

Jean C. Hardwick, Ph.D.

Education

Ph.D., Physiology and Biophysics, The University of Vermont, Burlington, VT; 1988.
B.A., *cum laude*, Biochemistry, Smith College, Northampton, MA; 1983.

Professional Experience

Professor, Biology Department, Ithaca College, Ithaca, NY; 2010-present
Coordinator, Neuroscience minor; 2008-present
Associate Professor, Biology Department, Ithaca College, Ithaca, NY; 2003-present.
Assistant Professor, Biology Department, Ithaca College, Ithaca, NY; 1997-2002.
Lecturer, Department of Biology, The University of Vermont, Burlington, VT; Spring semester 1996 and 1997.
Lecturer, Department of Natural Sciences and Mathematics, Trinity College, Burlington, VT; Fall semester, 1995.
Research Associate, Department of Anatomy and Neurobiology, The University of Vermont, Burlington, VT; 1994-1997.
Postdoctoral Associate, Department of Anatomy and Neurobiology, The University of Vermont, Burlington, VT; 1988-1994. Advisor: Rodney L. Parsons, Ph.D.
Graduate Teaching Fellow, Department of Physiology and Biophysics, The University of Vermont, Burlington, VT; 1983-1988. Advisor: Edith D. Hendley, Ph.D.

Honors and Awards

Ithaca College Excellence in Scholarship Award – 2005
“Who’s Who Among American Teachers” – 2002
Honorary Member, Gold Key National Honor Society, University of Vermont; 1996.
College of Medicine Graduate Student Research Award, University of Vermont; 1987.
Departmental Teaching Fellow of the Year, Department of Physiology and Biophysics, University of Vermont; 1987.
High Honors in Biochemistry, Smith College; 1983.
Sigma Xi Honor Society, Smith College; 1983.

Teaching (partial listing)

Ithaca College, Ithaca NY: 1997-present (*approximate course enrollments*)
Principles of Biology (BIOL 121) – 120 students
Animal Physiology (BIOL 214) – 32 students
Neurobiology (BIOL 315) – 20 students
Literature in Biology (BIOL 301) – 12 students
Biotechnology (Intermediate Honors Course) (BIOL 210) – 20 students
Junior Honors Course – Emotional Intelligence (IISP 300) – 20 students
Seminar in Neuroscience (IISP 492) – 12 students
University of Vermont, Burlington VT: 1996-1997
Comparative Animal Physiology – 75 students)
Anatomy and Physiology (selected lectures on Nerves, Muscles, Immune) – 200 students

Grants

National Institutes of Health RO1; 2010-2013, "Remodeling of the guinea pig intrinsic cardiac plexus with chronic heart disease". Co-PI Dr. E. Marie Southerland at East Tennessee State University; \$494,685.

National Institutes of Health RO1; 2010-2013, "Myocardial ischemia remodels the cardiac nervous system". Consultant, 5% effort. (*PI Dr. Jeffrey Ardell, ETSU*)

National Institutes of Health Academic Research Enhancement Award AREA; 2006-2009, "Regulation and actions of NO in the cardiac plexus"; \$209,722

National Institutes of Health Minority Undergraduate Research Supplement; 2002; \$3600

National Institutes of Health AREA; 2001- 2005, "Regulation of Cardiac Neurons by Mast Cells and Peptides"; \$120,241

National Science Foundation Equipment grant; 2001-2004, "Acquisition of Microscopy Core Facility for Biological Research"; \$78,643

National Institutes of Health AREA; 1998-2001, "Modulation of Intracardiac Neurons by Mast Cells"; \$88,650

National Research Service Award Postdoctoral Fellowship, National Institutes of Health; 1989-1991, "Regulation of nicotinic acetylcholine receptor recovery"

Affiliations

Committee Member, Society for Neuroscience Committee on Neuroscience Departments and Programs (2011-2014)

President, Faculty for Undergraduate Neuroscience (2005)

Secretary, Faculty for Undergraduate Neuroscience (2002-2003)

Member, Faculty for Undergraduate Neuroscience

Member, Society for Neuroscience

Member, Sigma Xi

Vice President, Ithaca College Chapter, Sigma Xi (2008-present)

Member, American Physiological Society

Publications

(undergraduate student authors underlined)

Girasole, A.E., Palmer, C.P., Corrado, S.L., Southerland, E.M., Ardell, J.L., and Hardwick, J.C. (2011). Angiotensin II potentiates adrenergic and muscarinic modulation of guinea pig intracardiac neurons. *American Journal of Physiology* **301**: R1391-1399..

Hardwick, J.C. and Smith, J.S. (2010). Undergraduate Neuroscience Faculty: Results from a Survey of Faculty for Undergraduate Neuroscience Members. *Journal of Undergraduate Neuroscience Education (JUNE)* **8(2)**: A101-A107.

Hardwick, J.C., Baran, C.N., Southerland, E.M., and Ardell, J.L. (2009). Remodeling of the guinea pig intrinsic cardiac plexus with chronic pressure overload. *American Journal of Physiology* **297**: R859-R866.

Hardwick, J.C., Southerland, E.M and Ardell, J.L. (2008). Chronic myocardial infarction induces phenotypic and functional remodeling in the guinea pig cardiac plexus. *American*

Journal of Physiology, **295**: R1926-R1933.

Hardwick, J.C., Kerchner, M, Lom, B., Ramirez, J.J., and Wiertelak, E. (2006). From Faculty for Undergraduate Neuroscience (FUN): Encouraging innovation in undergraduate neuroscience education by supporting student research and faculty development. *Cell Biology Education*, **5**: 86-90. (invited article)

Tompkins, J.D., **Hardwick, J.C.**, Locknar, S.A., Merriam, L.A., and Parsons, R.L. (2006). Ca^{2+} influx, but not Ca^{2+} release from internal stores, is required for the PACAP-induced increase in excitability in guinea pig intracardiac neurons. *Journal of Neurophysiology*, **95**: 2134-2142.

Hardwick, J.C., Kotarski, A.F., and Powers M.J. (2006). Ionic mechanisms of histamine-induced responses in guinea pig intracardiac neurons. *American Journal of Physiology* **290**: R241-R250.

Hardwick, J.C. (2005). Preparing the next generation of neuroscience educators, *Journal of Undergraduate Neuroscience Education*, **3**: E3. (invited editorial)

Hardwick, J.C., Tompkins, J., Locknar, S., Merriam, L., Young, B. and Parsons, R.L. (2006). Ca^{2+} -influx through channels other than voltage-dependent Ca^{2+} channels is critical to the PACAP-induced increase in excitability in guinea pig cardiac neurons. *Ann NY Acad. Sci* **1070**: 317-321.

Jelson, G.S., DiMasi, G., Sager, K.S., and **Hardwick J.C.** (2003). Modulation of guinea pig intrinsic cardiac neurons by prostaglandins. *American Journal of Physiology*, **285**: R682-R689.

Powers, M.J., Peterson, B.A., and **Hardwick, J.C.** (2001). Regulation of parasympathetic neurons by mast cells and histamine in the guinea pig heart. *Autonomic Neuroscience*, **87**: 37-45.

Schoenfeld, L.S., Souder, J.A., and **Hardwick, J.C.** (2000). Pituitary adenylate cyclase-activating polypeptide innervation of the mudpuppy cardiac ganglion. *Brain Research*, **882**: 180-190.

Parsons, R.L., Rossignol, T.M., Calupca, M.A., **Hardwick, J.C.**, and Braas, K.M. (2000). PACAP peptides modulate guinea pig cardiac neuron membrane excitability and neuropeptide expression. *Annals of the New York Academy of Science*, **921**: 202-210.

Calupca, M.A., Hendricks, G.M., **Hardwick, J.C.**, and Parsons, R.L (1999). Role of mitochondrial dysfunction in the Ca^{2+} -induced decline of transmitter release at K^{+} -depolarized motor neuron terminals *Journal of Neurophysiology*, **18**: 498-506.

Braas, K.M., May, V., Harakall, S.A., **Hardwick, J.C.** and Parsons, R.L. (1998). PACAP modulates parasympathetic neuron excitability in guinea pig cardiac ganglia. *Journal of Neuroscience*, **18**: 9766-9779.

May, V., Beudet, M.M., Parsons, R.L., **Hardwick, J.C.**, Gauthier, E., Durda, J.P., and Braas, K.M. (1998). Mechanisms of pituitary adenylate cyclase activating polypeptide (PACAP)-induced depolarization of sympathetic superior cervical ganglion (SCG) neurons. *Annals of the New York Academy of Science* **865**: 164-175.

Kennedy, A.L., Harakall, S.A., Lynch, S.W., Braas, K.M, **Hardwick, J.C.**, Mawe, G.M, and Parsons, R.L. (1998). Expression and physiological actions of neuropeptide Y in guinea pig parasympathetic cardiac ganglia. *Journal of the Autonomic Nervous System*, **71**: 190-195.

Hardwick, J.C., Mawe, G.M., and Parsons, R.L. (1997). Tachykinin-induced activation of non-specific cation conductance via NK₃ neurokinin receptors in guinea-pig intracardiac neurons. *Journal of Physiology*, **504**: 65-74.

Connor, E.A., Dunaevsky, A., Giffiths, D.J.G., **Hardwick, J.C.**, and Parsons, R.L. (1997). Transmitter release differs at snake twitch and tonic endplates during potassium-induced nerve terminal depolarization. *Journal of Neurophysiology*, **77**: 749-760.

Hardwick, J.C. and Parsons, R.L. (1996). Activation of the protein phosphatase, calcineurin, during carbachol exposure decreases the extent of recovery from end-plate desensitization. *Journal of Neurophysiology*, **76**: 3609-3616.

Hardwick, J.C., Mawe, G.M., and Parsons, R.L. (1995). Evidence for sensory fiber innervation of parasympathetic neurons of the guinea pig cardiac ganglion. *Journal of the Autonomic Nervous System*, **53**: 166-174.

Hardwick, J.C. and Parsons, R.L. (1995). Necessity of protein kinase C activity for maintenance of acetylcholine receptor function at snake twitch fibre endplates. *British Journal of Pharmacology*, **114**: 433-441.

Hardwick, J.C. and Parsons, R.L. (1995). Requirement of a colchicine-sensitive component of the cytoskeleton for acetylcholine receptor recovery. *British Journal of Pharmacology*, **114**: 442-446.

Hardwick, J.C. and Parsons, R.L. (1993). Necessity of divalent cations for recovery from carbachol-induced nicotinic acetylcholine receptor inactivation at snake twitch fibre endplates. *British Journal of Pharmacology*, **110**: 889-895.

Coniglio, L.M., **Hardwick, J.C.**, and Parsons, R.L. (1993). Quantal transmitter release at snake twitch and tonic muscle fibers during prolonged nerve terminal depolarization. *Journal of Physiology*, **466**: 383-403.

Hardwick, J.C. and Parsons, R.L. (1993). Mechanism of staurosporine-induced decrease in acetylcholine receptor recovery from desensitization. *British Journal of Pharmacology*, **108**: 741-748.

Hardwick, J.C. and Parsons, R.L. (1992). Galanin stimulates phosphatidylinositol turnover in cardiac tissue of the mudpuppy. *Journal of the Autonomic Nervous System*, **40**: 87-90.

Konopka, L.M., Merriam, L.A., **Hardwick, J.C.**, and Parsons, R.L. (1992). Aminergic and peptidergic elements and actions in a cardiac parasympathetic ganglion. *Canadian Journal of Physiology and Pharmacology*, **70**: S32-S43.

Hardwick, J.C., Coniglio, L.M. and Parsons R.L. (1991). Staurosporine inhibits the extent of acetylcholine receptor recovery from carbachol-induced desensitization in snake twitch fibres. *British Journal of Pharmacology*, **104**: 879-886.

Konopka, L.M., McKeon, T.W., Merriam, L.A., **Hardwick, J.C.**, and Parsons, R.L. (1991). Galanin in a parasympathetic ganglion, In: Galanin: A New Multifunctional Peptide in the Neuroendocrine System, ed. T. Hokfelt and J. Bartfai, Macmillan Press, New York, pp. 261-274.

Hardwick, J.C., Ehrlich, Y.H., and Hendley, E.D. (1989). Extracellular ATP increases norepinephrine uptake in PC12 cells. *Journal of Neurochemistry*, **53**: 1512-1518.

Hendley, E.D., Whittemore, S.R., ***Chaffee, J.E.** and Ehrlich, Y.H. (1988). Regulation of norepinephrine uptake by adenine nucleotides and divalent cations: Role for extracellular protein phosphorylation. *Journal of Neurochemistry*, **50**: 263-273.

Ehrlich, Y.H., Garfield, M.G., Davis, T.B., Kornecki, E., ***Chaffee, J.E.**, and Lenox, R.H. (1986). Extracellular protein phosphorylation systems in the regulation of neuronal function. In, Progress in Brain Research, **69**, ed W.H. Gispen and A. Routtenburg, Elsevier Sci Pub., pp. 197-208.

Briggs, R.T., ***Chaffee, J.E.**, and Anderson, M. (1985). Calcium-containing granules in myoepithelial cells of the polychaete *Syllis spongiphila*: Possible ionic modulators. *Tissue and Cell*, **17**: 923-928.

* earlier publications under maiden name: J.E. Chaffee

Invited Seminars

Ithaca College Chemistry Department – 1998

Cornell University Department of Molecular Medicine – 1999

East Tennessee State University, Quillen Medical School, Department of Pharmacology – 2005

Howard University Medical College, Department of Physiology and the Special Neuroscience Program – 2007

Cornell University, Department of Neurobiology and Behavior – 2008

Smith College, Department of Biological Sciences – 2008

University of Vermont, Department of Anatomy and Neurobiology – 2008

Association of Neuroscience Departments and Programs – 2009

“Neuroscience research opportunities at PUIs”

East Tennessee State University, Quillen Medical School, Dept of Pharmacology – 2010

Ithaca College Committees (partial listing)

Institutional Animal Care and Use Committee – 1997-present, Chair since 1999
Premedical Sciences Advisory Committee – 1998-present, Chair since 2000
Biology Department Assessment Committee – 2008- present, Chair
Faculty summer grant review panel – 1999, 2006
Humanities and Sciences Honors Program Steering Committee – 2002-2005
Faculty Mentoring Program Group Leader – 2005-2006
Biology Department Search Committees – Chair (4 committees), member (7 committees '99-'05)
Biology Department Self Review Committee – 1998, Chair (2007)
Biology Department Budget and Operations Committee – 1999-2000
Biology Department Curriculum Committee – 2001-2003
Biology Department Personnel Committee – Chair (2004-2007)
Middle States Re-accreditation Task Force member (Admission and Retention) - 2007
Humanities and Sciences Dean Search Committee – 2008

Grant Reviews

SOMAS (Support Of Mentors And their Students in the neurosciences) summer research grants
National Science Foundation (ad hoc reviewer)

Manuscript Reviews

American Journal of Physiology
Autonomic Neuroscience
Neuroscience Letters
Journal of Applied Physiology
Journal of Undergraduate Neuroscience Education
Autonomic & Autocoid Pharmacology
Journal of Neurophysiology
Regulatory Peptides

Conference Abstracts

(Ithaca College students underlined)

Hardwick, J.C., Ryan, S.E., Wilson, M.J., Southerland, E.M., and Ardell, J.L. (2012). Inhibition of AT1 receptors alters remodeling of the guinea pig cardiac plexus following chronic MI. *Experimental Biology Abstracts*.

Feinberg, P.A., Inada, M., Southerland, E.M., Ardell, J.L., and **Hardwick, J.C.** (2011). Chronic heart disease increases neuronal and inducible nitric oxide synthase expression within the intrinsic cardiac plexus of the guinea pig. *Experimental Biology Abstracts*.

Hardwick, J.C., Girasole, A.E., Palmer, C.P., Corrado, S.L., Southerland, E.M., and Ardell, J.L. (2011). Modulation of the intracardiac neurons of the guinea pig cardiac plexus by norepinephrine and Angiotensin II. *Experimental Biology Abstracts*.

Hardwick, J.C., Girasole, A.E., Southerland, E.M., and Ardell, J.L. (2011). Effects of chronic Beta blockade on disease-induced remodeling of the guinea pig cardiac plexus. *Experimental Biology*

Abstracts.

Girasole, A.E., Southerland, E.M., Ardell, J.L., and **Hardwick, J.C.** (2009). Modulation of neuronal responses in guinea pig intrinsic cardiac neurons with chronic heart disease: Changes in sensitivity to norepinephrine, acetylcholine, and angiotensin II. *Society for Neuroscience Abstracts*.

Baran, C.N., Southerland, E.M., Ardell, J.L. and **Hardwick, J.C.** (2008). Chronic heart disease remodels neuronal excitability and NOS expression in the guinea pig intrinsic cardiac plexus. *Society for Neuroscience Abstracts*.

Baran, C.N., Southerland, E.M., Ardell, J.L. and **Hardwick, J.C.** (2008). Remodeling of the guinea pig intracardiac plexus following pressure overload-induced cardiac hypertrophy. *Experimental Biology*

Hardwick, J.C., Southerland, E.M., and Ardell, J.L. (2007). Chronic myocardial infarction induces upregulation of nNOS and alters neuronal excitability in the guinea pig cardiac plexus. *Experimental Biology*

Hardwick, J.C., Andersen, N.E., Bochacki, R.P., and Kelley, A. (2006). Nitric oxide actions and regulation in the guinea pig cardiac ganglion. *Society for Neuroscience Abstracts*, **31**.

Hardwick, J.C. and Kotarski, A.F. (2005). Histamine-induced increase in intracardiac neuronal excitability is dependent on extracellular calcium. *Society for Neuroscience Abstracts*, **30**.

Hardwick, J.C., Tompkins, J., Locknar, S., Merriam, L., Young, B. and Parsons, R.L. (2005). Ca^{2+} -influx through channels other than voltage-dependent Ca^{2+} channels is critical to the PACAP-induced increase in excitability in guinea pig cardiac neurons. *Regulatory Peptides* **130**: 163-164.

Hardwick, J.C. and Sellers, J. (2004). Modulation of synaptic transmission by histamine and neuropeptides in the guinea pig cardiac plexus. *Society for Neuroscience Abstracts*, **29**.

Hardwick, J.C., Corbett, B.M., Dobson, J.S., and Powers, M.J. (2003). Ionic mechanisms of histamine and prostaglandin modulation of guinea pig intracardiac neurons. *Society for Neuroscience Abstracts*, **28**.

Hardwick, J.C., Jelson, G.S., DiMasi, G.M., and Sager, K.M. (2002). Modulation of guinea pig intracardiac neurons by eicosanoids. *Society for Neuroscience Abstracts*, **27**.

Powers, M.J., Peterson, B.A., and **Hardwick, J.C.** (2000). Regulation of parasympathetic neurons by mast cells and histamine in the guinea pig heart. *Society for Neuroscience Abstracts*, **26**.

Schoenfeld, L.K., Kumar, R.R., and **Hardwick, J.C.** (1998). Characterization of pituitary adenylate cyclase-activating polypeptide (PACAP) innervation of the mudpuppy cardiac ganglion. *Society for Neuroscience Abstracts*, **24**: 2047.