140.8. Society for Neuroscience, San Diego, CA.
- 25) A.C. Ajlen, **P.S. Katz**, K.J. Frantz, R. Calin-Jageman (2007) Amphetamine enhances locomotor activity after repeated exposure in the marine mollusc *Aplysia californica*. Program No. 429.10. Society for Neuroscience. San Diego, CA.
- 26) Calin-Jageman RJ, Sunderraman S, Zhu Y, Katz PS (2007). NeuronBank: An on-line knowledge base of identified neurons and synaptic connections. *Gastropod Neuroscience: Past Successes and Future Prospects*, Friday Harbor Laboratories, WA.
- 27) Calin-Jageman RJ, Sunderraman R, Zhu Y, & **Katz PS** (2006). Development of Neuron Bank: An on-line Knowledge Base of Identified Neurons and Synaptic Connections. 9th International Protégé Conference. Mon4. Stanford, CA.
- 28) Calin-Jageman RJ, Frost WN, **Katz PS** (2006). A computational analysis of neuromodulatory control of rhythmic neural activity in the *Tritonia* swim central pattern generator. 2006 Computational Neuroscience, T50, Edinburgh, Scotland.

- 29) R. Calin-Jageman, W.N. Frost, **P.S. Katz** (2006) Neuromodulatory control of rhythmic neural activity in the Tritonia swim CPG: a large-scale computational analysis. Program # 350.1. Society for Neuroscience. 2006 Neuroscience Meeting Planner. Atlanta, GA: Society for Neuroscience, 2006. Online.
- 30) J.M. Newcomb, **P.S. Katz** (2006) Phylogenetic reconfiguration of neural circuits underlying locomotion in nudibranch molluscs. Program # 350.2. Society for Neuroscience. 2006 Neuroscience Meeting Planner. Atlanta, GA: Society for Neuroscience, 2006. Online.
- 31) J.M. Newcomb, M. M. Naugle, D. J. Fickbohm, P. S. Katz (2006) Comparative mapping of serotonin-immunoreactive neurons in the central nervous systems of nudibranch molluscs. Program # 129.18. Society for Neuroscience. 2006 Neuroscience Meeting Planner. Atlanta, GA: Society for Neuroscience, 2006. Online.
- 32) A.Sakurai, **P.S. Katz** (2006) Activity-dependent heterosynaptic augmentation of synaptic transmission caused by a serotonergic interneuron in the Tritonia swim CPG. Program # 350.4. Society for Neuroscience. 2006 Neuroscience Meeting Planner. Atlanta, GA: Society for Neuroscience, 2006. Online.
- 33) E.S. Hill, **P.S. Katz** (2006) Heterosynaptic enhancement of spike-evoked Ca⁺⁺ signals by a serotonergic interneuron. Program # 350.3. Society for Neuroscience. 2006 Neuroscience Meeting Planner. Atlanta, GA: Society for Neuroscience, 2006. Online.
- 34) J.M. Newcomb and **P.S. Katz** (2005) Evolution of central pattern generator circuitry in nudibranch molluscs: changes in the functions of identified neurons embedded in a common network. Program No. 752.2. 2005 Abstract Viewer/Itinerary Planner. Washington D.C. Society for Neuroscience.
- 35) A. Sakurai; R.J. Calin-Jageman; **P.S. Katz** (2005) Serotonergic enhancement of transmitter release mediates the synaptic potentiation phase of spike timing-dependent neuromodulation. Program No. 177.13 Abstract Viewer/Itinerary Planner. Washington D.C. Society for Neuroscience.
- 36) E.S. Hill and **P.S. Katz** (2005) Membrane potential accounts for the Ca⁺⁺ signal during rhythmic bursting in a swim CPG neuron in the mollusc Tritonia diomedea. Program No. 54.3 Abstract Viewer/Itinerary Planner. Washington D.C. Society for Neuroscience.
- 37) **P.S. Katz**, R.J. Calin-Jageman, C. Gardner, J.A. Pamplin, R. Sunderraman, H. Tian, H. Yang, Y. Zhu (2005) Development of NeuronBank: An on-line database of identified neurons and synaptic connections. Program No. 570.6 Abstract Viewer/Itinerary Planner. Washington D.C. Society for Neuroscience.
- 38) A. Sakurai and **P.S. Katz** (2004) Serotonergic enhancement of a 4-AP sensitive current causes spike propagation failure in a *Tritonia* swim CPG neuron with multiple spike initiation zones. Program No. 537.1. 2004 Abstract Viewer/Itinerary Planner. Washington, DC: Society for Neuroscience.
- 39) N.R. Darghouth; A. Sakurai; R.J. Butera; **P.S. Katz** (2004) Computer simulations and dynamic clamp experiments support a role for a 4-AP-sensitive current in serotonin-induced spike narrowing

leading to synaptic depression. Program No. 420.2. 2004 Abstract Viewer/Itinerary Planner. Washington, DC: Society for Neuroscience.

- 40) J.M. Newcomb and **P.S. Katz** (2003) Homologous serotonergic neurons in two molluscan species differentially participate in analogous locomotor behaviors. Soc. Neurosci. Abstr. 29, #403.7.
 - 41) A. Sakurai and **P.S. Katz** (2003) 4-AP and IBMX selectively block the depression phase of a biphasic neuromodulation of synaptic strength by serotonergic neurons in the *Tritonia* swim CPG. Soc. Neurosci Abstr. 29, #168.18.
 - 42) **P.S. Katz**, A. Sakurai, S. Clemens, D. Davis (2002) Cycle period regulation in the *Tritonia* escape swim. Soc. Neurosci. Abstr.28, 67.5.
 - 43) C.P. Lynn-Bullock, S. Clemens, A. Sakurai, and **P.S. Katz** (2002) Functional anatomy of the escape swim CPG in *Tritonia*. Soc. Neurosci. Abstr.28, 67.25.
 - 44) L.B. Popova and **P.S. Katz** (2002) The effects of 5-HT on acutely isolated serotonergic *Tritonia* swim CPG neurons. Soc. Neurosci. Abstr.28, 270.12.
 - 45) A. Sakurai and **P.S. Katz** (2002) Serotonergic interneurons in *Tritonia* evoke a biphasic neuromodulatory action. Soc. Neurosci. Abstr.28, 270.13.
 - 46) **P.S. Katz** (2001) Short-term synaptic plasticity suggests that 5-HT synthesis and reuptake affect separate transmitter pools at a serotonergic synapse in *Tritonia*. Soc. Neurosci. Abstr.27: 13.10.
 - 47) S. Clemens and **P.S. Katz** (2001) Photolysis of intracellularly injected caged cyclic AMP rapidly affects the *Tritonia* swim CPG. Soc. Neurosci. Abstr.27: 306.29.
 - 48) C.P.Lynn-Bullock, K.Welshhans, A.Reedy, S.F.Belinga, S.L.Pallas, **P.S.Katz** (2001) 5-HTP - and 5-HT- immunoreactivity in the raphe nucleus, substantia nigra, and locus coeruleus after oral 5-HTP administration. Soc. Neurosci. Abstr.27: 806.15.
 - 49) D.R.McPherson and **P.S.Katz** (2001) Identification of serotonergic cerebral neurons that project to the pedal ganglia in *Aplysia californica*. Soc. Neurosci. Abstr.27: 943.10.
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INVITED TALKS:

- 2016 Seminar speaker, “Individual and Species Differences in Neural Mechanisms underlying Behavior in Nudibranch Molluscs”, University of Florida, Department of Biology.
- 2016 Invited speaker, “Evolution of central pattern generator circuits underlying rhythmic swimming behaviors in sea slugs” at “Neuro-evo: a comparative approach to cracking circuit function.” HHMI Janelia Research Campus.
- 2016 Invited speaker, “The many ways to swim a slug”, Department of Biology Seminar Series, Emory University
- 2015 Invited speaker, “Variations on a theme: Neural circuits underlying swimming behaviors in sea slugs”, Bryn Mawr College
- 2015 Invited speaker in Fifteenth Symposium of the Center for Neuroendocrine Studies, University of Massachusetts, Amhurst, Center for Neuroendocrine studies. Talk title: “Neurons, neurotransmitters and behavior: Same, same but different, yet still the same”
- 2015 Invited speaker in Small Scale Brain Initiatives, International Neuroinformatics 2015, Cairns, Australia, “Comparative neural circuitry in sea slugs; a multiplicity of mechanisms to produce species-specific behaviors” <http://neuroinformatics2015.org/program/workshops>
- 2015 Invited seminar speaker, University of Georgia Neuroscience, “The Evolution of Swimming Behaviors and their Neural Circuits in Nudibranch Sea Slugs”.
- 2015 Invited Session Chair at “Origin and evolution of the nervous system”, The Royal Society, London, England.
- 2015 Invited Speaker: “Distinct neural mechanisms underlie analogous behavior produced by homologous neurons in Nudipleura molluscs” at *Homology and convergence in nervous system evolution*, The Royal Society at Chicheley Hall, home of the Kavli Royal Society International Centre, Buckinghamshire, England
- 2013 Invited Participant: Phylogenetic Principles of Brain Structure and Function: Brain Maps Across Phylogeny. HHMI-Janelia Farm Research Campus, Ashburn, VA, Oct. 23-25, 2013, <http://understandingthebrain.org/>
- 2013 Invited Speaker: Gordon Research Conference, Neuroethology: Behavior, Evolution, & Neurobiology, Mount Snow, West Dover, VT, Aug 18-23, 2013, "Homoplasy of neural circuits: How many ways are there to swim a slug?" <http://www.grc.org/programs.aspx?year=2013&program=neureth>
- 2013 Invited Symposium Speaker: International World Congress of Malacology, Azores, Portugal, “Independent Evolution of Swimming Behaviors in Nudibranchs Inferred from Neural Mechanisms”

- 2013 Invited Speaker, Washington University, St. Louis. “There’s more than one way to swim a slug: Variations on a neural circuit theme”
- 2012 Invited Speaker, International Molloscan Neuroscience Conference, Florida Atlantic University
- 2012 Invited Speaker, Sackler Colloquium of the National Academy of Sciences, “In the Light of Evolution VI: Brain and Behavior, Beckman Center, Irvine, CA.
- 2011 Invited Conference Speaker, Vienna Biocenter, PhD Symposium, “Think Alternative: Insights from Unconventional Model Organisms”.
- 2011 Invited Colloquim speaker, “Evolution of Neural Circuits”, The Banbury Center, Cold Spring Harbor Laboratory, 7-7 Dec 2011
- 2011 Invited Speaker, University of Montreal
- 2010 Invited Speaker, University of Massachusetts, Worcester
- 2010 Invited Lecturer in the Advanced School of Neuroethology in Argentina, sponsored by the International Brain Research Organization – International Society for Neuroethology
- 2009 Invited Symposium Speaker, Harvard University
- 2008 Invited Speaker, Univ. California Riverside
- 2008 Invited Speaker, Grass Fellows, MBL Woods Hole
- 2007 Symposium Speaker, Society for Neuroscience, San Diego, CA
- 2007 Symposium Speaker, International Society for Neuroethology, Vancouver, Canada
- 2007 Scholar in Residence, Neural systems and Behavior course, MBL, Woods Hole, MA.
- 2007 Invited Speaker, University of Texas Health Science Center, Houston, TX
- 2007 Invited Speaker, University of California, Davis
- 2007 Keynote Speaker, Institute on Neuroscience, Atlanta, GA
- 2006 Invited speaker, University of Virginia, Department of Biology
- 2006 Symposium speaker, Conference on Origin and Regulation of Bursting Activity in Neurons, Atlanta, GA.
- 2006 Invited speaker, Clayton State College and University
- 2005 Invited speaker, University of Kentucky, Dept. of Physiology, Lexington, KY.
- 2005 Invited speaker, Seminar, Agnes Scott College, Decatur, GA.
- 2005 Invited speaker, Symposium: New Developments in the Neural Control of Locomotion, Georgia Institute of Technology
- 2005 Invited speaker, Neuroethology Symposium, University of Maryland.
- 2005 Invited speaker, Neurobiology Symposium, College of William and Mary, Williamsburg, VA.
- 2005 Invited speaker, Neuroscience Program, Wellesley University, Middletown, CT.
- 2004 Invited speaker, Banbury Conference on the Evolution of Nervous Systems, Cold Spring Harbor, NY.
- 2004 Invited speaker, Keck Center Distinguished Lecture, North Carolina State University

- 2003 Invited speaker, Department of Psychology, Oglethorpe University, Atlanta, GA.
- 2002 Invited speaker at Festschrift for Edward Kravitz, Marine Biological Laboratory, Woods Hole, MA.
- 2002 Invited speaker at the Gordon Research Conference on Neuroethology, "Serotonergic neuromodulation in *Tritonia*, *Aplysia*, and other Opisthobranch Molluscs: Similar actions and homologous neurons but different behaviors." Oxford University, UK.
- 2002 Medical Sciences Program, University of Indiana, "Serotonin and Second-Messenger Signaling in Swimming Seaslugs"
- 2001 Stomatogastric Symposium, "The accidental CPG: the story of serotonin and swimming in *Tritonia*". San Diego CA.
- 2001 Department of Biomedical Sciences, College of Veterinary Medicine, Iowa State University, Ames, IA.
- 2000 Department of Physiology & Biophysics, Mount Sinai Medical Center, New York
- 2000 Department of Physiology, Emory University.
- 2000 Keynote Speaker South East Nerve Net Meeting: "Integrating neuromodulatory actions into a simple neuronal circuit"
- 2000 Department of Neurobiology and Behavior, Cornell University.
- 2000 Invited Symposium Speaker: Swimming in Opisthobranch Mollusks: Contributions to Control of Motor Behavior, "Control of serotonergic actions within the *Tritonia* swim circuit.", Annual Meeting of the Soc. for Integrative and Comparative Biology, Atlanta GA.
- 1999 Department of Biology, University of North Carolina at Charlotte.
- 1999 Invited Symposium Speaker: Perspectives in the Neurobiology of Movement Control: From Systems to Subcellular Level: Blaubeuren Germany
- 1999 Section of Neurobiology, Free University, Berlin, Germany
- 1999 Invited talk at the Spring Symposium on the Neural Control of Movements, Sponsored by the Atlanta Chapter of the Society for Neurosciences, "The Roles of Neuromodulation in the Control of Central Pattern Generators"
- 1999 Department of Zoology, University of Oklahoma, Norman, OK.
- 1998 Department of Biology, Spelman College, Atlanta, GA.
- 1998 New York Academy of Sciences Conference, Neuronal Mechanisms for Generating Locomotor Activity, New York City, NY.
- 1997 Short Talk, Gordon Conference on Neural Plasticity
- 1997 Grass Foundation Lecture, East Coast Nerve Net, MBL, Woods Hole, MA
- 1997 Invited Symposium lecture, British Physiological Society Meeting, Plymouth England.
- 1996 Center for Complex Systems, Brandeis University, Waltham, MA.
- 1995 Department of Zoology, University of Texas, Austin, TX.;

- 1995 Division of Neuroscience, Baylor College of Medicine, Houston, TX.
- 1994 Invited Symposium Speaker, Neural Control of Movement Meeting, Maui, Hawaii.
- 1993 Invited Symposium Speaker, XXXII Congress of the International Union of Physiological Sciences, Glasgow, Scotland.
- 1993 Department of Biology, Colorado State University, Fort Collins, CO.
- 1990, 92, 94, 99, 02, 05 Winter Conference on Brain Research.
-

TEACHING:

Courses taught at Georgia State University:

Biol4102/6102 Fundamentals of Neurobiology	Biol 895 Biological Oscillators
Biol 6102, Neur 6010 Neurobiology	Biol 8950 Mechanisms of Evolution
Biol/Neur 8020 NeuroII: Integrative Neuro.	Biol 8950 Biological Imaging
Biol 4970 Undergraduate seminar	Neur/Biol 4040/6040 Neuroethology
Biol 8700 Graduate seminar	

Courses organized outside of Georgia State University

- 2008-2012 Co-director, Neural Systems and Behavior, MBL, Woods Hole, MA,
 - 2012 Co-organized Neural Systems and Behavior Course, São Paulo School of Advanced Science, Brazil
-

POST-DOCS MENTORED:

- Dr. David J. Fickbohm – currently faculty at Santa Monica College, CA
 - Dr. Lyudmila Popova – currently faculty at Moscow State University, Russia
 - Dr. Stefan Clemens – currently Assistant Professor at East Carolina University, NC
 - Dr. Robert J. Calin-Jageman – currently Associate Professor at Dominican University, IL
 - Dr. Evan Hill – currently Research Assistant Professor at Rosalind Franklyn Medical School, IL
 - Dr. Adriano Senatore – currently Assistant Professor at University of Toronto
 - Dr. Akira Sakurai (currently senior research scientist in my lab)
-

STUDENTS MENTORED:

Ph.D.

- Dr. James M. Newcomb – Dissertation 2006: Homologous neurons and their locomotor functions in Nudibranch molluscs
 - http://scholarworks.gsu.edu/biology_diss/15/
 - Currently Associate Professor at New England College, NH
- Joshua L. Lillvis – Dissertation 08/08/12: “A comparative analysis of the neural basis for dorsal-ventral swimming in the nudipleura”
 - http://digitalarchive.gsu.edu/biology_diss/119/
 - Currently post-doc at Janelia Farm Research Campus of the Howard Hughes Medical Institute with Barry Dickson
- Charuni A. Gunaratne – Dissertation 05/11/15: “Evolution of swimming behaviors in nudibranch molluscs: A comparative analysis of neural circuitry”
 - http://scholarworks.gsu.edu/neurosci_diss/21/
 - Currently Post-doc at Harvard University with Benjamin de Bivort
- Arianna Tamvacakis – Currently in lab
- Jonathan Boykin – Currently in lab

M.S.

- Şeydanur Tıkır, MS Thesis: 2016: A comparative analysis of nicotinic acetylcholine receptors and cholinergic neurons in nudipleura molluscs.
 - http://scholarworks.gsu.edu/biology_theses/73/
 - Currently PhD Student at Albert Einstein Medical School.
- Christina Lynn: Currently MD

Non-thesis research MS

- Kristie Welshhans, Yokesch Balaraman, May Chen, Argo Dalapati, April Crenshaw, Aashta Vashista

Undergraduates and Post-bacs:

Skishnell Nairn, Julie Shwiller, Todd Cook, Steve-Felix Belinger, Deron Davis, Ann Reedy, Priyal Shah, Michele Naugle, Nina Milosavljevic, Sagar Jhalla, Mercy Abonambugre, James Griffin, Punam “Pooja” Mandania, Caleb Young, Britessia Smith (NET/work), Stephen Pendleton, Roseanne Tan, Shalin Jyotishi, Preetham Ganupuru (Honors College, Brains & Behavior Scholar, Molecular Basis of Disease Scholar), Ryan Szczech, Aiyana Batton (NET/work), Jonathan Boykin, Amirah Hurst, Anastasia Schultz, Elif Diricanli, Vidya Chenji, Rachael Beaumont

High School Students: Rachael Beaumont, Lynn Jacobs

Other researchers mentored in the lab: Prashanth Irudayaraj, Alexandra Fowler, Saba Khan

AD HOC REVIEWER:

Behavioral Neuroscience Journal	Journal of Neuroscience
Biological Bulletin	Journal of Neuroscience Methods
BioScience	Journal of Physiology
Brain Behavior and Evolution	Learning and Memory
Brain Research	MacArthur Foundation
Cell Tissue Research	Max Planck Society
Current Biology	National Institutes of Health, IFCN-5, Fo2B
Comparative Biochemistry and Physiology	National Science Foundation
Developmental Cell	NSERC of Canada
Evolution and Development	Nature
Experimental Brain Research	Nature Neuroscience
Frontiers in Zoology	Naturwissenschaften
Frontiers in Behavioral Neuroscience	Neuron
Human Frontiers Science Program	PLoS One
Invertebrate Neuroscience	Proceedings of the National Academy of Science
Journal of Comparative Physiology	Neurobiology of Learning and Memory
Journal of Comparative Neurology	Science
Journal of Experimental Biology	Trends in Neurosciences
Journal of Neurobiology	U.S.A.-Israel Binational Science Foundation
Journal of Neurophysiology	

PROFESSIONAL SERVICE:

2016 - present	Program Committee, Society for Neuroscience
2016	NIH Study section: Computational Blueprint 2016/10 ZDA1 SXM-M (11) R
2016	Organized short course, "Big Data in Neuroscience", Winter Conference on Brain Research
2015	NIH Special Emphasis Panel BRAIN Initiative 005
2015	NSF Preliminary Proposal Panel
2014-2016	Konishi Neuroethology Research Award Committee, International Society for Neuroethology
2014	NIH Special Emphasis Panel BRAIN Initiative 009
2013	NIH Study section member NSD-B
2013	NSF Review panel
2009 – 2010	Co-edited Special Edition of <i>Frontiers in Behavioral Neuroscience</i> on Neuroethology, http://www.frontiersin.org/behavioral_neuroscience/specialtopics/neuroethology/68

- 2009 Edited Special Edition of *Brain, Behavior and Evolution* on Molluscan Neuroscience.
74, #3, 2009
[http://content.karger.com/ProdukteDB/produkte.asp?Aktion=showproducts&searchW
hat=books&ProduktNr=253693](http://content.karger.com/ProdukteDB/produkte.asp?Aktion=showproducts&searchW
hat=books&ProduktNr=253693)
- 2009 NSF Panel reviewer
- 2009 – present Program on Ontologies for Neural Structures Representation and Deployment task
force, International Neuroinformatics Coordinating Facility (INCF)
<http://www.incf.org/core/programs/pons>
- 2007 – 2016 Executive Committee, International Society for Neuroethology, served as President from
2010-2012
- 2006 – 2012 Executive board of the Atlanta Chapter of the Society for Neuroscience
served as president 2007-2009
- 2005 – 2008 Co-chair of the Gordon Conference on Neuroethology, Oxford University
- 2007 Organizer of FHL Centennial Symposium: Gastropod Neuroscience, Friday Harbor
- 2004 Organizer of the Identified Neuron Database Workshop
(http://brainsbehavior.gsu.edu/past_events/id_wkshp.html)
- 2003 – 2006 Society for Neuroscience Chapters Committee
- 2003 – 2005 Program Committee, Winter Conference on Brain Research
- 2002 – present South East Nerve Nerve Steering Committee
- 2002, 04, 06 Organizer of the Annual South East Nerve Net Conference
- 2002 – 2005 Assistant co-chair of the Gordon Conference on Neuroethology, Oxford England
- 2002 Conservation and Research Planning Committee for the Georgia Aquarium
- 2002 Founding member and previous web master for Georgia Citizens for Integrity in Science
Education (<http://www.georgiascience.org/>)
- 2000 – 2003 Director of the graduate program for the Center for Behavioral Neuroscience
- 1998 – present Developed and maintained the website for the Atlanta Chapter of the Society for
Neuroscience
- 1997 – 2002 Mentor for Elementary Science Education Partners (ESEP)
- 1997 – 1999 Councilor for the Atlanta Chapter of the Society for Neurosciences
- 1995 – 2001 Program Committee, Winter Conference on Brain Research

UNIVERSITY SERVICE:

- 2016-present Neuroscience Institute Search Committee, Chair
- 2016-present Neuroscience Graduate Program Committee
- 2016 Neuroscience Institute Curriculum Committee, Chair
- 2015 Georgia State University Research Foundation Board

2015 Neuroscience Institute website committee
2014-2016 Neuroscience Institute Bylaws committee
2014 Provost's Faculty Fellowship review committee
2011, 2013 Chair search committee for Neurogenomics, Georgia State University
2011-present University Senate, Georgia State University:
Research Committee, Admissions and Standards Committee, Upper-Division
Admissions Committee
2011 Undergraduate Program Committee, Neuroscience Institute, Georgia State Univ.
2008- 2016 Executive Committee, Neuroscience Institute, Georgia State University
2005 – 2007 GSU Coordinating Committee for Underrepresented Faculty Mentoring
2004 – 2007 Co-chair of the Neurons & Networks Research Group in the Brains & Behavior initiative
at GSU.
2003 – 2005 Chair of Biology Department Seminar Committee
2003 – 2006 GSU fire safety committee
2001 Provost's Committee: Web Instructional Support Planning Team (WebISPT)
1998 – 1999 Graduate advisor for Neurobiology and Behavior Program, Georgia State University
1997 – 2008 Supervisor of GSU Biology web site (<http://biology.gsu.edu>)
1995 – 1997: Web site development, Dept. of Neurobiology and Anatomy, Univ. Texas Med School