

Jane L. Witten, Ph.D.

Associate Professor
Department of Biological Sciences
PO Box 413
University of Wisconsin-Milwaukee
Milwaukee, WI 53201
email: jlw@uwm.edu
phone: (414) 229-4993

Education/Training

Institution	Degree/Year	Major/Area
Wesleyan University, Middletown, CT	B. A., 1974	Bio-Psychology
University of Chicago, Chicago, IL	Ph.D., 1984	Pharm. & Physiol. Sci.
University of Geneva, Switzerland	Postdoc, 1984-86	Neuroscience
University of Washington, Seattle, WA	Postdoc, 1986-90	Dev. Neuroscience
University of Arizona, Tucson, AZ	Postdoc, 1990-92	Dev. Neuroscience

Positions and Employment

1984-1985	Postdoctoral Fellow, Department of Animal Biology, University of Geneva, Switzerland (Dr. Michael O'Shea)
1986-1990	Postdoctoral Fellow (NRSA), Department of Zoology, University of Washington (Dr. James Truman)
1990-1992	Research Associate, Arizona Research Laboratories Division of Neurobiology (Dr. Richard Levine)
1992-1998	Assistant Professor, Department of Biological Sciences, University of Wisconsin-Milwaukee
1998-present	Associate Professor, Department of Biological Sciences, University of Wisconsin-Milwaukee

Articles Published in Refereed Journals**Published:**

- Garrison, S.L. and Witten, J.L. (2010) Steroid Hormone Regulation of the Voltage-Gated, Calcium-Activated Potassium Channel Expression in Developing Muscular and Neural Systems. *Dev. Neurobiol.* 70: 884-896.
- Keyser M.R. and Witten J.L. (2005) Calcium-Activated Potassium Channel of the Tobacco Hornworm *Manduca sexta*: Molecular Characterization and Expression Analysis. *J. Exp. Biol.* 208: 4167-4179.
- Keyser M., Titus S.A., Anson B., Ganetzky B., and Witten J.L. (2002) Molecular Characterization, Functional Expression and Developmental Profile of an *Ether à-go-go* K⁺ Channel in the Tobacco Hornworm *Manduca sexta*. *J. Neurobiol.* 55: 73-84.
- Lu D., Lee K.-Y., Horodyski F., and Witten J.L. (2002) Molecular characterization and cellular localization of a *Manduca sexta* FLRFamide gene. *J. Comp. Neurol.* 446: 377-396
- Miao Y., Waters E.M., and Witten J.L. (1998) Developmental and regional-specific expression of FLRFamide peptides in the tobacco hornworm, *Manduca sexta*, suggests functions in ecdysis behaviors. *J. Neurobiol.* 37: 469-485.
- Witten J.L. and Truman J.W. (1998) Distribution of GABA-like immunoreactive neurons in insects suggests lineage homology. *J. Comp. Neurol.* 398: 515-528.

- Kingan T.G., Shabanowitz F., Hunt D.F, and Witten J.L. (1996) Characterization of two neuropeptides in the FMRFamide family from the segmental ganglia of the moth, *Manduca sexta*: Candidate neurohormones and neuromodulators. *J. Exp. Biol.* 199: 1095-1104.
- Witten, J.L. and Truman J.W. (1996) Developmental plasticity in neuropeptide expression in insect motoneurons: Steroid hormonal regulation. *J. Neurobiol.* 29: 99-114.
- Pfluger H. J., Witten J.L., and Levine R.B. (1993) Fate of abdominal ventral unpaired median cells during metamorphosis of the hawkmoth, *Manduca sexta*. *J. Comp. Neurol.* 335: 508-522.
- Witten J.L. and Truman J.W. (1991a) The regulation of transmitter expression in postembryonic lineages in the moth, *Manduca sexta*. I: Transmitter identification and developmental acquisition of expression. *J. Neurosci.* 11: 1980-1989.
- Witten J.L. and Truman J.W. (1991b) The regulation of transmitter expression in postembryonic lineages in the moth, *Manduca sexta*. II: Role of cell lineage and birth order. *J. Neurosci.* 11: 1990-1997.
- Witten J.L. and O'Shea M. (1985) Peptidergic innervation of insect skeletal muscle: Immunochemical observations. *J. Comp. Neurol.* 242: 93-101.
- O'Shea M., Adams M.E., Bishop C., Witten J., and Worden M. (1985). Model peptidergic systems at the insect neuromuscular junction. *Peptides* 6: 417-424.
- Witten J.L., Schaffer M., O'Shea M., Cook J. C., Hemling M. E., and Rinehart K. L. (1984) Structures of two cockroach neuropeptides assigned by fast atom bombardment mass spectrometry. *Biochem. Biophys. Res. Comm.* 124: 350-358.
- O'Shea M., Witten J., and Schaffer M. (1984) Isolation and characterization of two myoactive neuropeptides: Further evidence of an invertebrate peptide family. *J. Neurosci.* 4: 521-529.
- de la Torre J.C. and Surgeon^a J.W. (1976c). Histochemical fluorescence of tissue and brain monoamines: Results in 18 minutes using the sucrose-phosphate-glyoxylic acid (SPG) method. *Neurosci.* 1: 451-454.
- de la Torre J.C. and Surgeon^a J.W. (1976b) A methodological approach to rapid and sensitive monoamine histofluorescence: SPG method. *Histochem.* 49: 81-93.
- de la Torre J.C. and Surgeon^a J.W. (1976a) Dexamethasone and DMSO in cerebral artery infarction. *Stroke* 7: 577-583.
- de la Torre J.C., Kawanga H.M., Hill P., Crockard A., Surgeon^a J. W., and Mullan S. (1975) Experimental therapy after middle cerebral artery occlusion in monkeys. *Surgical Forum* 26: 489-492.

^aCurrently J.L. Witten

Invited book chapters

- Bishop C.A., Witten J. L., and O'Shea M. (1989) Identification of neurotransmitters in the cockroach using immunohistochemical techniques. In: *Cockroach models in biomedicine: Neurophysiology*. CRC Press.
- O'Shea M., Hekimi S., Witten J., and Worden M. K. (1988) Functions of aminergic and peptidergic skeletal motoneurons in insects. In: *Society for Exp. Biol. Seminar Series 33*. Thorndyke, M.C. and Goldworthy, G.J (eds). Cambridge University Press.

Invited papers in symposia

- Miao Y.S, Lu D., Lee K.-Y., Horodyski F.M. and Witten J.L. (2000) Developmental regulation and functions for FLRFamide peptides in *Manduca sexta*. Invited Symposium Speaker, International Entomological Society Meeting, Iguassu Falls, Brazil.
- Witten J.L (1994) Developmental changes in peptide neuromodulators in insect motoneurons: Implications for the neuromuscular system. Invited Symposium speaker "Neuronal Modulation of Muscle Properties", The American Physiology Intersociety Meeting, San Diego, CA.

Abstracts

- Garrison, S.L. and Witten, J.L. (2009) Differential transcript regulation of the calcium-activated voltage-gated potassium ion channel by the steroid hormone ecdysone in flight muscle and the CNS. Soc. Neurosci. Meeting.
- Garrison S.L. and Witten J.L. (2007) Developmental changes in a calcium and voltage-activated potassium gene transcript levels in the tobacco hornworm *Manduca sexta*: Modulation by steroid hormones. Soc. Neurosci. Meeting
- Lytle M., Lee K-Y, Davis N., Horodyski F.M, and Witten J.L. (2006) Cell-specific expression of the *Manduca sexta* allatotropin gene. Soc. Neurosci. Meeting.
- Garrison S.L and Witten J.L. (2005) Steroid hormone regulation of calcium-activated potassium channel gene transcription in the tobacco hawkmoth, *Manduca sexta*. Soc. Neurosci. Meeting.
- Witten J.L., Lytle M., Van Sickle S.J., and Keyser M. (2004) Cell-Specific Expression of a Calcium-activated K⁺ Channel Gene in the Tobacco Hornworm. Society of Neuroscience Milwaukee Area Chapter Meeting.
- Lytle M., Van Sickle S.J., Keyser M., and Witten J.L. (2004) Cellular Localization of a Ca²⁺-Activated Potassium Channel in the Tobacco Hornworm, *Manduca sexta*. Midwest Neurobiology Meeting.
- Witten J.L., Lytle M., Van Sickle S.J., and Keyser M. (2003) Cell-Specific Expression of a Calcium-activated K⁺ Channel Gene in the Tobacco Hornworm. 33rd Annual Meeting for the Society for Neuroscience, New Orleans, LA
- Keyser M., Lytle M., Van Sickle S.J., and Witten J.L. (2003) Developmental and Cell-Specific Expression of a Calcium-activated K⁺ Channel Gene in the Tobacco Hornworm. FASEB Meeting: Regulation of Ion Channels, June 2003 Tucson, Arizona
- Witten J.L. and Keyser M. (2003) Developmental and Cell-Specific Expression of a Calcium-Activated K⁺ Channel Gene in the Tobacco Hornworm. Milwaukee Area Neuroscience Research Symposium
- Witten J.L. and Keyser M. (2002) Developmental and cell-specific expression of a calcium-activated K⁺ channel gene in the tobacco hornworm. Society for Neuroscience 32nd Annual Meeting, Orlando FL.
- Keyser M. and Witten J.L. (2002) Molecular characterization and developmental expression of a calcium-activated K⁺ channel gene in the tobacco hornworm, *Manduca sexta*. Fourth International Symposium on Molecular Insect Science. Tucson, AZ .
- Keyser M. and Witten J.L. (2001) Molecular Characterization of a Calcium-activated K⁺ channel in the Tobacco Hornworm, *Manduca sexta*. Soc. Neurosci. Abst.
- Miao Y.S., Lu D., Horodyski F.M., and Witten J.L. (2000) *Manduca sexta* FLRFamide peptides: Gene expression and physiological functions. Midwest Neurobiology, Ames, Iowa.
- Keyser M., Ekman G.C., Titus S., Ganetzky B., Tejedor F. and Witten J.L. (2000) Identification and developmental changes in expression of voltage gated potassium channels in the tobacco hornworm, *Manduca sexta*. Midwest Neurobiology, Ames, Iowa.
- Ekman G.C, Tejedor F., Homberg U. and Witten, J.L. (1999) Identification and Developmental Analysis of a Shaker-like Potassium Ion Channel in the Tobacco Hornworm, *Manduca sexta*. Midwest Neurobiology Meeting, Madison, WI.
- Keyser M., Ganetzky B., and Witten J.L. (1999) EAG potassium channels in the tobacco hornworm: developmental expression and cellular localization. Soc. Neurosci. Abstr. 25: 418.
- Keyser M., Titus S., Anson B., Ganetzky B., and Witten J.L. (1999) Molecular characterization of *eag* potassium channels in *Manduca sexta*. Midwest Neurobiology Meeting, Madison WI.
- Lu D., Ekman G.C., Horodyski F., and Witten J.L. (1999) Molecular characterization of FLRFamide gene in the tobacco hornworm. Soc. Neurosci Abstr. 25: 365.

- Lu D., Ekman G.C., Horodyski F., and Witten J.L. (1999) A *Manduca* FLRFamide gene: Isolation and Distribution. Midwest Neurobiology Meeting, Madison WI.
- Miao Y.S. and Witten J.L. (1999) Effects of *Manduca sexta* FLRFamide peptides on isolated skeletal and cardiac muscles. Soc. Neurosci. Abstr. 25: 365.
- Miao Y.S. and Witten J.L. (1999) Excitatory Actions of *Manduca sexta* FLRFamide Peptides on Isolated Skeletal and Cardiac Muscles. Midwest Neurobiology Meeting, Madison WI.
- Ekman, G.C., Tejedor F.J., and Witten J.L. (1998) Developmental expression of Shaker potassium ion channels in the tobacco hornworm, *Manduca sexta*. Soc. Neurosci. Abstr. 24: 622.
- Keyser, M., Titus S., Waters E.M., Ganetzky B., and Witten J.L. (1998) *Eag* potassium channels in *Manduca sexta*: Cloning and mRNA tissue distribution. Soc. Neurosci. Abstr. 24: 622.
- Keyser M., Titus S., Waters E.M., Ganetzky B., and Witten J.L. (1998) *Eag* potassium channels in *Manduca sexta*: Cloning and mRNA distribution. The International Symposium for Molecular Insect Science Abstr III: 63.
- Bailey D.B. and Witten J.L. (1997) GABA-like immunoreactivity in the medicinal leech: Central and Peripheral Staining. Midwest Neurobiologists 18.
- Binor I.E., Witten J.L. and Heathcote R.D. (1997) Patterning of GABAergic cells in the developing spinal cord. Soc. Neurosci. Abstr. 23: 875.
- Miao Y.S., Waters E.M., Heinzen K., and Witten J.L. (1996) Cellular specific distribution and physiological actions of Mas FLRFamide peptides. Soc. Neurosci. Abstr. 22: 840.
- Bailey D.J. and Witten J.L. (1996) Distribution of GABA immunoreactive neurons in the leech, *Hirudo medicinalis*. Soc. Neurosci. Abstr. 22: 1332.
- Gruhl M.C. and Witten J.L. (1994) Do FLRFamide peptides influence embryonic muscle development in the tobacco hornworm, *Manduca sexta*? Soc. Neurosci. Abstr. 20: 86.
- Gruhl M.C. and Witten J.L. (1994) Are FLRFamide-like peptides present in identified insect motoneurons during embryogenesis. Midwest Neurobiologists 17.
- Witten J.L. (1994) Developmental Changes in Peptide Neuromodulators in Insect Motoneurons: Implications for the Neuromuscular System, Symposium speaker "Neuronal Modulation of Muscle Properties", The Physiologist.
- Witten J.L., Kingan T., Shabanowitz J. and Hunt D.F. (1993) Isolation and sequencing of two new members of the *Manduca sexta* FLRFamide family of peptides. Soc. Neurosci. Abstr. 19: 1274.
- Witten J.L., Blair J., Luedeman R., and Levine R.B. (1992) Nerve/muscle interactions during development of insect adult leg muscles *in vivo* and *in vitro*. Soc. Neurosci. Abstr. 18:40.
- Witten J.L. and Levine R.B. (1991) Cellular specificity of steroid influences on process outgrowth of identified motoneurons in culture. Soc. Neurosci. Abstr. 17:1320.
- Witten J.L. and Truman J.W. (1990) Stage specific expression of FMRFamide-like immunoreactivity in motoneurons of the tobacco hornworm, *Manduca sexta*, is mediated by steroid hormones. Soc. Neurosci. Abstr. 16: 633.
- Witten J.L. and Truman J.W. (1989) The distribution of GABAergic lineages in insects. Soc. Neurosci. Abstr. 15: 365.
- Witten J.L. and Truman J.W. (1988) Regulation of transmitter choice in an identified lineage in *Manduca sexta*. Soc. Neurosci. Abstr. 14: 28.
- Witten J.L. and Truman J. W. (1987) Clonally related neurons in *Manduca sexta* express different putative transmitters. Soc. Neurosci. Abstr. 13: 1255.
- Worden M.K., Witten J.L., and O'Shea, M. (1985) Proctolin is a co-transmitter for the SETi motoneuron. Soc. Neurosci. Abstr. 11: 327.
- Witten J.L., Worden M.K., Schaffer M.H., and O'Shea M. (1984) New classification of insect motoneurons: Expression of different peptide transmitters. Soc. Neurosci. Abstr. 10: 151.
- Witten J., Schaffer M.H., and O'Shea M. (1983) Structure and biology of two new related neuropeptides from insect: Further evidence for a peptide family. Soc. Neurosci. Abstr. 9: 313.
- Surgeon^a J.W. and O'Shea M. (1982) Peptide (proctolin) innervation of insect skeletal and visceral muscle and heart. Soc. Neurosci. Abstr. 8: 990.

^a Currently JL Witten

Grant proposals:

Extramural Federal:

NIH/ NINDS: R15 NS34117-01S1 "Functional significance of neuropeptide plasticity, **PI: JL Witten,** 5/1/95-4/30/99, \$109,500

NIH: Minority Supplement for Postdoctoral Fellow to NIH R15 NS34117-01S1 Award, **PI: JL Witten,** 5/1/95-4/30/98, \$64, 852.

NSF: IBN 9905697 "Hormonal modulation of novel potassium ion channels, **PI: JL Witten,** 8/99-7/05. \$290,000.

NSF: DBI 0079794, Major Research Instrumentation, "Acquisition of a Confocal Microscope for Neural and Cell Biology", **Co-PI: JL Witten,** 2000-2003, \$231,000.

Intramural:

UWM Graduate School Research Committee Award, Steroid hormonal regulation of neuropeptide expression in motoneurons, **PI: JL Witten,** 7/1/93-6/30/94, \$8187.

UWM Graduate School Research Committee Award, "Cellular Distribution, Developmental Changes and Hormonal Regulation of Potassium Ion Channels in the Nervous System"; **PI: JL Witten,** 7/1/96-6/30/98: \$13,880.

UWM Faculty and Staff Development Program Award Global hypermedia in the undergraduate neuroscience classroom, **Co-PI: JL Witten,** 7/1/95-6/30/96, \$20,000.

Professional Service

Federal panel service

Panel member for NSF Division of Integrative Biology and Neuroscience (Neuroendocrinology), 1995

Panel NIH Panel member for NIH Integrative, Functional and Cognitive Neuroscience 2000-2001

Referring of grant proposals

NSF Division of Integrative Biology and Neuroscience Panels: Neuroendocrinology, Developmental Neurobiology, Physiology, and Behavior and Neuronal and Glial Mechanisms.

NIH grant panel: Functional and Cognitive Neuroscience.

Referring of journal articles

Ad hoc reviewer for J. Neuroscience, J. Neurobiology, J. Comparative Neurology, PNAS, J. Experimental Biology, J. Neurophysiology, General and Comparative Endocrinology, J. Comparative Physiology [B], Developmental Biology, J. American Physiological Society, Bioscience

Journal editor

Review editor, Frontiers in Cellular Neuroscience, 2007-present

Outside examiner

Ph. D. Thesis of Barbara Kirchhof, Department of Zoology, University of Otago, Dunedin, New Zealand, 1997

Professional memberships and positions

1981-present Member, Society for Neuroscience

1992-present Member, Milwaukee Chapter for Neuroscience

2006-7 President, Milwaukee Chapter for Neuroscience

Collaborators

Dr. Barry Ganetzky, U. Wisconsin-Madison

Dr. Uwe Homberg, U. Marburg, Germany

Dr. Frank Horodyski, Ohio University
Dr. Kyeong-Yeoll Lee, Kyungpook National University, South Korea
Dr. Hans-Gunther Knaus, University of Austria
Dr. Alan Nighorn, Arizona Research Division of Neurobiology
Dr. Monica Stengl, U. Marburg, Germany
Dr. Francesco Tejedor, U. Alicante, Spain

Graduate Students Advised

Gail Ekman, MS 1999
Yongsheng Miao, PhD 2000, MBA U. Chicago, 2003
Dan Lu, MS 2000
Matthew Keyser, PhD candidate
Mia Lytle, Ph.D. 2007
Sheldon Garrison, Ph.D. 2009