Curriculum Vitae

Lon A. Wilkens, Professor
Center for Neurodynamics
Department of Biology
University of Missouri-St. Louis
8001 Natural Bridge Road
St. Louis, Missouri 63121-4499
(314) 516-6222; FAX 516-6233
lon_wilkens@umsl.edu

Education

BA in Zoology, 1965, University of Kansas, Lawrence
Ph.D. in Comparative Physiology, 1970, Florida State University, Tallahassee

Academic Appointments

Assistant Professor and Schwartz Lecturer in Biology, Bryn Mawr College, 1973-1975.
Assistant Professor of Biology, University of Missouri-St. Louis, 1975-1979.
Associate Professor of Biology, University of Missouri-St. Louis, 1979-1987.
Research Fellow, The Australian National University, Canberra, 1980-1982.
Associate Research Professor, Whitney Marine Laboratory, University of Florida, 1982.
Professor of Biology, University of Missouri-St. Louis, 1988-present.
Chairperson, Department of Biology, University of Missouri-St. Louis, 1989-1992.
Associate Director, Center for Neurodynamics, University of Missouri-St. Louis, 1996-present.

Non Academic Appointments

Director, St. Louis Aquacenter Foundation for Education and Research, 1988-1993.

Teaching Experience

Introduction to Neuroscience
Comparative Animal Physiology
General Physiology
Invertebrate Neuroethology
Invertebrate Biology
Marine Science
General Biology
Seminars, Topics in Biology

Research Experience

Dissertation Research, Florida State University, 1966-1970. Electrophysiological studies on the heart of the bivalve mollusc *Modiolus demissus* (advisor, M.J. Greenberg).
Independent Investigator, Marine Biological Laboratory, Woods Hole, 1970. Ion conductance and pharmacology of molluscan hearts.
Postdoctoral Research, University of Texas, Austin, 1970-1973 (sponsor, J. L. Larimer). Neurophysiology of crayfish interneurons.
Independent Investigator, University of Washington, Friday Harbor Laboratories, 1972. CNS control of respiration and heart rate in decapod crustaceans.
Independent Investigator, Marine Biological Laboratory, Woods Hole, 1973. Visceral innervation and synchronization of heartbeat(s) in squid.
Independent Investigator, Bermuda Biological Station, Bermuda, 1976. Electrophysiology of the optic lobes of the scallop.
Independent Investigator, Duke University Marine Laboratory, Beaufort, North Carolina, 1978. Shadow response behavior in the scallop.
Independent Investigator, Bermuda Biological Station, Bermuda, 1979. Starfish-mediated escape in scallops.
Visiting Scientist, Australian Institute of Marine Science, 1980, 1981. Visual behavior, physiology, and ecology of the giant clam *Tridacna*.

Visiting Scientist, Universität Konstanz, FRG, 1987. Crustacean mechanoreception and CNS integration.
Visiting Research Professor, Florida State University, 1993. Hydrodynamic sensitivity in marine decapods.

Teaching Grants

E. Reuben & Gladys Flora Grant Charitable Trust, Teaching, Introduction to Marine Science, 1997. $1,000.
E. Reuben & Gladys Flora Grant Charitable Trust, Teaching, Introduction to Marine Science, 1999. $1,000.
E. Reuben & Gladys Flora Grant Charitable Trust, Teaching, Introduction to Marine Science, 2000. $1,000.

Research Grants

Principal Investigator: NIH Grant NS-12971, "Synaptic Integration in a Bimodal Sensory Interneuron," 1974-1978. $60,247.
Principal Investigator: NSF, "Mechanosensitivity in the Crayfish Caudal Photoreceptor Interneuron," 1974-1976, $52,000.
Co-principal Investigator with Dr. B. W. Ache: NSF-Bermuda Biological Station Umbrella Grant, "Visual Integration in the Scallop CNS," 1976. $1,600.
Principal Investigator: Whitehall Foundation, Inc. "Synaptic Integration in the Crustacean CNS," 1979-1982. $59,000.
Principal Investigator: NSF-Bermuda Biological Station Umbrella Grant, "Mechanisms of Central Integration and Habituation of the Shadow Reflex Behavior in the Scallop," 1979. $2,700.
Principal Investigator: Weldon Spring Grant, "Somatosensory Integration in the Crayfish Central Nervous System," 1983-84. $12,069.
Principal Investigator: Whitehall Foundation, Inc., "Structure and Function of an Identified Network of Sensory Interneurons in the Crayfish Abdominal CNS," 1984-1989. $88,144.
Principal Investigator: Weldon Springs Grant, "Directional sensitivity in Mechanoreceptive Interneurons: an Analysis of the Encoding Properties in Identified Cells," 1986-1987. $9,933.
Principal Investigator: Research Incentive Award, "Orientation and Rheotaxis in Decapod Crustaceans," 1993-1994. $3,057.
Principal Investigator: Research Projects Fund, "Mechanotransduction in Aquatic Near-field Receptors: Analysis by Daser-doppler Vibrometry and Stochastic Sesonance." 1993. $1,000.
Principal Investigator: UMSL Reseach Award, "Stochastic and Integrative Mechanisms in Signaling by the Nervous System," 1994. $3,150.
Co-Investigator (Frank Moss, PI): Office of Naval Research Umbrella Grant , "The statistical, nonlinear dynamics of sensory neurons and of certain physical systems." 1994-1997. $499,947.
Co-Investigator (Frank Moss, PI): Office of Naval Research Supplemental Equipment Grant, "Apparatus for Neurophyusiology and Nonlinear Dynamics Experiments." 1996. $198,382.
Principal Investigator: UM Research Board, "Stochastic Influences in Mechanosensory Integration," 1995-1996. $39,760.
Co-Principal Investigator with Frank Moss: Department of Defense (ONR), "Stochastic Resonance, Noise and Signal Processing in Sensory Biology." 1996-2001. $1,979,829.
Principal Investigator: U.S. Geological Survey and Mississippi Interstate Cooperative Resource Association, "Species at Risk: Potential effects of coded-wire tags on juvenile paddlefish movement and feeding in the Mississippi River Basin". 2001. $7,000.

Principal Investigator: NSF, "The paddlefish detecting and mapping the outside world– Experiment and Modeling." 2000-2002. $19,470.
Principal Investigator: UMSL Research Award, "Neural coding and spatial representation of weak electrical fields by the paddlefish." 2005. $3,847.
Principal Investigator: UM Research Board, "Electrosensory coding in the paddlefish brain." 2005. $16,047.
Principal Investigator: NSF, "Electrosensory processing in plankton capture by the paddlefish." 2005-2008. $463,254.

Honors

NIH Predoctoral Fellow, Florida State University, 1968-70.
Grass Fellow in Neurophysiology, Marine Biological Laboratory,1973
NIH Postdoctoral Fellow, University of Texas, Austin, 1970-73.
UMSL Chancellor's Award for Excellence in Research, 2000.

Graduate Students

George A. Marzelli: Ph.D., 1977. Bryn Mawr College.
George A. Marzelli: Master of Arts, 1975. Bryn Mawr College.
Patricia M. Flood: Master of Arts, 1977. Bryn Mawr College.
Tom Spagnolia: Master of Science, 1980. University of Missouri-St. Louis.
Jeanne Wanner: Master of Science, 1986. University of Missouri-St. Louis.
Richard Nolte: Master of Science, 1988. University of Missouri-St. Louis.
Craig Gurgens: Master of Science, 1996. University of Missouri-St. Louis
Derek Hildreth: Master of Science, 2003. University of Missouri-St. Louis

Laboratory Postdoctoral and Visiting Scientists

Reinhold Schultz (PD), Universität Braunschweig, 1987-1988.
Tateo Shimozawa (VS), Hokkaido University, 1989.
John Douglass (PD), Duke University, 1990-1993.
Barbara Schmitz (VS), Universität Konstanz, 1996.
Winfried Wojtenek (PD), Universität Bonn, 1997-2001.
Michael Hofmann (VS), Universität Bonn, 1999

Memberships

American Association for the Advancement of Science, since 1973.
American Microscopical Society, since 1996.
American Society of Zoologists, 1967-1995.
International Society for Neuroethology, since 1997.
Marine Biological Laboratory, Life Member.
Midwest Neurobiologists, since 1977.
Society for Neuroscience, 1975-2004.
Tallahassee, Sopchoppy and Gulf Coast Marine Biological Association, since 1968.

Professional Activities

Founder and co-organizer (with Stan Kater and Ann Kammer), First Annual Meeting of Midwest Neurobiologists, Pere Marquette, Illinois, 1977. An annual meeting of cellular neurobiologists.
Co-organizer (with Paul Taghert), Twelfth Annual Meeting of Midwest Neurobiologists, Pere Marquette, Illinois, 1989.

Publications (refereed)

1972 Wilkens, L.A. Electrophysiological studies on the heart of the bivalve mollusc, *Modiolus demissus*: I. Ionic basis of the membrane potential. *J. Exp. Biol.* **56**, 273-291.

Wilkens, L.A. Electrophysiological studies on the heart of the bivalve mollusc, *Modiolus demissus*: II. Ionic basis of the action potential. *J. Exp. Biol.* **56**, 293-310.

Wilkens, L.A. and Larimer, J.L. The CNS photoreceptor of crayfish: its morphology and *synaptic* activity. *J. Comp. Physiol.* **80**, 389-407.

1973 Wilkens, L.A. and Greenberg, M.J. Effects of acetylcholine and 5-hydroxytryptamine and their ionic mechanisms of action on the electrical and mechanical activity of molluscan heart smooth muscle. *Comp. Biochem. Physiol.* **45A**, 637-651.

Irisawa, H., Wilkens, L.A. and Greenberg, M.J. Increase in membrane conductance by 5-hydroxytryptamine and acetylcholine on the hearts of *Modiolus demissus demissus* and *Mytilus edulis* (Bivalvia). *Comp. Biochem. Physiol.* **45A**, 653-666.

Wilkens, L.A. and Larimer, J.L. Sensory interneurons: some observations concerning the physiology and related structural significance of two cells in the crayfish brain. *Tissue & Cell* **5**, 393-400.

1974 Wilkens, L.A. and Wolfe, G.E. A new electrode design for *en passant* recording and stimulation and for intracellular dye infussion. *Comp. Biochem. Physiol.* **48A**, 217-220.

Wilkens, J.L., Wilkens, L.A. and McMahon, B.R. Central control of cardiac and scaphognathite pacemakers in the crab. *J. Comp. Physiol.* **90**, 89-104.

1976 Wilkens, L.A. and Larimer, J.L. Photosensitivity in the 6th abdominal ganglion of decapod crustaceans: a comparative study. *J. Comp. Physiol.* **106**, 69-75.

Wilkens, J.L. and Wilkens, L.A. A simple oil-immersion hook electrode. *J. Electrophysiol. Tech.* **5**, 35-38.

1977 Wilkens, L.A. and Ache, B.W. Visual responses in the central nervous system of the scallop. *Experientia* **33**, 1338-1340.

1978 Flood, P.M. and Wilkens, L.A. Directional sensitivity in a crayfish mechanoreceptive interneuron: analysis by root ablation. *J. Exp. Biol.* **77**, 89-106.

1979 Wilkens, L.A. and Marzelli, G.A. Central inhibition of an identified mechanosensory interneuron in the crayfish. *J. Neurobiol.* **10**, 247-254.

Henson, B.L. and Wilkens, L.A. A mathematical model for the motion of mechanoreceptor hairs in fluid environments. *Biophys. J.* **27**, 277-286.

Marzelli, G.A. and Wilkens, L.A. Centrally-mediated synaptic input: effects on an identified crayfish mechanosensory interneuron. *J. Comp. Physiol.* **134**, 1-10.

1981 Wilkens, L.A. and Wolken, J.J. Electroretinograms from *Odontosyllis enopla* (Polychaeta; Syllidae): initial observations on the visual system of the bioluminescent fireworm of Bermuda. *Mar. Behav. Physiol.* **8**, 55-66.

Wilkens, L.A. Neurobiology of the scallop. I. Starfish-mediated escape behavior. *Proc. Roy. Soc. Lond. B* **211**, 341-372.

1982 Sandeman, D.C. and Wilkens, L.A. Sound production by abdominal stridulation in the Australian Murray River crayfish *Euastacus armatus*. *J. Exp. Biol.* **99**, 469-472.

1983 Spagnolia, T. and Wilkens, L.A. Neurobiology of the scallop. II. General morphology and fine structure of the parietovisceral ganglion lateral lobes in relation to afferent projections from the mantle eyes. *Mar. Behav. Physiol.* **10**, 23-55.

Sandeman, D.C. and Wilkens, L.A. Motor control of the antennal flagellum in the Australian crayfish, *Euastacus armatus*. *J. Exp. Biol.* **105**, 253-273.

1984 Wilkens, L.A. Ultraviolet sensitivity in hyperpolarizing photoreceptors of the giant clam *Tridacna*. *Nature* **309**, 446-448.

1986 Wilkens, L.A. The visual system of the giant clam *Tridacna*: behavioral adaptations. *Biol. Bull.* **170**, 393-408.

1988 Wilkens, L.A. Hyperpolarizing photoreceptors in the eyes of the giant clam *Tridacna*: physiological evidence for both spiking and nonspiking cell types. *J. Comp. Physiol.* **163**, 73-84.

Schultz, R. and Wilkens, L.A. Mechanosensory interneurons (MSIs) in the crayfish 6th abdominal ganglion are inhibited by activation of other MSIs. *Comp. Biochem. Physiol.* **91A**, 571-579.

1993 Douglass, J.K., Wilkens, L., Pantazelou, E., and Moss, F. Stochastic resonance: Noise-enhanced information transfer in crayfish mechanoreceptors. *Nature* **365**, 337-340.

Moss, F., Douglass, J.K., Wilkens, L., Pierson, D., and Pantazelou, E. Stochastic resonance in an electronic FitzHugh-Nagumo model. *Stochastic Processes in Astrophysics*, NY Acad. Sci. **706**, 26-41.

1994 Wilkens, L.A. and Douglass, J.K. A stimulus paradigm for analysis of near-field hydrodynamic sensitivity in crustaceans. *J. Exp. Biol.* **189**, 263-272.

1995 Petracchi, D., Barbi, M., Chillemi, S., Pantazelou, E., Pierson, D., Dames, C., Wilkens, L.A., and Moss, F. A test for a biological signal encoded by noise. *Intern. J. Bifurcation and Chaos* **5**,89-100.

Pantazelou, E., Dames, C., Moss, F., Douglass, J. and Wilkens, L.A. Temperature dependence and the role of internal noise in signal transduction efficiency of crayfish mechanoreceptors. *Intern. J. Bifurcation and Chaos* **5**, 101-108.

1996 Pei, X., Moss, F. and Wilkens, L.A. Light enhances hydrodynamic signaling in the caudal photoreceptor interneuron of the crayfish. *J. Neurophysiol.* **76**, 3002-3011.

Wilkens, L.A., Schmitz, B. and Herrnkind, W.F. Antennal responses to hydrodynamic and tactile stimuli in the spiny lobster *Panulirus argus*. *Biol. Bull.* **191**, 187-198.

Pei, X., Wilkens, L.A. and Moss, F. Noise-mediated spike timing precision from aperiodic stimuli in an array of Hodgkin-Huxley-type Neurons. *Phys. Rev. Lett.* **77**, 4679-4683.

1997 Braun, H.A., Schäfer, K., Peters, R., Bretschneider, F., Pei, X., Wilkens, L. and Moss, F. Low-dimensional dynamics in sensory biology 1: Thermally sensitive electroreceptors of the catfish. *J. Computational Neurosci.* **4**, 335-347.

Wilkens, L.A., Russell, D.F., Pei, X. and Gurgens, C. The paddlefish rostrum functions as an electrosensory antenna in plankton feeding. *Proc. Roy. Soc. Lond. B* **264**, 1723-1729.

1998 Douglass, J.K. and Wilkens, L.A. Directional selectivities of near-field filiform mechanoreceptors on the crayfish tailfan (Crustacean: Decapoda). *J. comp. Physiol. A.* **183**, 23-34.

Moss, F., Wilkens, L.A., Pei, X., Dolan, K., Braun, H.A., Dewald, M., Schafer, K. and Voigt, K. Finding unstable periodic orbits in physical and biological dynamical systems. *Proc. 4th Exp. Chaos*, Boca Raton, Florida, pp.289-301.

1999 Pei, X., Russell, D.F., Wilkens, L..A., and Moss, F. Dynamics of the electro-receptors in the paddlefish, *Polyodon spathula*. *Computational Neuroscience,* J. M. Bower ed. Plenum Press, New York. pp. 245-249.

Neiman, A., Pei, X., Russell, D., Wojtenek, W., Wilkens, L.A., Moss, F., Braun, H.A., Huber, M.T. and Voight, K. Synchronization of the noisy electrosensitive cells in the paddlefish. *Phys. Rev. Lett.* **82**, 660-663.

Russell, D.F., Wilkens, L.A. and Moss, F. Use of behavioural stochastic resonance by paddlefish for feeding. *Nature* **402**, 291-294.

2000 Gurgens, C., Russell, D.F. and Wilkens, L.A. Avoidance of metallic obstacles by the paddlefish *Polyodon spathula* due to electrosense. *J. Fish Biology*. **57**, 277-290.

Neiman, A.B., Russell, D.F., Pei, X., Wojtenek, W., Twitty, J., Simonotto, E., Wettring, B.A., Wilkens, L. A. and Moss, F. Stochastic synchronization of electroreceptors in paddlefish. *Int. J. Bifurcation and Chaos* **10**, 2499-2517.

2001 Wilkens, L.A., Wettring, B.A., Wagner, E., Wojtenek, W., and Russell, D.F. Prey detection in selective plankton feeding by the paddlefish: Is the electric sense sufficient. *J. Exp. Biol.* **204**, 1381-1389.

Wojtenek, W., Pei, X. and Wilkens, L.A. Paddlefish strike at artificial dipoles simulating the weak electric fields of planktonic prey. *J. Exp. Biol.* **204**, 1391-1399.

Wojtenek, W., Hofmann, M.H. and Wilkens, L.A. Primary afferent electrosensory neurons represent paddlefish natural prey. *Neurocomputing* **38**, 451-458.

Russell, D. F., Tucker, A., Wettring, B. A., Neiman, A., Wilkens, L. and Moss, F. Noise effects on the electrosense-mediated feeding behavior of small paddlefish. *Fluctuations and Noise Letters* **1**, L71-L86.

Bahar, S., Kantelhardt, J.W., Neiman, A., Rego, H.H.A., Russell, D.F., Wilkens, L., Bunde, A. and Moss, F. Long-range temporal anti-correlations in paddlefish electroreceptors. *Europhys. Lett.* **56**, 454-460.

2002 Hofmann, M.H., Wojtenek, W. and Wilkens, L.A. Central organization of the electrosensory system in the paddlefish (*Polyodon spathula*). *J. Comp. Neurol.* **446**, 25-36.
Bahar, S., Neiman, A., Wilkens, L.A. and Moss, F. Phase Synchronization and stochastic resonance effects in the crayfish caudal photoreceptor. Phys. Rev. E **65**, 050901.
2003 Wilkens, L.A., Hofmann, M., and Wojtenek, W. The electric sense of the paddlefish: a passive system for the detection and capture of zooplankton prey. *J. Physiol. Paris* **96**, 363-377.
2004 Hofmann, M.H., Falk, J. and Wilkens, L.A. Electrosensory brain stem neurons compute the time derivative of electric fields in the paddlefish. *Fluctuation and Noise Letters* **4**, L129-L138.
2005 Hofmann, M.H. and Wilkens, L.A. Temporal analysis of moving dc electric fields in aquatic media. *Phys. Biol.* **2**, 23-28.
Hofmann, M.H., Chagnaud, B. and Wilkens, L.A. Response properties of electrosensory afferent fibers and secondary brain stem neurons in the paddlefish. *J. Exp. Biol.* **208**, 4213-4222.

Publications (invited chapters, reviews, other)

1973 Greenberg, M.J., Agarwal, R.A., Wilkens, L.A. and Ligon, P. (1973). Chemical regulation of rhythmic activity in molluscan muscle. pp. 123-142, *Neurobiology of Invertebrates: Mechanisms of Rhythm Regulation*, ed. J. Salanki. Akademiai Kiado, Budapest.
1988 Wilkens, L.A. (1988). The crayfish caudal photoreceptor: advances and questions after the first half century. *Comp. Biochem. Physiol.* **91C**, 61-68.
1991 Wilkens, L.A. (1991). Neurobiology and behavior of the scallop. In *Scallops: Biology, Ecology and Aquaculture*. N. Shumway ed., Elsevier Science Publ., Amsterdam, p. 429-469.
1993 Wilkens, L.A. (1993). *Dynamic Biological Networks: The Crustacean Stomatogastric System*, ed. Harris-Warrick, Selverston, Marder and Moulins, MIT Press, 1992. *Amer. Zool.* **33**, 412-413.
1994 Wilkens, L.A. (1994). Hydrodynamic sensitivity in the spiny lobster *Panulirus argus*. *Tidings* **2**, 3-4.
2001 Wilkens, L.A. (2001). Tuning in to paddlefish. *Missouri Conservationist* **62**, 14-18. http://mdc.mo.gov/conmag/2001/01/30.htm
2003 Pettigrew, J. D. and Wilkens, L. Paddlefish and Platypus: Parallel evolution of passive electroreception in a rostral bill organ. In: *Sensory Processing in Aquatic Environments,* (eds. S.P. Collin, N.J. Marshall). Springer-Verlag, New York, pp. 420-433.
Wilkens, L.A. Adaptation of the rostral ampullary electrosense for plankton feeding by the paddlefish. In: *The Senses of Fishes: Adaptations for the Reception of Natural Stimuli,* (eds. G. von der Emde, J. Mogdans, B.G. Kapoor). Narosa Publishing House, New Dehli, pp. 288-307.
2005 Wilkens, L.A. and Hofmann, M.H. Behavior of animals with passive, low-frequency electrosensory systems. In: *Electroreception*, (eds. T.H. Bullock, C. Hopkins). Springer Handbook of Auditory Research (Series eds. R.R. Fay, A.N. Popper). Springer-Verlag, New York, pp. 229-263.

Manuscripts in Press

Wilkens, L.A. and Hofmann, M.H. Electroreception. In: *Senses on the Threshold, Function and Evolution of the Sense Organs in Secondarily Aquatic Vertebrates*. (eds. H.G. Thewissen and Nummela).Univ. California Press
Hofmann, M.H. and Wilkens, L.A. Magnetoreception. In: *Senses on the Threshold, Function and Evolution of the Sense Organs in Secondarily Aquatic Vertebrates*, (eds. H.G. Thewissen, S. Nummela). University of California Press.

Wilkens, L.A. and Hofmann, M.H. The paddlefish rostrum as an electrosensory organ: a novel adaptation for plankton feeding. *Bioscience*

Wilkens, L.A. and Moss, F. Mechanoreceptors and Stochastic Resonance. *Scholarpedia*

Manuscripts Submitted

Hofmann, M.H., Jung, N. and Wilkens, L.A. Complex spike train patterns in a system with delayed feedback. *Physical Biology*.

Hofmann, M.H., Jung, N., Preissner, M., Siebenaller, U., and Wilkens, L.A. Response properties of electrosensory units in the midbrain tectum of the paddlefish (*Polyodon spathula*). *J. Comp. Physiol. A*

Manuscripts in Preparation

Hofmann, M.H., Wassoer, T. and Wilkens, L.A. Ascending electrosensory pathways to multiple targets in di- and mesencephalon in the paddlerfish (*Polyodon* spathula). *J. Exp. Biol.*

Preissner, M., Wilkens, L.A., and Hofmann, M.H. Electrosensory pathways in the sterlet, *Acipenser ruthenus*.

Abstracts from Presentations

1970 Wilkens, L.A. and Greenberg, M.J. Ionic basis of electrical and mechanical activity of the heart of the mussel, *Modiolus demissus*. *Fed. Proc.* 456.

1971 Wilkens, L.A. and Larimer, J.L. Structural and functional morphology of two crayfish interneurons. *Amer. Zool.* **11**, 674.

1972 Wilkens, L.A. and Larimer, J.L. The caudal photoreceptor of the crayfish: structure and physiology of a light-sensitive multimodal interneuron. *Amer. Zool.* **12**, 36-37.

1973 Wilkens, J.L., Wilkens, L.A. and McMahon, B.R. Central control of cardiac and scaphognathite rhythms in the crab. Glasgow Symposium, p. 8.

1974 Wilkens, L.A. and Larimer, J.L. A survey of abdominal photoreceptive interneurons in the decapod crustacea. *Amer. Zool.* **14**, 1280.

1976 Marzelli, G.A. and Wilkens, L.A. Central inhibitory fibers in the crayfish abdomen: effect on a sensory interneuron. *Amer. Zool.* **16**, 178.

Flood, P.M. and Wilkens, L.A. Somatosensory integration in a crayfish interneuron: analysis by root ablation. *Amer. Zool.* **16**, 179.

Wilkens, L.A. and Baker, J.A. Effects of picrotoxin and curare on central inhibition in the crayfish. *Soc. Neurosci.* **2**, 360.

1979 Spagnolia, T. and Wilkens, L.A. Ultrastructure of the lateral lobe of the scallop parietovisceral ganglion. *Amer. Zool.* **19**, 960.

Wilkens, L.A. and Spagnolia, T. Projections of optic fibers in the parietovisceral ganglion of the scallop: a light microscope autoradiographic study. *Amer. Zool.* **19**, 960.

1981 Wilkens, L.A. Neural control of the smooth adductor muscle in the scallop. *Aust. Physiol. Pharmacol. Soc.* 40P.

Wilkens, L.A. The eyes of the giant clam *Tridacna*: photoreceptor electrophysiology. *Soc. Neurosci.* **7**, 667.

1983 Wilkens, L.A. Visual system of the giant clam *Tridacna*: behavior and receptor physiology. *Amer. Zool.* **23**, 903.

1985 Schultz, R. and Wilkens, L.A. Inhibitory integration by mechanoreceptive interneurons in the abdominal nervous system of the crayfish *Procambarus clarkii*. *Midwest Neurobiol.* **8**, 9.

1986 Wilkens, L.A. Directional sensitivity in crayfish mechanosensory interneurons. *Midwest Neurobiol.* **9**, 36.

1987 Wilkens, L.A. Directional coding by crayfish mechanosensory interneurons. *Soc. Neurosci.* **13**, 41.

1988 Nolte, R.A. and Wilkens, L.A. Interaction of photo- and mechanosensitivity in the caudal photoreceptor interneuron of the crayfish. *Midwest Neurobiol.* **11**, P27.

1991 Douglass, J.K. and Wilkens, L.A. Crayfish mechanoreceptor sensilla: properties of the tonic, nonadapting, long feathered hairs. *Midwest Neurobiol.* **14**, P41.
Douglass, J.K. and Wilkens, L.A. Directional sensitivities of long feathered hair mechanoreceptors on the crayfish tailfan. *Amer. Zool.* **31**, 33A.

1992 Douglass, J.K. and Wilkens, L.A. Directional selectivities of near-field mechanoreceptors on the crayfish tailfan. Midwest Neurobiol. 15, R13.
Douglass, J.K., Moss, F. and Wilkens, L.A. Crayfish filiform hair mechanoreceptors: a simple neuronal system for investigating stochastic resonance. NATO Advanced Research Workshop, San Diego, CA.

1993 Wilkens, L.A., Douglass, J.K. and Moss, F. Is information transfer in the nervous system enhanced by noise? *Midwest Neurobiol.* **16**, 3.
Douglass, J.K., Moss, F. and Wilkens, L.A. Stochastic resonance in crayfish mechanoreceptors with external noise added. *Amer. Physical Soc.*, Seattle, WA.
Douglass, J.K., Wilkens, L.A. and Moss, F. Stochastic resonance in crayfish hydrodynamic receptors stimulated with noise. ICNF Conference, St. Louis, MO
Douglass, J.K., Wilkens, L.A. and Moss, F. Noise-assisted information transfer in crayfish mechanoreceptors: stochastic resonance in a neuronal receptor. *Soc. Photo-Optical Inst. Eng.*, San Diego, CA.

1994 Wilkens, L.A. and Cox, M. Possible role of electrosensitivity in planktivorous feeding in the paddlefish *Polyodon spathula*. *Midwest Neurobiol.* **17**, 9.
Wilkens, L.A., Cox, M. and Russell, D. Evidence for electrosensitivity in planktivorous feeding in the paddlefish *Polyodon spathula*. *Amer. Zool.* **34**, 43.

1995 Pei, X., Wilkens, L. and Moss, F. Signal processing, noise and stochastic resonance in the crayfish caudal photoreceptor. Proc. 13th Intern. Conf. On Noise in Physical Systems. Palanga, Lituania.

1996 Pei, X., Wilkens, L.A. and Moss, F. The effect of noise on signal detection and time precision in parallel neural network. *Soc. Neurosci.* **22**, 6.

1997 Russell, D.F., Wilkens, L.A., Gurgens, C., Wettring, B., Wagner, E., Pei, X. and Moss, F. Electrosense in paddlefish, and the function of the rostrum. *Midwest Neurobiol.* **19**, T2.
Wilkens, L.A., Russell, D.F. and Pei, X. Paddlefish rostrum functions as electrosensory antenna in planktivorous feeding. *Soc. Neurosc.* **23**, 181.
Pei, X., Russell, D.F., Moss, F. and Wilkens, L.A. The characteristics of electrosensitive cells in the paddlefish *Polyodon spathula*. *Soc. Neurosc.* **23**, 181.

1998 Russell, D.F., Wettring, B., Wilkens, L.A. and Moss, F. Noise-enhanced capture of plankton during feeding behavior of juvenile paddlefish. *Midwest Neurobiol.* **20,** 17.
Wilkens, L.A., Russell, D.F., Pei, X., Wojtenek, W. and Moss, F. Passive electrosensory perception in plankton feeding: The paddlefish antenna. *Bioelectrochemistry, Gordon Research Conference,* Henniker, New Hampshire.
Wilkens, L.A., Russell, D.F., Wagner, E., Pei, X., Moss, F., Wojtenek, W. and Wettring, B. Electrodetection of planktonic electric fields by the paddlefish, *Polyodon spathula*. *5th Int. Congress of Neuroethology*, No. 344. La Jolla, CA.
Wojtenek, W. and Wilkens, L.A. Detection of artificial sinusoidal electrical signals by the paddlefish, *Polyodon spathula*. *5th Int. Congress of Neuroethology*, No. 345. La Jolla, CA.

1999 Wojtenek, W., Pei, X., Wagner, E. and Wilkens, L.A. Planktonic electric fields and the response of paddlefish primary electroreceptor afferents to live plankton. *Soc. Neurosc.* **25**, 1363.

2000 Wojtenek, W., Neiman, A., Moss, F. and Wilkens, L.A. Primary afferent neurons of the electrosensory system of paddlefish respond to the electrical signal of paddlefish moving prey. Amer. Physics Soc. **18**, 6.
Wojtenek, W., Pei, X. and Wilkens, L.A. Paddlefish striking and avoidance behavior habituates to electric fields. *Soc. Neurosc.* **26**, 55:6.

2001 Wilkens, L.A. Planktivory by passive electrosensory detection in the paddlefish, *Polyodon spathula*. *ASLO Aquatic Sciences* **2001**, 150.

Wilkens, L.A. The rostral electric sense of the paddlefish: design of a passive system for detection and capture of zooplankton prey. *Neurobiology of Electrosensory Organisms*, **4**, 27.

Hofmann, M., Wojtenek, W. and Wilkens, L.A. The organization of the electrosensory system in the paddlefish (Polyodon spathula). 6th Int. Congress of Neuroethology, No. 203. Bonn, Germany.

2004 Hofmann, M.H. and Wilkens, L.A.Information processing in the electrosensory system of the paddlefish brain. Intl. Workshop on Complex Dynamical Processes in Electroreceptors and Hair Cells, Dresden, p. 15.

Wilkens, L.A. and Hofmann, M.H. Adaptations of the passive electrosensory system correlated with the feeding strategies in sturgeons and paddlefish. Intl. Workshop on Complex Dynamical Processes in Electroreceptors and Hair Cells, Dresden, p. 15.

2005 Wilkens, L.A. and Hofmann, M.H. Electrosensory neuroanatomy in the paddlefish CNS. SICB, San Diego.

Hofmann, M.H. and Wilkens, L.A. Physiology of the electrosensory system of the paddlefish. SICB San Diego.