

**CURRICULUM VITAE**

**LESLIE P. TOLBERT**

Regents' Professor Emerita in Neuroscience  
University of Arizona

*Mailing address:*  
Department of Neuroscience  
Gould-Simpson Building, Room 636  
University of Arizona  
1040 E. 4<sup>th</sup> St.  
Tucson, Arizona 85721

*Telephone:* (520) 621-6640  
*FAX:* (520) 621-8282  
*E-mail:* tolbert@email.arizona.edu

**Education**

- 1973 A.B. in Applied Mathematics, Radcliffe College, Harvard University, Cambridge, MA  
1978 Ph.D. in Anatomy, Division of Medical Sciences, Harvard University, Cambridge, MA  
Thesis title: "Synaptic Organization in the Anteroventral Cochlear Nucleus of the Cat"  
Thesis advisor: Dr. D. Kent Morest  
1978-81 Postdoctoral Fellow, Department of Neurobiology, Harvard Medical School, Boston, MA  
Mentor: Dr. John G. Hildebrand  
1981 Cold Spring Harbor summer course, "Neurobiology of the Leech"

**Research Interests**

Cellular and developmental neuroscience  
- Mechanisms underlying impact of sensory input on development of brain circuitry  
- Interactions between neurons and glial cells  
- Development and plasticity of olfactory system  
Use of experimentally advantageous insect systems to address neuron-glia interactions of broad relevance across animal species

**Academic Appointments**

Present Position

2018- Regents' Professor Emerita in Neuroscience, University of Arizona

Previous Positions

- 2011-13 Senior Vice President for Research, University of Arizona  
2005-11 Vice President for Research, Graduate Studies, and Economic Development, University of Arizona  
2010-13 Acting Director, Arizona Research Laboratories, University of Arizona  
2005-06 Interim Dean of the Graduate College and Director of Graduate Interdisciplinary Programs, University of Arizona  
2002-18 Regents' Professor, University of Arizona  
1995-18 Professor, Department of Neuroscience (a.k.a. Arizona Research Laboratories Division of Neurobiology), with joint appointment in Department of Cellular and Molecular Medicine (a.k.a. Cell Biology and Anatomy), University of Arizona  
1997-04 Chair, campus-wide Committee on Neuroscience and Graduate Interdisciplinary Ph.D.

- Program in Neuroscience, University of Arizona
- 1990-95 Associate Professor (with tenure), Arizona Research Laboratories Division of Neurobiology, and (joint appointment) Department of Anatomy, University of Arizona
- 1987-90 Assistant Professor, Arizona Research Laboratories Division of Neurobiology, and (joint appointment) Department of Anatomy, University of Arizona, Tucson, AZ
- 1982-87 Assistant Professor, Department of Anatomy and Cell Biology, Georgetown University Schools of Medicine and Dentistry, Washington, D.C.
- 1981-82 Research Associate, Department of Cellular and Developmental Biology, Harvard University, Cambridge, MA (with Dr. Ronald Calabrese)

### **Honors and Awards (selected)**

- 1978-81 Individual NRSA postdoctoral fellowship
- 1995 Grass Lecturer, University of Mississippi Medical Center
- 1998 Mortar Board Senior Honor Society teacher award, University of Arizona
- 1999 Outstanding Honors Faculty award, University of Arizona
- 2000 Selected as a Special Lecturer by Society for Neuroscience for annual meeting
- 2002 Awarded a Regents' Professorship (limited to no more than 3% of faculty) by Arizona Board of Regents
- 2005 Selected as a "Woman of Influence" by *Inside Tucson Business*
- 2006 Selected as a "Woman on the Move" by Tucson YWCA
- 2010, 2012 Invited to testify before Subcommittee on Research and Science Education of U.S. House of Representatives Committee on Science and Technology on issues relating to support of public research universities
- 2013 Graduate College award for long-standing support and leadership of Graduate Interdisciplinary Programs at University of Arizona
- 2017 Superior Teaching Award, Humanities Seminars Program, University of Arizona
- 2017 Elected Fellow of the American Association for the Advancement of Science
- 2017- Elected member, Harvard University Board of Overseers

### **Memberships in Professional Societies (current)**

- American Association for the Advancement of Science  
 Society for Neuroscience  
 - founding member and first president of Tucson Chapter

### **Intramural Professional Positions and Service (selected)**

#### University of Arizona

- 1987-05 Coordinator, Division of Neurobiology's imaging facility
- 1988-04 Member, Executive Committee of the Ph.D. Program in Neuroscience
- 1989-92 Chair, Recruitment and Admissions Subcommittee of the Ph.D. Program in Neuroscience
- 1989-92 Member, School Outreach Subcommittee, Howard Hughes Biology Experiences Program, Department of Molecular and Cellular Biology
- 1989-90 Member, Provost's Search Committee for Coordinator of Interdisciplinary Programs at the University of Arizona
- 1990- Active faculty participant, Undergraduate Research Biology Program
- 1990-97 Member, selection committee for special scholarships, Honors Center
- 1990-98 Co-organizer, campus-wide Developmental Neurobiology Journal Club
- 1991-00 Member, Developmental Neuroscience Training Faculty
- 1992-93 Acting Director, Arizona Research Laboratories (ARL) Division of Biotechnology

1993 Member, Provost's Search Committee for Dean, Faculty of Science  
 1993-94 Acting Co-Director, ARL Division of Neurobiology  
 1993-00 Member, Biotechnology Advisory Committee for Vice President for Research  
 1993-05 Member, Imaging Facility User Group Committee for ARL Division of Biotechnology  
 1994- Member, faculty of the Interdisciplinary Ph.D. Program in Insect Science  
 1995-96 Member, Honors Center Task Force for Vice Provost for Undergraduate Programs  
 1995-02 Member, Promotion and Tenure Committee, Department of Cell Biology and Anatomy  
 1995-01 Member, steering committee for postdoctoral training program in Molecular Insect Science  
 (Chair and PI, 1996-01)  
 1995-00 Member, steering/admissions committee for the Flinn Initiative in Biomathematics of the  
 Applied Mathematics Program  
 1995-98 Chair, Graduate College Standing Advisory Committee on Interdisciplinary Programs  
 1996-00 Member, Executive Committee, Center for Insect Science  
 1997-05 Affiliate, Applied Mathematics Program  
 1998 Member, search committee for Vice President for Research  
 1998-05 Member, Vice-Chair, and Chair, Graduate Interdisciplinary Programs Advisory Council  
 (elected)  
 1998-05 Member, Steering Committee for Applied Mathematics Program  
 1999-05, 2015 Member, selection committee for BRAVO! program for undergraduate research abroad  
 1999-00 Member, search committee for Senior Vice President for Academic Affairs and Provost  
 2000-01 Member, search committee for Vice President for Health Sciences and Dean, College of  
 Medicine  
 2000 Acting Director, ARL Division of Neurobiology  
 2002-05 Member, university's Finance Committee  
 2004 Chair, committee to review university's central Financial Support Services units  
 2005 Member, search committees for University of Arizona Federal Relations Director and  
 for federal relations firm to represent University in Washington, DC  
 2005-13 Member, President's Cabinet  
 2005-13 Member, Provost's Leadership Team  
 2005-13 Member, University Space Committee  
 2005-06 Member, University Development Executive Committee  
 2006 Member, President's Development Executive Committee  
 2006-09 Member, Committee on the Status of Women  
 2006-13 PI, NSF ADVANCE grant aimed at enhancing success of women faculty in science,  
 technology, engineering, and math fields  
 2006-13 Member, President's Large Telescopes Directorate  
 2008-10 Member, University Corporate and Business Relations Council  
 2008-10 Chair, Provost's Strategic Advancement Advisory Council on Science and Engineering  
 2008-12 Member, President's Advisory Group (small subset of Cabinet)  
 2009 Chair, Search Committee for recruitment of General Counsel for the university  
 2009-10 Co-chair, Provost's Strategic Advisory Council on Humanities, Social Sciences, and  
 Fine Arts  
 2011-12 Member, Search Committee for recruitment of University of Arizona President  
 2011-12 Member, Arizona Board of Regents Research Committee  
 2011-13 Member, President's Executive Finance Committee (financial leadership for University)  
 2012-13 Member, Search Advisory Committee for recruitment of Senior Vice President for Health  
 Sciences  
 2012-13 Member, advisory board for Tech Launch Arizona (new technology commercialization  
 office of the University)  
 2012-13 Member, LCME (Liaison Committee on Medical Education) Task Force overseeing  
 application of UA College of Medicine for continuing accreditation

- 2012-15 PI for Howard Hughes Medical Institute-funded Undergraduate Biology Research Program
- 2013-15 Co-chair of Neuroscience Advisory Council for Senior Vice President for Health Sciences, charged to develop and help implement a comprehensive plan for growth and focus in the neurosciences
- 2013- Faculty mentor in Flinn Scholar program, MARC (Maximizing Access to Research Careers) Program, ASEMS (Arizona Science, Engineering, and Math Scholars) Program
- 2014 Member, Provost's Academic Program Review committee for 7-year assessment of Department of Geosciences
- 2014- Member, strategic advisory committee for Evelyn F. McKnight Brain Institute directed by Dr. Carol Barnes
- 2014-18 Faculty advisor for new "Alpha in Arizona" chapter of Nu Rho Psi, the national neuroscience honor society
- 2014-16 Member, search committee for inaugural Director of new Center for Innovation in Brain Sciences based in Arizona Health Sciences Center
- 2014-15 Chair, faculty search committee, Department of Neuroscience
- 2015-16 Member, faculty search committee, Department of Neuroscience
- 2016 Member, Provost's Academic Program Review committee for 7-year assessment of Department of Biomedical Engineering

Georgetown University

- 1986-87 Faculty Director, Georgetown University Medical Center Electron Microscopy Facility
- 1986-87 Member, University Animal Care and Use Committee

**Extramural Professional Positions and Service (selected)**

- 1978- Ad hoc reviewer for: Brain Research, Cell and Tissue Research, eLife, European Journal of Neuroscience, Glia, Journal of Anatomy, Journal of Comparative Neurology, Journal of Comparative Physiology, Journal of Neurobiology, Journal of Neuroscience, Science, Synapse, Trends in Neuroscience, National Science Foundation, National Sciences and Engineering Research Council of Canada
- 1987 Member, NIH Search Committee for position of Chief, Laboratory of Neurobiology, NINCDS
- 1987-91 Member, National Science Foundation Advisory Panel on Biological Facilities Centers, which became Advisory Panel on Science and Technology Centers
- 1990-91 President, Arizona Society for Electron Microscopy and Microbeam Analysis
- 1990-92 Guest Editor, two issues of Microscopy Research and Technique on olfactory centers in the brain
- 1991 Member, National Science Foundation Advisory Panel, Instrumentation and Instrument Development Program
- 1991-95 Regular Member, National Institutes of Health Neurology B-1 Study Section
- 1994 Chair, NIH Behavioral and Neurosciences Special Emphasis Panel
- 1994 Invited participant, National Science Foundation Workshop on developing an international database on identified neurons
- 1995-96 President and founding member, Tucson Chapter of the Society for Neuroscience
- 1996-00 Member, NASA/Canadian Space Agency advisory team for design of insect accommodations for insect research in space
- 1997-00 Member, Committee on Neuroscience Literacy of Society for Neuroscience; co-organizer of Workshop for High School Students, 1998, 1999, 2000
- 1998 Member, Program Committee of the Association for Chemoreception Sciences

1998-99 Member, Awards Committee of the Association for Chemoreception Sciences  
1998-01 Councilor, Association of Neuroscience Departments and Programs (elected)  
1998-05 Member, Editorial Board, Chemical Senses  
2000-02 Councilor, Association of Chemoreception Sciences (elected)  
1999-02 *Ad hoc* member, NIH Review Panel for Small Grants Program in Deafness and  
Communicative Disorders  
2000-05 Member, Program Committee, Society for Neuroscience (served as chair in 2003-2004)  
2001 External evaluator, University of Utah's Interdisciplinary Program in Neuroscience  
2001-05 Associate Editor, Journal of Comparative Neurology  
2001-02 President-elect, Association of Neuroscience Departments and Programs (ANDP)  
2002-03 President, Association of Neuroscience Departments and Programs  
2002 External evaluator, Montana State University's NSF-funded IGERT Program in  
Computational Neuroscience  
2003-06 Member, ad hoc Committee on Electronic Initiatives, Society for Neuroscience  
2003-05 Member, Society for Neuroscience working group on the annual meeting  
2003-06 Member, Society for Neuroscience working group on professional development  
2003-08 Co-chair, statewide Neurosciences Platform Committee for Bioscience Roadmap for AZ  
2004 Member, selection committee, Arizona Rhodes Scholar finalists  
2005-12 Member, Arizona Center for Innovation Board of Directors  
2005-12 Member, Critical Path Institute Operations Board  
2005-12 Member, Campus Research Corporation Board of Directors, which oversees UA Science  
and Technology Park  
2005-13 Member Representative, Large Binocular Telescope Board of Directors  
2005-06 President-elect, Association for Chemoreception Sciences  
2006-07 President, Association for Chemoreception Sciences  
2006-10 Councilor, Society for Neuroscience (member of working groups on future annual  
meetings, membership enhancement, relationship with ANDP, ADVANCE grant)  
2006-13 Member, Southern Arizona Leadership Council (member of Executive Committee, '08-13)  
2006-13 Member, Arizona Bioscience Roadmap Steering Committee  
2006-08 Member, Arizona Governor's Council on Innovation and Technology  
2006-08 Member, Southern Arizona Biosciences Steering Committee  
2006-10 Member-at-Large, Neuroscience Section, AAAS (elected)  
2006-13 Active member, American Association of Universities' Senior Research Officers group  
(at various times, member of working groups on protection of animal researchers and  
on conflict of interest, and of annual meeting organizing committee)  
2006-13 Active member, APLU's (Association of Public and Land-grant Universities Council on  
Research Policy and Graduate Education (member of working group on protection of  
animal researchers, 2007, and of Executive Comm., 2008-13; Chair, 2011-2012)  
2006-13 Board member, Arizona Alzheimer's Research Consortium  
2007 External consultant, Ohio Board of Regents, Innovation Incentive Program  
2007-12 Member, Arizona Technology Council Board of Directors  
2008-09 Member, U.S. Representative Gabrielle Giffords' (D-AZ) Solar Energy Advisory  
Committee  
2008-09 Member, Research Park Development Corporation Board of Directors  
2008-14 Co-chair, Biosciences Leadership Council of Southern Arizona  
2010 Provided, by invitation, written and oral testimony for hearing on "The State of Research  
Infrastructure at U.S. Universities" before the Subcommittee on Research and Science  
Education of the Committee on Science and Technology of the U.S. House of  
Representatives; coordinated with AAU and APLU  
2010-14 Member, Society for Neuroscience Committee on Committees and Awards Committee  
(chairing Achievement Awards Selection Committee)

- 2010-13 Co-chair, Southern Arizona Leadership Council Science and Innovation Task Force
- 2011-12 Member, APLU Board of Directors
- 2012 Provided, by invitation, written and oral testimony for hearing on “The Role of Research Universities in Securing America’s Future Prosperity: Challenges and Expectations” before the Subcommittee on Research and Science Education of the Committee on Science and Technology of the U.S. House of Representatives; coordinated with AAU and APLU and timed to coincide with release of NRC report of the same name
- 2012- Member/chair, selection committee for national Golden Goose Awards for high-impact science that initially seemed arcane, through Association of American Universities (AAU) and AAAS
- 2013 Member of organizing committee and convener for “Southwestern Regional Conference to Renew the Partnership for Innovation, Prosperity, and Security,” held in Oro Valley, Arizona, as a follow-up to the 2012 NRC report on “Research Universities and the Future of America”
- 2013 Chair, external advisory committee for review of Vice President for Research Administration, Emory University
- 2013-16 Reviewer of nominations for Howard Hughes Medical Institute Exceptional Research Opportunities Program (EXROP) each year
- 2014 Speaker, “Federally Funded Research: Expect the Unexpected,” in symposium on Golden Goose Award, AAAS Annual Meeting, Chicago, IL
- 2014, 2015 Reviewer of scientific abstracts for “newsworthiness” for press office of Society for Neuroscience
- 2014- Member of Finance Committee, Society for Neuroscience
- 2015-18 Vice President for Western Region and member of the national board of Nu Rho Psi, the national honor society for neuroscience
- 2016 Organizer and chair, Society for Neuroscience’s first virtual (internet-based) conference, on “The other brain cells: New insights into what glial cells do,” with 2500 registrants
- 2017, 2018 Reviewer, proposals for scientific sessions at annual meeting of AAAS

## Publications

### Refereed journal articles:

- Tolbert LP, Hildebrand JG (1981) Organization and synaptic ultrastructure of glomeruli in the antennal lobes of the moth *Manduca sexta*: a study using thin sections and freeze-fracture. Proc. R. Soc. Lond. B 213:279-301
- Tolbert LP, Morest DK (1982) The neuronal architecture of the anteroventral cochlear nucleus of the cat in the region of the cochlear nerve root: Golgi and Nissl methods. Neuroscience 7:3013-3030
- Tolbert LP, Morest DK, Yurgelun-Todd D (1982) The neuronal architecture of the anteroventral cochlear nucleus of the cat in the region of the cochlear nerve root: horseradish peroxidase labelling of identified cell types. Neuroscience 7:3031-3052
- Tolbert LP, Morest DK (1982) The neuronal architecture of the anteroventral cochlear nucleus of the cat in the region of the cochlear nerve root: electron microscopy. Neuroscience 7:3053-3067
- Tolbert LP, Matsumoto SG, Hildebrand JG (1983) The development of synapses in the antennal lobes of the moth *Manduca sexta*. J. Neurosci. 3:1158-1175

- Tolbert LP, Calabrese RL (1985) Anatomical analysis of contacts between identified neurons that control heartbeat in the leech *Hirudo medicinalis*. Cell Tissue Res. 242:257-267
- Arbas EA, Tolbert LP (1986) Presynaptic terminals persist following degeneration of "flight muscle" in a flightless grasshopper. J. Neurobiol. 17:627-636
- Oland LA, Tolbert LP (1987) Glial patterns during early development of antennal lobes of *Manduca sexta*: A comparison between normal lobes and lobes deprived of antennal axons. J. Comp. Neurol. 255:196-207
- Oland LA, Tolbert LP, Mossman KL (1988) Radiation-induced reduction of the glial population during development disrupts the formation of olfactory glomeruli in an insect. J. Neurosci. 8:353-367
- Oland LA, Tolbert LP (1988) The effects of hydroxyurea parallel the effects of radiation in developing olfactory glomeruli. J. Comp. Neurol. 27:377-387
- Tolbert LP (1988) Afferent axons from the antenna influence the number and placement of intrinsic synapses in the antennal lobes of *Manduca sexta*. Synapse 3:83-95
- Oland LA, Tolbert LP (1989) Patterns of glial proliferation during formation of olfactory glomeruli in an insect. Glia 2:10-24
- Oland LA, Orr G, Tolbert LP (1990) Construction of a protoglomerular template by olfactory axons initiates the formation of olfactory glomeruli in the insect brain. J. Neurosci. 10:2096-2112
- Tolbert LP, Sirianni PA (1990) The requirement for olfactory axons in the induction and stabilization of olfactory glomeruli in an insect. J. Comp. Neurol. 298:69-82
- Sun XJ, Tolbert LP, Hildebrand JG (1993) Ramification pattern and ultrastructural characteristics of the serotonin immunoreactive neuron in the antennal lobe of the moth *Manduca sexta*: a laser-scanning confocal and electron microscopic study. J. Comp. Neurol. 338:5-16 (with cover picture)
- Alonso-Pimentel H, Tolbert LP, Heed WB (1994) Re-examination of the concept of the insemination reaction in *Drosophila*. Cell Tiss. Res. 275:467-479
- Krull CE, Morton DB, Faissner A, Schachner M, Tolbert LP (1994) Spatiotemporal pattern of expression of tenascin-like molecules in a developing insect olfactory system. J. Neurobiol. 25:515-534
- Krull CE, Oland LA, Faissner A, Schachner M, Tolbert LP (1994) *In vitro* analyses indicate a potential role for tenascin-like molecules in the development of insect olfactory glomeruli. J. Neurobiol. 25:989-1004
- Malun D, Oland LA, Tolbert LP (1994) Uniglomerular projection neurons participate in early development of olfactory glomeruli in the moth *Manduca sexta*. J. Comp. Neurol. 347:1-22 (with cover picture)
- Willis MA, Butler MA, Tolbert LP (1995) Normal glomerular organization of the olfactory lobe is not necessary for odor guided locomotion. J. Comp. Physiol. A 176:205-216

- Sun XJ, Tolbert LP, Hildebrand JG (1995) Using laser scanning confocal microscopy as a guide for electron microscopic study of labeled neurons. J. Histochem. Cytochem. 43:329-335
- Kirschenbaum SR, Higgins M, Tveten M, Tolbert LP (1995) 20-hydroxyecdysone stimulates proliferation of glial cells in the developing brain of the moth *Manduca sexta*. J. Neurobiol. 28:234-247
- Oland LA, SR Kirschenbaum, WM Pott, AR Mercer, LP Tolbert (1995) Development of an identified serotonergic neuron in the antennal lobe of the moth and effects of reduction in serotonin during construction of olfactory glomeruli. J. Neurobiol. 28:248-267
- Oland LA, WM Pott, GY Bukhman, XJ Sun, LP Tolbert (1996) Activity blockade does not prevent the construction of olfactory glomeruli in the moth *Manduca sexta*. Int. J. Dev. Neurosci. 14:983-996
- Baumann PM, LA Oland, LP Tolbert (1996) Glial cells stabilize axonal protoglomeruli in the developing olfactory lobe of the moth *Manduca sexta*. J. Comp. Neurol. 373:118-128
- Sun XJ, Tolbert LP, Hildebrand JG (1997) Synaptic organization of the uniglomerular projection neurons of the antennal lobe of the moth *Manduca sexta*: a laser scanning confocal and electron microscopic study. J. Comp. Neurol. 379:2-20
- Oland LA, LP Tolbert (1998) Glomerulus development in the absence of a set of mitral-like neurons in the insect olfactory lobe. J. Neurobiol. 36:41-52
- Rössler W, Tolbert LP, Hildebrand JG (1998) Early formation of sexually dimorphic glomeruli in the developing olfactory lobe of the brain of the moth *Manduca sexta*. J. Comp. Neurol. 396:415-428
- Oland LA, WM Pott, MR Higgins, LP Tolbert (1998) Targeted ingrowth and axon-glial relationships of olfactory receptor axons in the primary olfactory pathway of an insect. J. Comp. Neurol. 398:119-138
- Sun XJ, LP Tolbert, JG Hildebrand, IA Meinertzhagen (1998) A rapid method for combined laser scanning confocal microscopic and electron microscopic visualization of biocytin or neurobiotin-labeled neurons. J. Histochem. Cytochem. 46:263-273
- Rössler W, Randolph PW, Tolbert LP, Hildebrand JG (1999) Axons of olfactory receptor cells of trans-sexually grafted antennae induce development of sexually dimorphic glomeruli in *Manduca sexta*. J. Neurobiol. 38:521-541
- Rössler W, Oland LA, Higgins MR, Hildebrand JG, Tolbert LP (1999) Development of a glia-rich axon-sorting zone in the olfactory pathway of the moth *Manduca sexta*. J. Neurosci. 19:9865-9877
- Rössler W, Tolbert LP, Hildebrand JG (2000) Importance of timing of olfactory receptor-axon outgrowth for glomerulus development in *Manduca sexta*. J. Comp. Neurol. 425:233-243
- Wegerhoff R, Rössler W, Higgins MR, Oland LA, Tolbert LP (2001) Fenvalerate treatment affects development of olfactory glomeruli in *Manduca sexta*. J. Comp. Neurol. 430:533-541
- Lohr C, Oland LA, Tolbert LP (2001) Olfactory receptor axons influence the development of glial potassium currents in the antennal lobe of the moth *Manduca sexta*. Glia 36:309-320



- Dubuque SH, Schachtner J, Nighorn AJ, Menon K, Zinn K, Tolbert LP (2001) Immunolocalization of synaptotagmin for the study of synapses in the developing antennal lobe of *Manduca sexta*. J. Comp. Neurol. 441:277-287
- Gibson NJ, Rossler W, Nighorn AJ, Oland LA, Hildebrand JG, Tolbert LP (2001) Neuron-glia communication via nitric oxide is essential in establishing antennal-lobe structure in *Manduca sexta*. Dev. Biol. 240:326-39
- Goriely A, Secomb T, Tolbert LP (2002) Effect of the glial envelope on extracellular K<sup>+</sup> diffusion in olfactory glomeruli. J. Neurophysiol. 87:1712-1722
- Higgins MR, Gibson NJ, Eckholdt PA, Nighorn A, Copenhaver P, Nardi J, Tolbert LP (2002) Different isoforms of fasciclin II are expressed by a subset of developing olfactory receptor neurons and by olfactory-nerve glial cells during formation of glomeruli in the moth *Manduca sexta*. Dev. Biol. 244:134-154
- Lohr C, Tucker E, Oland LA, Tolbert LP (2002) Development of depolarization-induced calcium transients in insect glial cells is dependent on the presence of afferent axons. J. Neurobiol. 52:85-98
- Tucker ES, Tolbert LP (2003) Reciprocal interactions between olfactory receptor axons and olfactory nerve glia cultured from the developing moth *Manduca sexta*. Dev. Biol. 260:9-30
- Tucker ES, Oland LA, Tolbert LP (2004) *In vitro* analyses of interactions between olfactory receptor growth cones and glial cells that mediate axon sorting and glomerulus development. J. Comp. Neurol. 472:478-495
- Gibson NJ, Hildebrand JG, Tolbert LP (2004) Glycosylation patterns are sexually dimorphic throughout development of the olfactory system in *Manduca sexta*. J. Comp. Neurol. 476:1-18
- Oland LA, Gibson NJ, Tolbert LP (2005) NO-mediated signaling from olfactory receptor axons to peripheral ensheathing glia in the moth olfactory pathway. Chemical Senses 30:265-278
- Gibson NJ, Tolbert LP (2006) Activation of epidermal growth factor receptor mediates receptor axon sorting and extension in the developing olfactory system of the moth *Manduca sexta*. J. Comp. Neurol. 495:554-572
- Lipscomb B, Tolbert LP (2006) Temporally staggered development of glomeruli in the moth *Manduca sexta*. Chem. Senses 31:237-247
- Oland LA, Biebelhausen JP, Tolbert LP (2008) Glial investment of the adult and developing antennal lobe of *Drosophila*. J. Comp. Neurol. 509:526-550
- Gibson NJ, Tolbert LP, Oland LA (2009) Roles of specific membrane lipid domains in EGF receptor activation and cell adhesion molecule stabilization in a developing olfactory system. PLoS One 4(9):e7222
- Oland LA, Gibson NJ, Tolbert LP (2010) Localization of a GABA transporter to glial cells in the developing and adult olfactory pathway of the moth *Manduca sexta*. J. Comp. Neurol. 518:815-838
- Koussa MA, Tolbert LP, Oland LA (2010) Development of a glial network in the olfactory nerve: role of calcium and neuronal activity. Neuron Glia Biol. 6:245-261

Gibson NJ, Tolbert LP, Oland LA (2012) Activation of glial FGFRs is essential in glial migration, proliferation, and survival and in glia-neuron signaling during olfactory system development. PLoS ONE 7(4):e33828.

MacNamee SE, Liu KE, Gerhard S, Tran CT, Fetter RD, Cardona A, Tolbert LP, Oland LA (2016) Astrocytic glutamate transport regulates a *Drosophila* CNS synapse that lacks astrocyte ensheathment. J. Comp. Neurol. 524: published online 5/7/16.

### **Chapters and reviews:**

Hildebrand JG, Matsumoto SG, Camazine SM, Tolbert LP, Blank S, Ferguson H, Ecker V (1979) Organization and physiology of antennal centers in the brain of the moth *Manduca sexta*. In: Insect Neurobiology and Pesticide Action, pp. 375-382

Hildebrand JG, Matsumoto SG, Tolbert LP, Schneiderman AS, Camazine SM (1982) Postembryonic development of the antennal lobes in the moth *Manduca sexta*. Neuroscience Research Program Bulletin. MIT Press 20:891-900

Tolbert LP (1988) Review of Synapse. Quart. Rev. Biol. 63:243

Tolbert LP, Oland LA (1989) A role for glia in the development of organized neuropilar structures. Trends Neurosci. 12:70-75 (invited contribution)

Tolbert LP (1989) Intercellular interactions in the construction of olfactory glomeruli in an insect. ISOT X: Proceedings of the Tenth International Conference on Olfaction and Taste. (K. Doving, ed.), Univ. of Oslo Press, pp. 236-245

Tolbert LP, Oland LA (1990) Glial cells form boundaries for developing insect olfactory glomeruli: a review. Exp. Neurol. 109:19-28 (Invited contribution to special issue devoted to boundaries in the developing brain)

Boeckh J, Tolbert LP (1993) Synaptic organization and development of the insect antennal lobe. Micros. Res. Techn. 24:260-280

Oland LA, Krull CE, Tolbert LP (1995) Glial cells play a key role in the construction of insect olfactory glomeruli. In Neuron-Glia Interrelations During Phylogeny: II. Plasticity and Regeneration, A. Vernadakis and B. Roots (eds), Humana Press, Inc.

Oland LA, Tolbert LP (1996) Multiple factors shape the development of olfactory glomeruli: insights from an insect model system. J. Neurobiol. 30:92-109 (invited contribution for special issue on olfaction)

Tolbert LP, Sun XJ, Hildebrand JG (1996) Combining laser scanning confocal microscopy and electron microscopy in studies of the insect nervous system. J. Neurosci. Methods 69:25-32 (invited contribution to issue on "Methods for Studying the Nervous Systems of Invertebrates")

Hildebrand JG, Rössler W, Tolbert LP (1997) Postembryonic development of the olfactory system in the moth *Manduca sexta*: primary-afferent control of glomerular development. Seminars in Cell & Developmental Biology 8:163-170 (invited contribution to issue on olfactory development)

Edwards JS, Tolbert LP (1998) Chapter 19: Insect Neuroglia. In Microscopic Anatomy of the Invertebrates, M. Locke (ed.), Wiley-Liss Inc., Vol 11B: Insecta, pp. 449-466 (invited chapter)

Tolbert LP (1998) Olfactory development in invertebrates: on the scent of central developmental issues. In "Olfaction and Taste XII: An International Symposium," Annals NY Acad. Sci. 855:95-103

Burd GD, Tolbert LP (2000) Development of the Olfactory System. In Neurobiology of Taste and Smell, T.E. Finger, W.L. Silver, and D. Restrepo (eds.), John Wiley and Sons, pp. 233-255

Oland LA, Tolbert LP (2003) Key interactions between neurons and glial cells during neural development in insects. Ann. Rev. Entomology 48:89-110 (electronic version published 8/19/02)

Tolbert LP, Oland LA, Christensen TC, Goriely AR (2003) Neuronal and glial morphology in olfactory systems: Significance for information processing and underlying developmental mechanisms. Brain and Mind 4:27-49

Tolbert LP, Oland LA, Tucker ES, Gibson NJ, Higgins M, Lipscomb B (2004) Bidirectional influences between neurons and glial cells in the developing olfactory system. Prog. Neurobio. 73:73-105

Oland LA, Tolbert LP (2010) Role of glial cells in neural circuit formation: Insights from research in insects. Glia: PMID: 21125646.

#### **Newspaper editorial:**

Jewett JB, Shoopman R, Tolbert LP (2012) Southern Arizona plays critical role in state's bioscience drive. Arizona Daily Star, Dec. 2, 2012.

#### **Scholarly presentations**

##### **Invited presentations at national and international meetings (selected):**

1989 Tenth International Symposium on Olfaction and Taste, Oslo, Norway

1990 Winter Conference on Brain Research, Panel on "Roles for Glial Cells in Development," Snowmass, CO

1990 European Chemoreception Research Organization, Satellite Symposium on "Development and Plasticity of the Olfactory System: A Comparative View," Luminy, France

1992 Glomerulus Meeting, Tegernsee, Germany

1993 Association for Chemoreception Sciences, Workshop on "Comparative Aspects of Olfaction," Sarasota, FL

1994 Gordon Conference on Olfaction and Taste, Plymouth, NH

1995 Conference on the Smallest Brains, Free University of Berlin, Berlin, Germany

1995 Fourth International Congress on Neuroethology, Symposium on "Olfactory Development" (organizer and speaker), Cambridge, England

1997 International Symposium on Olfaction and Taste XII/Association for Chemoreception Sciences XIX, Symposium on "Olfactory Development," San Diego, CA

2000 International Symposium on Olfaction and Taste XV, Symposium on "Olfactory Plasticity," Brighton, England

2000 XXI International Congress of Entomology, plenary speaker, Iguassu Falls, Brazil

2000 Society for Neuroscience, Special Lecturer, New Orleans, LA

2002 International Society for Developmental Neuroscience, symposium on "Olfactory Development," Sydney, Australia

- 2003 European Symposium on Insect Taste and Olfaction, Harstad, Norway
- 2007 Göttingen Meeting of the German Neuroscience Society 2007, Göttingen, Germany
- 2008 Magisterial Speaker, “Brain Development and Plasticity,” Third Pan-American Symposium on Neurovirology, Guadalajara, Mexico

**Invited presentations at universities and local societies (selected):**

- 1990 Research seminar, Institute for Zoology, University of Regensburg, Regensburg, Germany
- 1990 Research seminar, Department of Biology, University of Konstanz, Konstanz, Germany
- 1991 Research seminar, Department of Neurobiology and Physiology, Northwestern University
- 1991 Research seminar, Department of Anatomy, University of Tennessee
- 1992 Research seminar, Institute of Neuroscience, University of Oregon
- 1992 Research seminar, Neuroscience Program, Ohio State University
- 1995 Grass Lecture, University of Mississippi Medical Center, Jackson, MS
- 1995 Series of three lectures as Visiting Professor, Institute for Zoology, University of Regensburg, Regensburg, Germany
- 1995 Research seminar, Neurobiology Division, University of Heidelberg, Heidelberg, Germany
- 1996 Research seminar, Neuroscience Program, University of Illinois, Urbana-Champaign, IL
- 1997 Research seminar, Department of Zoology, University of Maryland, College Park, MD
- 1997 Research seminar, Neuroscience Program, University of Utah, Salt Lake City, UT
- 1998 Research seminar, Department of Neuroscience, Case Western Reserve University, Cleveland, OH
- 1999 Research seminar, Department of Biology, University of Missouri, Columbia, MO
- 2001 Research seminar, Department of Biology, Georgia State University, Atlanta, GA
- 2002 Research seminar, Program in Neuroscience, Michigan State University, East Lansing, MI
- 2003 Research seminar, Neuroscience Program, Yale University, New Haven, CT
- 2004 Research seminar, Biocenter, University of Würzburg, Würzburg, Germany
- 2005 Research seminar, Cell & Structural Biology, University of Illinois, Urbana-Champaign, IL
- 2005 Research seminar, Women in Neuroscience Program, Rutgers University, NJ
- 2007 Research seminar, Center for Smell and Taste, University of Florida, Gainesville, FL
- 2008 Research seminar as Helen Cserr Lecturer, Mt. Desert Island Biological Laboratory, Mt. Desert Island, ME
- 2008 Invited speaker, President’s Forum on “The Role of Universities in the 21<sup>st</sup> Century,” Toyota Technological Institute, Nagoya, Japan
- 2012 Research seminar, Rutgers University Women in Neuroscience program, Piscataway, NJ
- 2012 Research seminar, Miami University Chapter of Society for Neuroscience, Oxford, OH
- 2014 Keynote speaker, Northern Arizona University annual Undergraduate Research Symposium, Flagstaff, AZ

**Adult education activities:**

- 2016, 2018 Instructor for adult education course on “Your Ever-Changing Brain” in Humanities Seminars Program, University of Arizona

**Grants and Contracts Awarded (covering only years 2000-)**

**Research grants:**

- 2000-05 NIH: Program Project Grant for "Neural development: intercellular and humoral control," competitive renewal. R.B. Levine, overall P.I.; L.A. Oland, L.L. Restifo, N.J. Strausfeld, L.P. Tolbert, Co-P.I's. L.P. Tolbert, P.I. of Project #5, “Development of sexually dimorphic olfactory glomeruli,” and of Imaging Core, and co-investigator on Project #2, “Glial development during glomerulus formation.”

1999-04 NIH R01 Grant, "Intercellular interactions in developing glomeruli," competitive renewal.  
L.P. Tolbert, P.I.

**Other grants:**

2012-15 Howard Hughes Medical Institute Precollege and Undergraduate Science Education  
Program Grant, L.P. Tolbert, PI.

2012-13 NIH Infrastructure Grant: "College of Medicine Phoenix Campus Vivarium Phase I  
Construction," L.P. Tolbert, PI for last year of ARRA grant, while facility was  
completed.

2006-13 NSF: "Eradicating Subtle Discrimination," ADVANCE Program for Institutional  
Transformation (to promote success of women faculty in science, engineering, and  
math), L.P. Tolbert, PI; L. Gerken, R. Richardson, A. Vaillancourt, co-PI's.

2005-10 Department of Energy: "Environmental and Natural Resources Facility – Phase II  
Planning," L.P. Tolbert, PI.

**Most Recent Formal Teaching Activities**

NROS 330 – "Principles of Organization of the Brain," 3 credits + weekly discussion section, fall  
semester. Sole instructor. (Fall 2014 - Fall 2017)

NSCS 450 – "Neurons and Glia in Health and Disease," 3 credits, spring semester. Co-instructor with  
Dr. Lynne Oland. (Spring 2016 – Spring 2018)

NRSC 560 – "Systems Neuroscience," 4 credits, spring semester. Primary instructor: Andrew  
Fuglevand; I provided 4 hours of lecture, 2 hours of discussion. (Spring 2015 - 2016)