

John G. Hildebrand

Department of Neuroscience
 College of Science
 University of Arizona
 PO Box 210077
 Tucson AZ 85721-0077

Email: jhildebr@arizona.edu
 Tel: 520-621-6626

Website: <https://neurosci.arizona.edu/person/john-hildebrand-phd>

Education

- 1993 DNA Methods Course, University of Arizona Division of Biotechnology
- 1977 Cold Spring Harbor Laboratory course, Methods in Cellular Neurophysiology
- 1969-71 Postdoctoral Fellow, Harvard Medical School, Department of Neurobiology
(mentor: Edward Kravitz)
- 1969 Ph.D. Rockefeller University (Biochemistry – mentors: Leonard Spector & Fritz Lipmann)
- 1966 Harvard Medical School, summer training program in general pathology
- 1964 A.B. Harvard University (Biology – mentors: John Law & Konrad Bloch)

Employment**Present Positions**

- 2022-now Regents Professor Emeritus of Neuroscience
- 2014-2026 International Secretary, U.S. National Academy of Sciences
- 2010-now Honors Professor, University of Arizona

Previous Positions

- 1989-2022 Regents Professor of Neuroscience, University of Arizona
- 1985-2022 Professor of Neuroscience, Chemistry & Biochemistry, Ecology & Evolutionary Biology,
Entomology, and Molecular & Cellular Biology, University of Arizona
- 2009-13 founding Head, Dept. of Neuroscience (formerly Division of Neurobiology), Univ. of Arizona
- 2010-12 Chairman, Executive Committee, UA School of Mind, Brain and Behavior
- 2000 Sabbatical at University of Würzburg and Free University of Berlin
- 1986-97 Chairman, UA Committee on Neuroscience, University of Arizona
- 1985-2009 founding Director, Arizona Research Laboratories Division of Neurobiology, Univ. of Arizona
- 1981-86 Adjunct Professor, Rockefeller University
- 1980-85 Professor of Biological Sciences, Columbia University
- 1980-81 Visiting Professor of Neurobiology, Harvard Medical School
- 1980-97 Associate in Behavioral Biology, Museum of Comparative Zoology, Harvard University
- 1977-80 Associate Professor of Neurobiology, Harvard Medical School
- 1972-77 Assistant Professor of Neurobiology, Harvard Medical School
- 1970-80 Tutor in Biochemical Sciences, Department of Biochemistry and Molecular Biology and Eliot
House, Harvard University
- 1970-71 Instructor in Neurobiology, Harvard Medical School

Honors**Academies and Learned Societies**

- 2025 Elected Fellow, African Academy of Sciences
- 2022 Elected Fellow, The World Academy of Sciences
- 2019 Elected Corresponding Member, Brazilian Academy of Sciences
- 2014 Elected Member, American Philosophical Society
- 2011 Elected Foreign Member, Royal Norwegian Society of Sciences and Letters (Trondheim)
- 2007 Elected Member, U.S. National Academy of Sciences
- 2001 Elected Fellow, American Academy of Arts and Sciences
- 1999 Elected Foreign Member, Norwegian Academy of Science and Letters (Oslo)
- 1998 Elected Member, German National Academy of Sciences ‘Leopoldina’

Awards, Prizes, and Other Honors

- 2023 Honorary Doctor of Science, Michigan State University
 2022 Elected Fellow, International Science Council
 2016 Wigglesworth Memorial Award & Lectureship, Royal Entomological Society, London
 2015 Nu Rho Psi, the National Honor Society in Neuroscience (elected faculty member)
 2014 Galileo Circle Fellow, University of Arizona College of Science
 2013 University of Arizona Graduate Interdisciplinary Programs Honored Faculty Award
 2012 Fellow, International Society for Neuroethology
 2012 Honorary Fellow, Royal Entomological Society of London
 2012 Max Mozell Award for Outstanding Achievement in the Chemical Senses
 2011 Westlake Friendship Award (“the highest award given to foreign experts by the government of Zhejiang Province,” P.R. China)
 2009 Honorary Professor, Wenzhou Medical College, Wenzhou, Zhejiang, P.R. China
 2008 Fellow, Entomological Society of America
 2008 Einstein Professorship, Chinese Academy of Sciences, P.R. China
 2006 Lifetime Achievement Award, American Psychological Assoc., Diversity Program in Neuroscience
 2006 Outstanding Service Award for Contributions to the Biological Sciences, AIBS
 2006 Henry and Phyllis Koffler Prize for Research/Scholarship/Creative Activity, Univ. of Arizona
 2006 Silver Medal, International Society of Chemical Ecology (ISCE’s highest award)
 2005 Kerry-Manheimer Award, Monell Chemical Senses Center, Philadelphia, PA
 2000 *Laurea honoris causa*, Università degli Studi di Cagliari, Italy
 2000 University of Arizona Mortar Board National Senior Honor Society Faculty Award
 1997 Humboldt Research Award, Alexander von Humboldt-Stiftung, Germany
 1997 Internat. Flavors and Fragrances Award for Innovative Research in the Chemoreception Sciences
 1997 Founders Memorial Award, Entomological Society of America
 1991 Wellcome Visiting Professorship, Meharry Medical College, Nashville, TN
 1990 Max Planck Research Award of the Max-Planck-Gesellschaft & A. von Humboldt-Stiftung
 1990 R.H. Wright Award in Olfactory Research
 1989 Awarded Regents Professorship, University of Arizona
 1986 Elected Fellow, American Association for the Advancement of Science (AAAS)
 1986 MERIT Award, NIAID, NIH
 1986 Javits Neuroscience Award, NINCDS, NIH (later changed to Pepper Award, NIDCD)
 1984 Elected Fellow, Royal Entomological Society (London)
 1973-77 Alfred P. Sloan Foundation Postdoctoral Research Fellowship
 1972-77 Established Investigatorship of the American Heart Association
 1969-72 Helen Hay Whitney Foundation Postdoctoral Research Fellowship
 1967 Elected to Sigma Xi, Rockefeller University
 1964 Elected to Phi Beta Kappa, Harvard College
 1964 A.B. *Magna cum laude*, Harvard College

Honorific Lectureships

- 2017 James C. Smith Lecturer, Florida State University, Tallahassee, FL
 2014-16 Sigma Xi Distinguished Lecturer
 2012 Distinguished Lecturer, Max-Planck-Institut für Neurobiologie, Munich (Martinsried), Germany
 2012 Lawrence Gilbert Distinguished Lecturer, Univ. of North Carolina
 2012 2012 Walter F. Heiligenberg Lecturer, Univ. California-San Diego
 2011 First Hector Maldonado Memorial Lecturer, Argentinian Society for Neuroscience (SAN)
 2011 Siemens Stiftung Lecturer, Munich, Germany
 2009-10 Phi Beta Kappa Visiting Scholar
 2009 Martinez-Townsel Lecturer, Marine Biological Laboratory, Woods Hole, MA
 2008 Charles Doane Lecturer, University of Wisconsin, Madison, Dept. of Entomology
 2008 Grass Foundation Lecturer, South East Nerve Net annual meeting, Atlanta
 2007 Ernst Florey Lecture, International Society for Invertebrate Neurobiology, Hungary
 2007 Neuroscience Distinguished Lecturer, Colby College, Waterville, ME

2007	Edward A. Kravitz Lecturer, Marine Biological Laboratory, Woods Hole, MA
2006	Silver Medal Lecture, International Society of Chemical Ecology
2005	Mastertaste-Manheimer Lecturer, Monell Chemical Senses Center, Philadelphia
2004	Cajal Lecturer, Cajal Institute, Madrid, Spain
2003	Bobby Pass Student Choice Speaker, Dept. of Entomology, University of Kentucky
2003	Padykula Lecturer, Wellesley College, Wellesley, MA
2003	Class of 1960 Neuroscience Scholar Lecturer, Williams College, Williamstown, MA
2002	Grandpierre Memorial Lecturer, Dept. of Chemistry, Columbia University
2001	Alfred M. Boyce Lecturer, University of California - Riverside
1999	Grass Foundation Lecturer, Eastern Nerve Net annual meeting, Woods Hole, MA
1998	Grass Foundation Lecturer, Halifax, NS, Chapter, Society for Neuroscience
1995	Felix Santschi Lecturer, Universität Zürich, Switzerland
1995	Kenneth D. Roeder Memorial Lecturer, Tufts University
1995	King Solomon Lecturer, Hebrew University, Jerusalem
1992	Jan de Wilde Memorial Lecturer, University of Wageningen, Netherlands
1992	Distinguished Lecturer, Boyce Thompson Institute, Cornell University
1991	D.T. Rolf Lecturer, Meharry Medical College, Nashville, TN
1990	Spencer Memorial Lecturer, University of British Columbia
1988	Grass Foundation Lecturer, Central Illinois Chapter, Society for Neuroscience
1986	Ralph W. Gerard Lecturer in Neurosciences, University of California – Irvine
1985	Givaudan Lecturer, Association for Chemoreception Sciences
1985	Lang Lecturer, Marine Biological Laboratory, Woods Hole, MA

Memberships in Professional Scientific Societies

American Association for the Advancement of Science (AAAS, Fellow)
 American Chemical Society (recognized for more than 50 years of membership)
 American Institute of Biological Sciences (AIBS)
 American Physiological Society
 American Society for Biochemistry and Molecular Biology
 Animal Behavior Society
 Association for Chemoreception Sciences (AChemS; past President)
 Entomological Society of America (Fellow)
 Faculty for Undergraduate Neuroscience (FUN)
 International Society of Chemical Ecology (past President)
 International Society for Neuroethology (Fellow; past President)
 Royal Entomological Society (UK, Fellow; awarded Honorary Fellowship in 2012)
 Society for Integrative and Comparative Biology (SICB)
 Society for Neuroscience (past Treasurer)

Other Professional Positions and Service

Academies and Learned Societies [NOTE: “NAS” is National Academy of Sciences; “NASEM” is the National Academies of Sciences, Engineering, and Medicine]

2022-now	member, Advisory Committee, InterAcademy Partnership (IAP)
2021-now	member, Advisory Committee, NASEM New Voices in Sciences, Engineering and Medicine
2021-now	member, Oversight Committee, NASEM US-Africa Frontiers in Science, Engineering, & Medicine
2020-2025	member, NASEM Roundtable on Global Science Diplomacy
2019-2025	ex-officio member, NASEM Board on Research Data and Information (BRDI)
2018-2025	NAS Council Development Committee
2018-2023	member, Steering Committee, American Academy of Arts & Sciences project “Challenges for International Scientific Partnerships”
2017-now	member, Patrick Suppes Prize Selection Committee, American Philosophical Society
2015-now	chair, Oversight Committee for the NASEM Arab-American Frontiers in Science, Engineering, and Medicine
2014-2020	member, Class II Committee, American Philosophical Society

2014-now member, Lashley Prize Committee, American Philosophical Society
 2014-now member, NASEM Committee on Human Rights (CHR)
 2014-2025 member, NASEM Committee for Division on Earth and Life Studies (DELSC)
 2014-2025 member, NASEM Committee for Division of Policy and Global Affairs (PGAC)
 2014-2026 member, NAS Committee on International Security and Arms Control (CISAC)
 2014-2025 member, US National Member Organization Committee for the International Institute for Applied Systems Analysis (IIASA)
 2014-2026 chair, NASEM Committee on International Programs (CIP)
 2014-2026 chair, NAS Council Committee on International Affairs (CCIA)
 2014-2025 member, NASEM Board on International Scientific Organizations (BISO)
 2014-2026 elected International (previously Foreign) Secretary, NAS
 2014-2026 member, NAS Council Executive Committee
 2013-2024 member, NASEM Committee on Science, Engineering, Medicine & Public Policy (COSEMPUP)
 2013-2015 member, NASEM Board on Life Sciences (BLS)
 2013-now American Academy of Arts & Sciences Affiliate representative to the AAAS
 2013-2023 member, NAS Committee on Publications
 2012-2026 NAS Council Committee on Scientific Programs (CCSP)
 2012-2014 NAS Council Committee on Membership Affairs (CCMA)
 2012-2014 elected member, NAS Council
 2011-2014 member, NAS Temporary Nominating Group (Class VI)
 2009-2023 NAS representative to IBRO Governing Council
 2008 member, NAS Nominating Committee
 2004-2010 co-chair, Committee on Science in the Liberal Arts Curriculum, Am. Acad. Arts & Sciences
 2003-2022 member, Committee on Studies & Publications, American Academy of Arts & Sciences
 1991 member, NAS Advisory Panel for *The Infinite Voyage*
 1984-85 workshop participant, NAS Committee on Models in Biomedical Research

Scientific Societies, Agencies, etc.

2022-25 member, Committee for Outreach and Engagement, International Science Council (ISC)
 2020-22 elected member, AAAS Committee on Nominations
 2019-22 member, Committee for Science Planning (CSP), International Science Council (ISC)
 2018-2022 member, Scholarships to Enhance and Empower Diversity (SEED) Neuroscience Committee, American Psychological Association
 2016 Co-Organizer and Co-Chair, Vector Biology Session, 2016 World Life Science Conference of the China Association of Science & Technology (CAST), Beijing
 2014-20 Chair, Nominating Committee, IBRO
 2013-14 member, Annual Meeting Program Committee, International Society of Chemical Ecology
 2013-14 Co-Chair, Academic Committee, Tenth Conference of the Chinese Assoc. of Chem. Ecology
 2013-18 member, Society for Neuroscience Finance Committee
 2010-14 Soc. for Neuroscience representative to the FENS-IBRO Neuroscience Schools Committee
 2008-19 member, US/Canada Regional Committee of IBRO
 2007-12 Councilor, International Society for Neuroethology
 2005-10 Chairman, Membership Committee, International Society for Neuroethology
 2004-06 member, Education Committee, International Society for Neuroethology
 2004-05 Chairman, Section on Neuroscience, AAAS (Chairman-Elect, 2003-04)
 2002-09 member, International Affairs Committee, Society for Neuroscience (also the US/Canada Regional Committee of IBRO)
 2002-03 President, Association for Chemoreception Sciences (AChemS)
 2001-10 Chairman, Board of Schools, International Brain Research Organization (IBRO)
 1999-2002 member, Council of the Gordon Research Conferences
 1998-2099 Chairman, Electorate Nominating Committee, AAAS Section on Neuroscience
 1998-2001 member, Social Issues Committee, Society for Neuroscience
 1998-1999 President, International Society of Chemical Ecology (Vice President, 19998)
 1998 member, Gerard Prize Selection Committee, Society for Neuroscience

- 1997-99 Founding Chairman, Gordon Research Conference on Neuroethology (Oxford, 1999)
 1995-98 President, International Society for Neuroethology (Past-President, 1998-2001)
 1995-98 Member-at-Large, Neuroscience Section Steering Group, AAAS
 1995 Organizer and Chairman, Ciba Foundation/WHO Symposium on Mosquito Olfaction
 1993-97 member, Publications Committee, Society for Neuroscience
 1993-2022 member, Dana Alliance for Brain Initiatives, Dana Foundation
 1993-95 Councilor, Association for Chemoreception Sciences
 1993-98 Chair, Committee on Developing Countries, Assoc. of Neurosci. Depts. & Programs
 1992-94 Treasurer-Elect (1992-93) and Treasurer (1993-94), Society for Neuroscience
 1992-93 Chair, International Brain Research Organization Committee on Developing Countries
 1991-99 Councilor, International Society for Invertebrate Neurobiology
 1990-92 Chair, International Program Committee, 3rd International Congress of Neuroethology
 1990-93 member, Government and Public Affairs Committee, Society for Neuroscience
 1990-2009 member, Advisory Committee, APA/ANDP/NIMH Diversity Program in Neuroscience
 1989-90 member, Selection Committee, Young Investigator Award, Society for Neuroscience
 1989 member, Prize Committee, International Society for Neuroethology
 1989-92 member, Steering Committee, Complex Systems Summer School, Santa Fe Institute
 1988-89 President, Association of Neuroscience Departments and Programs (ANDP)
 1988-89 member, International Program Committee, 2nd International Congress of Neuroethology
 1987-90 Chair, Membership Committee, Society for Neuroscience
 1986-87 member, Program Committee, Association for Chemoreception Sciences
 1986-88 member, Program Committee, American Society for Neurochemistry
 1982-83 Chair, Program Committee, Society for Neuroscience
 1979-80 member, Nominating Committee, Society for Neuroscience
 1978-81 member, Program Committee, Society for Neuroscience

Editorial Boards

- 2006-10 *TheScientificWorld Journal*
 2003-05 *Neuroscience Letters*
 2001-16 *Journal of Chemical Ecology*
 2000-14 *Journal of Insect Science*
 1997-2013 *Chemoecology*
 1994-2020 *Invertebrate Neuroscience*
 1990-2021 *Journal of Comparative Physiology A*
 1989-95 *Journal of Comparative Neurology*
 1989-92 &
 1996-2003 *Journal of Neurophysiology*
 1988-89 *Journal of Experimental Biology*
 1986-93 *Journal of Insect Behavior*
 1983-94 *International Journal of Insect Morphology and Embryology*
 1983-90 *Archives of Insect Biochemistry and Physiology*
 1983-2013 *Quarterly Review of Biology*
 1981-89 *Journal of Neurochemistry*
 1981-91 *Trends in Neurosciences*
 1981-91 *Annual Review of Neuroscience*
 1981-84 *Neuroscience Commentaries* (Editor)
 1980-88 *Journal of Neuroscience* (Section Editor, Developmental Neuroscience, 1983-88)
 1977-90 *Insect Biochemistry*

Federal Government Agencies

- 2009-12 member, Alan T. Waterman Award Selection Committee, NSF
 2007 member, Workshop on Neuroscience and the Physical Sciences, NSF
 1995-96 Co-Chair⁴, Special Committee to Review Training Programs, NINDS-NIH
 1994 Chair, Program Project Site Visit Team, Morehouse Medical School, NINDS

1992 member, Invertebrate Zoology Task Group, NSF
 1989-91 Chair, Advisory Committee for Biological, Behavioral & Social Sciences, NSF
 1989 member, Oversight Review Committee, Division of Behavioral & Neural Sciences, NSF
 1986-88 member, Committee on Recommendations for U.S. Army Basic Scientific Research
 1983 member, Neuroscience Workshop, Office of Technology Assessment, U.S. Congress
 1983 member, Neurobiology Program Review Committee, NSF
 1974-77 member, Advisory Panel for Neurobiology, NSF

Foundations

2005-06 member, Presidential Advisory Panel for Research, The Research Corporation
 2001-07 Trustee, Grass Foundation
 1992-2010 member, Prize Selection Committee, Capranica Foundation (Chair every third year)
 1985 Overseer for Grass Fellows Program, Grass Foundation
 1984-2016 Consultant, Sherman Fairchild Foundation

Industry

1989, 1993 Consultant, Merck Research Laboratories
 1984-91 Consultant, Monsanto Company
 1982 Consultant, DuPont Corporation

Institutional Service and Administration

University of Arizona

2023-now member, Steering Committee, MENTOR Institute
 2020-21 Co-PI, NSF Ethical and Responsible Research (ER2) project "*An Indigenous data governance approach for enhancing ethical research policies and practices.*"
 2019-22 member, Executive Committee, Center of Excellence in Data for Society (CEDS)
 2019 member, Search Committee for viola instructor, School of Music
 2018-19 member, Search Committee for Senior Vice President for Academic Affairs and Provost
 2018-24 member, Science, Health, and Engineering Policy and Diplomacy Initiative (SPDI)
 2018-22 member, Honors College Faculty Advisory Committee
 2018 member, Search Committee for bassoon instructor, School of Music
 2018 member, Search Committee for horn instructor, School of Music
 2015 member, Search Committee for low-brass instructor, School of Music
 2015-22 Affiliated Faculty, Center for Latin American Studies
 2013-15 member, Advisory Board of the School of Mind, Brain and Behavior
 2012-19 member, Graduate and Professional Student Council Advisory Council
 2011-12 member, Advisory Council for the University of Arizona Presidential search
 2011-13 member, Dean's Board of Advisors, University of Arizona College of Science
 2010-11 member, Search Committee for Dean, College of Agriculture and Life Sciences
 2010-14 member, Research Policy Committee
 2009-11 member, Executive Committee, Grad. Interdisc. Prog. in Entomology & Insect Science
 2009-13 member, Executive Committee, School of Mind, Brain, and Behavior (Chair, 2010-12)
 2008-09 member, planning team for School of Mind, Brain, and Behavior
 2008 member, Academic Program Review Committee for Department of Neurology
 2008-11 member, University of Arizona Strategic Advancement Committee
 2007-09 member, University of Arizona Science Center Task Force
 2007-13 member, B2 Institute Steering Committee, College of Science
 2005 member, search committee for Director of Development, UAPresents
 2004-05 member, General Education Review Committee
 2004 member, Academic Program Review Self-Study Team, GIDP in Insect Science
 2004 member, Faculty Senate committee to review School of Planning
 2002-06 co-founder and member, Regents Professors' Focused Excellence Task Force
 2001-02 Co-Chair, Organizing Committee, 4th Internat. Symposium on Molecular Insect Science
 2000-19 elected member, Committee of Eleven (University faculty governance committee)

1998-99	member, Team on Research for University of Arizona NCA Re-Accreditation
1998-2012	member, Coordinating Committee, Program for Academic Leadership
1998-99 & 2001-03	elected member, Graduate Interdisciplinary Programs Advisory Council
1997-2003	member, Graduate Student Admission & Recruitment Committee, Graduate Interdisciplinary Program in Neuroscience (chairman 1997-2000)
1997-98	Co-Chair, Organizing Committee, 3rd Internat. Symposium on Molecular Insect Science
1997-2002	member, Sponsored Projects Services Users Group
1997-2001	member, Executive Committee, Interdisciplinary Research Training Group on Plant-Insect Interactions
1996-2026	UA Faculty Representative to the Federal Demonstration Partnership (FDP)
1996-2022	Regents Professorship Advisory Committee (chairman 1999-2022)
1994	member, Provost's Planning Group for Undergraduate Core Curriculum Development
1994-2009	member, faculty of the Graduate Interdisciplinary Program (GIDP) in Insect Science
1993	member, Selection Committee, Departmental Awards for Outstanding Achievement in Undergraduate Education
1993-94	member, Search Committee for Head, Department of Physics
1991-92	member, Task Force on Undergraduate Education
1991-93	member, faculty of the Graduate Interdisciplinary Program in Physiological Sciences
1991-92	member, University Relations Advisory Board
1991-96	member, Advisory Board, Institute for Neurogenic Communication Disorders
1990-91	member, Search Committee for UA President
1990-94 & 2000-21	elected member, Faculty Senate
1990-92	member, Laboratory Safety Committee
1990	member, Special Committee on Faculty Participation in University Governance
1989-92	member, International Programs Advisory Committee
1989	Chair, Search Committee for Director, Center for Insect Science
1989	Vice Chair, Search Advisory Committee for Provost
1989-2006	member, Advisory Committee for Vice President for Research
1989-92	member, University Research Collections and Systematics Committees
1988	member, Search Advisory Committee for Vice President for Research
1988	member, Internal Review Committee, Department of Speech & Hearing Sciences
1987	member, Committee to Review Graduate Programs in the Biological Sciences
1986-87	Chair, Search Committee for Head of Dept. of Microbiology & Immunology
1986-91	member, Executive Committee, Center for Complex Systems
1986-2020	member, Executive Committee, & Co-Founder, Center for Insect Science
1986-2000	member, Committee of Biological Sciences Department Heads (Chairman, 1987-88)
1986-2003	member, Executive Committee, Committee on Neuroscience
1986-97	Founding Chair, University Committee on Neuroscience

Marine Biological Laboratory, Woods Hole

2013-now	member, MBL Society (formerly MBL Corporation)
2012	Chair, Review Committee for the Whitman Center
2004	Scholar-in-Residence, Neural Systems & Behavior Course
1996-2024	Instructor in Summer Program in Neuroscience, Excellence and Success (SPINES)
1989	member, Committee to Review Gray Museum
1986-87	member, Search Committee for Director
1986-87	member, Committee on Laboratory Goals
1984-89	member, Instruction Committee
1984-85	member, Ad Hoc Housing Committee
1984	member, Decennial Review Committee
1983-88	member, Research Services Committee
1981-89 & 93	elected member, Board of Trustees (Executive Committee, 1981-88)

- 1980-2013 member of the Corporation (since 2013, the MBL Society)
 1978-84 faculty member (Co-Director 1980-84), Summer Neurobiology Course

Columbia University

- 1983-85 Chair, Graduate Studies Committee, Dept. of Biological Sciences
 1983-84 member, Provost's Task Force on Scientific Research
 1982-83 member, Executive Committee, Graduate School of Arts and Sciences
 1982-83 member, Psychiatry Chair Search Committee
 1981-85 member, Horwitz Prize Committee
 1980-85 member, Biology Appointments and Promotions Committee
 1980-85 Chair, Biology Library Committee
 1980-83 Chair, Neurobiology Search Committee, Dept. of Biological Sciences

Harvard University

- 2005-06 Advisory Committee, Center for Brain Science
 1992-95 Advisory Comm., NINDS Program Project Grant (E. Kravitz, PI), Dept. of Neurobiology
 1977-80 member, Committee on Cell and Developmental Biology
 1972-80 Chair, Library Committee, Department of Neurobiology

Rockefeller University

- 1996 Chair, Committee on the Future of the Field Research Center
 1983-84 Co-Chair, Graduate Program 25th Anniversary Committee
 1970-73 member, Board of Trustees (Alumnus Trustee)

Other Institutions (including State and Foreign Governments)

- 2020-24 member, International Scientific Advisory Board, Chinese Academy of Sciences Center for Excellence in Biotic Interactions
 2018-now member, International Scientific Council, NEURON Fund for Support of Science, Czechia
 2014 member, Program Review team, Keck Center, North Carolina State University
 2014 member, Site Visit Team, UCLA Dept. of Integrative Biology & Physiology
 2012 member, Academic Program Review Panel, Dept. of Biology, U. Maryland
 2010-14 member, External Advisory Committee, Institute of Neurobiology, U. Puerto Rico
 2009 member, Selection Committee for 25th International Prize for Biology, JSPS, Japan
 2006 member, Review Committee for the Biological Intelligence Main Research Theme of the Beckman Institute, University of Illinois at Champaign/Urbana
 2006 member, Academic Program Review Panel, Dept. of Biology, Georgia State Univ.
 2004-14 member, External Advisory Committee, State of Maine NIH IDeA Network of Biomedical Research Excellence
 2001 consultant on interdisciplinary programs, East Carolina University, NC
 2000-08 member, External Advisory Committee, Meharry Medical College, Center for Molecular and Behavioral Neuroscience and NINDS-sponsored Specialized Neuroscience Research Prog.
 2000-08 member, External Advisory Committee, NIMH R25 Grant, Meharry Medical College
 2000-04 member, External Advisory Committee, University of Puerto Rico's NIH-supported Center of Biomedical Research Excellence
 2000 Chair, External Review Committee, RIKEN Brain Science Institute, Japan
 1999 Chair, External Review Committee, Section of Neurobiology & Behavior, Cornell University
 1998 member, External Review Committee, Dept. of Biology, University of Virginia
 1997 member, External Review Committee, Ph.D. Program in Neurosciences, UCSD
 1997 member, External Advisory Committee, School of Integrative Biology, Univ. of Illinois
 1996-2007 member, Consiglio Scientifico, Stazione Zoologica, Naples, Italy
 1996-99 member, External Advisory Committee, MBRS Program, Meharry Medical College
 1996 External Reviewer for Life Sciences Consortium, Pennsylvania State University
 1995-98 member, Fachbeirat, Max-Planck-Institut für Verhaltensphysiologie, Seewiesen

- 1995 member, Organizing Committee, 1995 Workshop, Krasnow Institute for Advanced Study, George Mason University
- 1994 reviewer, graduate programs, School of Biological Sciences, Univ. of California-Irvine
- 1993-94 SERC Invertebrate Neuroscience Initiative Review Panel, UK
- 1993 external reviewer for Doctoral Program in Neuroscience, SUNY-Syracuse
- 1993-95 RCMC External Advisory Committee, Meharry Medical College, Nashville, TN
- 1992-99 member, Steering Committee, Sussex Centre for Neuroscience, University of Sussex, UK
- 1992 reviewer for Doctoral Program in Neuroscience, University of Miami
- 1990-95 & 2007-12 member, Scientific Advisory Board, Whitney Marine Laboratory, Univ of Florida
- 1989 Chair, Biological Sciences Panel, Texas Advanced Technology/Advanced Research Program, Texas Higher Education Coordinating Board
- 1981-86 member, Yale University Council Committee on Sciences – Biological

Activities Outside Academe and Science (Community Service, etc.)

- 2021-now member, Board of Trustees, Tucson Symphony Orchestra
- 2013-now member, Community Advisory Board, Arizona Public Media (active Emeritus member 2023-now)
- 2012-14 volunteer science teacher, J.B. Wright Elementary School, Tucson Unified School District
- 2012-14 member, Ambassadors of the Arizona Friends of Chamber Music
- 2005-20 member, Program Committee, UAPresents (performing arts presenting organization)
- 2003-05 & 2014-15 member, search committee for Director, UAPresents
- 2003-10, 2012-14, 2016-18 member, Advisory Board, UAPresents
- 1990-now occasional speaker at local alumni clubs, retirement communities, school groups, etc.

Activities in Education

Extramural

- 2012 faculty member, FENS-SfN-IBRO Bertinoro School on Chemical Senses, Bertinoro, Italy
- 2011 Co-Director, Second IBRO-Kemali Neuroscience School, Stazione Zoologica, Naples
- 2009 faculty member, IBRO Neuroscience School, Instituto Estable, Montevideo, Uruguay
- 2007 faculty member, IBRO Latino American School of Neuroethology, Buenos Aires
- 2003 faculty member, IBRO Neuroscience School, Instituto Estable, Montevideo, Uruguay
- 2002 faculty member, School and Conference on Chemical Senses: Molecules to Perception, Abdus Salam International Centre for Theoretical Physics, Trieste, Italy
- 2001 faculty member, International Course on Experimental Approaches in Neuroethology, University of Chile, Santiago and Valparaiso
- 1978-84 faculty member (co-Director 1980-84), Summer Neurobiology Course, MBL, Woods Hole

University of Arizona

- 2019-now co-instructor (1 of several), ENGR 495A/595A, 'Science, Health and Engineering Diplomacy'
- 2012-14 co-instructor (1 of several), NRSC 560, 'Systems Neuroscience'
- 2012-14 co-instructor (1 of 2), Neuroscience (NROS) 307, 'Cellular Neurophysiology'
- 2011-now co-instructor (1 of 2), HNRS 195, 'Biomedical Ethics, Health Policy and Society'
- 2011-16 occasional lecturer on chemical senses for Neurosurgery Residents
- 2010 co-instructor (1 of 2), HNRS 195I-004, 'The Brain—the Organ that Makes Us Human'
- 2008-2010 co-instructor (1 of 4), Integrated Science 195A
- 1998-2000 & 2004-11 co-instructor, Neuroscience (NRSC) 589, 'Principles of Systems Neurobiology'
- 1992-97 course instructor, Neuroscience (NRSC) 195H, Honors First-Year Colloquium, 'The Brain'
- 1992-2011 co-instructor (1 of 2), MCB (also BIOC and NRSC) 407 (formerly 461), 'Neurobiology'
- 1988-1990 co-instructor (1 of 3), NRSC (also BIOC, MCB, and PSIO) 588, 'Principles of Cellular and Molecular Neurobiology'

1989-91 co-instructor (1 of 3), NRSC 701, 'Communication in Neuroscience'
 1986-97 Chair, Committee on Neuroscience & Founding Director, Graduate Interdisciplinary Program in Neuroscience

Postdoctoral Research Associates (with last-known position)

- Rella Abernathy, Ph.D. (1995-96) [co-advisor: Dr. Elizabeth Bernays], UA Plant-Insect Group Postdoctoral Fellowship, *Integrated Pest Management Coordinator, City of Boulder CO*
- Rachel Bober, Ph.D. (2011-12), Vaadia-BARD Postdoctoral Fellow (Israel), *research associate at the Haifa University*
- Thomas A. Christensen, Ph.D. (1983-87), *retired*
- Cécile Faucher, Ph.D. (2011-13), *Chargée de missions Trame Verte et Bleue & Zones Humides EPAGE de la Bourbe, France*
- Ann Fraser, Ph.D. (1998-2001), fellow, UA/NSF Plant-Insect Group Training Program, *currently Professor, Kalamazoo College, Michigan*
- Nicholas J. Gibson, Ph.D. (1995-2006) [co-advisor: Dr. L.P. Tolbert], *retired*
- Corinna (Thom) Gilley, Ph.D. (2002-05) Deutsche Akademische Austauschdienst Fellow & Feodor Lynen Fellow of the A. von Humboldt Stiftung, *science writer and editor, New Jersey*
- John R. (Jack) Gray, Ph.D. (1999-2001) [co-advisor: Dr. M.A. Willis], *Prof. of Biology and Vice-Dean Research, Scholarly and Artistic Work, University of Saskatchewan*
- Pablo G. Guerenstein, Ph.D. (1999-2008), *Senior Researcher, National Research Council (CONICET, CICyTTP), Diamante, Entre Rios, Argentina*
- Susannah Hannaford, Ph.D. (1993-94) [co-advisor: Dr. T.A. Christensen], *Professor of Biology, University of Puget Sound, Washington*
- Eric Hanneman, Ph.D. (1988-90), American Cancer Society Postdoctoral Fellow, *East Meets West Stem Cells, Portland OR*
- Bill S. Hansson, Ph.D. (1989-90), Swedish government fellowship, *Director, Max-Planck-Institut für Chemische Oekologie, Jena, Germany, and Past Vice President of the Max-Planck Gesellschaft*
- Jon H. Hayashi, Ph.D. (1986-90), NIH Postdoctoral Fellow, *Professor, Paradise Valley Community College, Phoenix AZ; formerly Research Scientist, FMC, New Jersey*
- Akira Hishinuma, M.D., Ph.D. (1986-87), *Professor, Dept. of Infection Control and Clinical Laboratory Medicine, Dokkyo University School of Medicine, Japan*
- Uwe Homberg, Ph.D. (1984-88), Deutsche Forschungsgemeinschaft fellow, *Professor Emeritus of Zoology, Universität Marburg, Germany*
- Haruhiko Itagaki, Ph.D. (1986-90), NIH Postdoctoral Fellow 1987-90, *Professor of Biology, Kenyon College, Ohio*
- Nicole Kalberer, Ph.D. (2000-01), holder of a Swiss postdoctoral fellowship, *Research Associate, Zool. Institute, Univ. of Basel, Switzerland*
- Ryohei Kanzaki, Ph.D. (1987-90) [co-adviser: Dr. E.A. Arbas], *Professor, Graduate School of Information Science & Technology, University of Tokyo, Japan*
- Jane Roche King, Ph.D. (1996-2001), *independent science writer & editor*
- Peter Kloppenburg, Ph.D. (1991-96), Deutsche Forschungsgemeinschaft fellow, *Professor of Animal Physiology, Zoologisches Institut, Universität zu Köln, Germany*
- Herman K. Lehman, Ph.D. (1988-93), *Prof. Emeritus of Biology, Hamilton College, Clinton, NY*
- Hong Lei, Ph.D. (1999-2004), *Research Professor, School of Life Sciences, Arizona State University, Tempe*
- Wendy L. Mechaber, Ph.D. (1995-2003), *independently employed, Sherborn, MA*
- Robert F. Mitchell, Ph.D. (2012-15) Univ. of AZ Center for Insect Science PERT Fellow, *Associate Professor of Entomology, Penn. State Univ*

- Alan Nighorn, Ph.D. (1993-98), [co-advisor until 1997: Dr. David B. Morton], *retired*
- Mark G. Novak, Ph.D. (1992-94) [co-advisor: Dr. J. Ribeiro], UA Center for Insect Science
Postdoctoral Fellow, *last known: Supervising Public Health Biologist,
Vector-Borne Disease Section (Northern Region), California Dept. of
Health Services, Elk Grove, CA*
- Robert A. Raguso, Ph.D. (1995-97) [co-advisor: Dr. Mark A. Willis], trainee on the
Center for Insect Science NIH Training Grant, *Professor, Dept. of
Neurobiology & Behavior, Cornell University*
- Carolina E. Reisenman, Ph.D. (2001-07) Pew Latin American Scholar, *Associate Researcher,
Dept. of MCB, Univ. of California, Berkeley*
- Jeffrey A. Riffell, Ph.D. (2004-10) Univ. of AZ Center for Insect Science PERT Fellow,
Professor of Biology, Univ. of Washington
- Wolfgang Rössler, Dr. rer. nat. (1995-99) [co-advisor: Dr. L.P. Tolbert], Deutsche
Forschungsgemeinschaft fellow, *Professor Emeritus, Biocenter,
Universität Würzburg, Germany*
- Vonnie D.C. Shields, Ph.D. (1995-2000), *Professor of Biological Sciences, Towson University,
Maryland*
- Sakiko Shiga, Ph.D. (1998-99) [co-advisor: Dr. N.T. Davis], *Professor of Biological Sciences,
Osaka University, Japan*
- Brian H. Smith, Ph.D. (1988-90), NIMH Postdoctoral Fellow, *Professor, School of Life Sciences,
Arizona State University, Tempe AZ*
- Jordanna Sprayberry, Ph.D. (2006-08) Univ. of Arizona Center for Insect Science PERT
Fellow, *Associate Professor of Ecology & Evolution, Stony Brook
University, SUNY*
- Xue Jun Sun, Ph.D. (1991-94) [co-advisor: Dr. L.P. Tolbert], Center for Insect Science
Postdoctoral Fellow, *Staff Scientist, University of Alberta, Edmonton,
Canada*
- Neil J. Vickers, Ph.D. (1995-98) [co-advisor: Dr. T.A. Christensen], *Professor of Biology,
University of Utah*
- Brian R. Waldrop, Ph.D. (1984-87), *last known: Director, College of Arts & Sciences
Administration, University of Buffalo, NY*
- Mark A. Willis, Ph.D. (1998-2001), *Professor of Biology, Case Western Reserve University,
Cleveland, OH*
- Fumio Yokohari, Ph.D. (1988-89) [co-advisor: Dr. L.P. Tolbert], *Professor, University of
Fukuoka, Japan*

Graduate Students

- Aaron Beyerlein, M.S. in Entomology and Insect Science (M.S. conferred 2011), *R&D Specialist
at Bayer CropScience, Carrboro, North Carolina*
- Andrew Dacks, Ph.D. in Insect Science (Ph.D. conferred 2007) [co-advisor with Dr. T.A.
Christensen], *Associate Professor of Biology, Case Western Reserve
University, Cleveland, OH*
- Thomas Heinbockel, Ph.D. in Neuroscience (Ph.D. conferred 1997), *Professor of Anatomy,
Howard Univ. Coll. of Medicine, Washington, DC*
- Joshua P. Martin, Ph.D. Neuroscience (Ph.D. conferred 2012), *Associate Professor of Biology,
Colby College, Maine*
- Katja Selchow, Ph.D. in Neuroscience (Ph.D. conferred 1998), *airline pilot*
- Kenneth A. Sorensen, Ph.D. in Molecular & Cellular Biology (Ph.D. conferred 1993),
Co-Founder, Nonpareil Biotechnologies, White Plains, NY
- Monika Stengl, Ph.D. in Molecular & Cellular Biology (Ph.D. conferred 1990), *Professor of
Zoology, Universität Kassel, Germany*

Visiting Students

Martin Brill (2009), Universität Würzburg, Germany
 Davide Dulcis (1999-2000) [co-advisor with Dr. N.T. Davis], Univ. of Cagliari, Italy
 Alex Eaton-Mordas (2005), Dept. of Ecology & Evolutionary Biol, Univ. of Arizona
 Edwin van der Jagt (1994-95) [co-advisor with Dr. N.T. Davis], University of Utrecht,
 The Netherlands (Dutch Gov. fellowship)
 Elisabeth Pasch (2008), Universität Würzburg, Germany
 Marco Rosales (2004-05), Pima Community College, Tucson, AZ
 Nadia Scascighini (2000), Swiss Federal Institute of Technology (ETH) Zürich
 Paolo Solari (1998), University of Cagliari, Italy
 Erich Staudacher (1991), Max-Planck-Institut für Verhaltensphysiologie, Germany
 Michiel van Wijk (1999), Agricultural University, Wageningen, The Netherlands
 Ning Zhang (2014), China Agricultural University, Beijing

Undergraduate Research Assistants [co-advisors: ¶Dr. T. Christensen, §Dr. N. Davis, °Dr. H. Lehman, †Dr. H. Lei, ‡Dr. W. Mechaber, ◆Dr. R. Mitchell, #Dr. A. Nighorn, ΔDr. C. Reisenman, ◇Dr. J. Riffell]

◆Arthur Abougou, Allison Agajanian, †Angelica Alvarez, †Arshed Al-Obeidi, ◆Lauren Amos,
 ◆Tiffany Bledsoe, †Nyssa Burdick, ‡Christopher Capaldo, †Hong-Yan (Vicki) Chiu, Dawn
 Clark, ◇Eleni Constantopoulos, ¶Christine Cuzzocrea, Engracia Dang, ΔBianca Demara,
 Charleston Dick, Erik Dillingham, ¶Sarah Dixon, ¶Dan Doty, Kristin Duffy, †Petimat
 Dudurkaeva, ‡Damian Elias, †Jessica Fletcher, ◇ΔAndrew Flores, °Zoe Forester, Robyn Forkos,
 Kim Frank, ¶Sabrina Geoffrion, ¶Nicole Giedinghagen, §Marianne Go, ◇ΔBreena Goodwin,
 §Tushara Gunatilaka, ‡Darren Hall, ‡Jennifer Hill, †JungMin Kim, #Eric Kennedy, Clint Kleppe,
 ‡Gina Kraft, †Laura Kulas, §George Lai, Emily Landeen, ¶Jason Lashbrook, ΔYan Mei Lee,
 #Dominique Leitner, Sara Lewis, Chris Ludwig, Jeff Ludwig, †Yessenia Magana; ‡Kristen
 McCoy, ◇ΔDavid Mikles, Cristina Murgiu, Kayla Peck, ◇ΔAdrian Pesque, Anastasia Peterson,
 #David Rivers, †Aracely Romero, †Naghmeah Saghafi, Hetal Shah, †Bradley Shane, Stephen
 Shipman, †Yeeck Sim, Katie Skinner, ‡Tracey Smart, #Matt Stoker, #Sylvia Thompson, Andrew
 Tseng, ◇ΔMeredith Tuinstra, #Maggie Villamana, Andrew Waters, †Angela Wu, †Weijie Xiang,
 †Jinglei Zhang

High-School Research Assistant [co-advisor: ☼Dr. C. Faucher] ☼Monica Seng

Visiting Scientists

Rafael Cantera (1989-90), University of Stockholm, Sweden
 William Conner (2004), Wake Forest University, North Carolina
 Blanka Kalinova (1993), Czech Academy of Sciences, Prague
 Le Kang (2010), Chinese Academy of Sciences, Institute of Zoology, Beijing
 Alison Mercer (several periods during 1992-96), University of Otago, New Zealand
 B.K. Mitchell (1990, 1996), University of Alberta, Edmonton, Canada
 R. Alexander Steinbrecht (1994), Max-Planck-Institut f. Verhaltensphysiologie, Seewiesen
 Chenzhu Wang (2010), Chinese Academy of Sciences, Institute of Zoology, Beijing
 Yanxue Yu (2014), Chinese Academy of Plant Inspection and Quarantine, Beijing

Columbia University

1984 instructor, Biology G9007, Special Topics in Developmental Neurobiology
 1982-84 instructor, Biology G4006, Biochemistry of Nerve Cells
 1981-84 instructor, Biology G4004, Biology of Nerve Cells

Postdoctoral Fellows

Ian D. Harrow, Ph.D. (1981-84), *Founder, Director & Principal Consultant at Ian Harrow Consulting Ltd., UK*
 Sally G. Hoskins, Ph.D. (1982-85), *Professor Emerita of Biology, City College of NY (deceased)*

Timothy G. Kingan, Ph.D. (1980-83), *U.S. Patent and Trademark Office*

Graduate Student

Akira Hishinuma, M.D., Ph.D. (Ph.D. conferred 1986), *Professor, Dept. of Clinical Laboratory Medicine, Dokkyo University School of Medicine, Japan*

Undergraduate Research Students

Jeffrey E. Arle, Carla Cerami, Annemarie I. Coffman, Tristan Davies, Dennis Deltoro, Claire Kedeshian, William Korn, Robert Kovelman, Art Papier, Paul Quartararo

Harvard University

1979 course director and instructor, Biology 25, Neurobiology
 1977 instructor, Eliot 111, Senior Seminar in Developmental Neurobiology
 1976-80 instructor, Biology 126, Biochemistry of Nerve Cells (with Edward Kravitz)
 1975-77 instructor, Biology 240, Invertebrate Behavior (with Bert Hölldobler)
 1973 co-instructor, Neurobiology 206, Physiology of Synaptic Transmission
 1971-73 lecturer in Neurobiology 210, Introductory Neurobiology
 1963-64 teaching Assistant in Natural Sciences 5 (General Biology)

Postdoctoral Fellows

Scott M. Camazine, M.D., Ph.D. (1978-79), *physician in private practice*
 Nikolai E. Klemm, Ph.D. (1978), *position unknown*
 Steven G. Matsumoto, Ph.D. (1977-80), NIH Postdoctoral Fellow, *Associate Professor, Oregon Health & Science University*
 Gerald D. Maxwell, Ph.D. (1975-79), NIH Postdoctoral Fellow, *Professor Emeritus of Neuroscience, University of Connecticut Medical School*
 Margaret C. Nelson, Ph.D. (1975-79), *free-lance writer and illustrator*
 David J. Prescott, Ph.D. (1974-75), *Professor Emeritus of Biology, Bryn Mawr College*
 Leslie P. Tolbert, Ph.D. (1978-81), NIH Postdoctoral Fellow, *Regents Professor Emerita of Neuroscience, Univ. of Arizona*

Graduate Students

Karla S. Kent, Ph.D. (Ph.D. conferred 1985), *Professor Emerita of Integrative Biosciences, Oregon Health & Science University*
 Joshua R. Sanes, Ph.D. (Ph.D. conferred 1975), *Professor Emeritus of Molecular & Cellular Biology, Harvard University, Cambridge, MA*
 Anne M. Schneiderman, Ph.D. (Ph.D. conferred 1984), *patent attorney in private practice, Ithaca, New York*

Undergraduate Research Students

Paul J. Deutsch, Margaret Drickamer, Marcia M. Moore, Erik S. Schweitzer, Jonathan F. Tait

Rockefeller University

1965-67 instructor, Summer Biology Program for high school students

Marine Biological Laboratory

1996-2024 instructor, summer SPINES program
 1988 lecturer, Methods in Computational Neuroscience Course
 1985 lecturer, Neural Systems and Behavior Course
 1984 lecturer, Review and Update in Neurobiology for Neurosurgeons
 1980-84 Co-Director and instructor, Summer Neurobiology Course
 1978-79 instructor, Summer Neurobiology Course

Research

My research has combined anatomical, behavioral, chemical, molecular, and neurophysiological approaches in multidisciplinary studies of the nervous system in insects and other arthropods. My principal research interests include: the physiology, functional organization, behavioral roles, and postembryonic development of the olfactory system; sensory control of mating behavior and insect-host interactions, including feeding and oviposition behaviors; chemical ecology and behavioral aspects of interactions with host plants; olfactory learning; and the behavior and sensory neurobiology of local species of Triatomine insects (“kissing bugs”) as potential vectors of Chagas Disease. The main goal of this work has been to discover fundamental principles and mechanisms common to many or all nervous systems through studies of the experimentally favorable nervous systems of these invertebrate animals. In view of the importance of insects in their own right, my coworkers and I also have aimed to contribute to knowledge that will help to alleviate the harm done by insects that are predators of plants cultivated for food, fuel or fiber or are vectors of microbial or parasitic pathogens. Our principal research contributions have come in the following areas:

(i) *Functional organization and physiology of the insect olfactory system.* Our work has focused mainly on the olfactory system of the giant sphinx moth *Manduca sexta*. Using intracellular recording and staining methods, extracellular and multi-unit recording techniques, and pharmacological manipulations, we have explored the neuronal circuitry and synaptic interactions in the antennal lobe (AL), the primary olfactory center in the moth's brain. We also have used histological and neuronal tracing methods to learn about the anatomical organization of the AL and its sensory inputs. The goal has been to understand mechanisms of information processing in the olfactory pathways in the central nervous system. Much of this work has focused on the sexually dimorphic olfactory subsystem in the male moth that is specialized to detect and process information about the female's sex pheromone. We also have conducted multi-level studies of the detection and central processing of sensory information about volatile organic compounds (VOCs) emitted by living plants. Particular effort has addressed central neural mechanisms encoding olfactory information about behaviorally significant mixtures of VOCs. In addition to the primary focus on the AL, the reach of the work has extended to the higher-order olfactory pathways in the protocerebrum that are involved in processing of the outputs of the ALs and their integration with information of other sensory modalities.

(ii) *Behavior and chemical ecology.* In parallel with studies of the olfactory system of *Manduca*, we have investigated the identities of the VOCs emitted by living host- and non-host plants and used a variety of chemical, physiological and behavioral methods to identify behaviorally significant compounds in those complex mixtures. We also have studied the effects of VOCs on the behavior of flying *Manduca* in the field and in a laboratory wind tunnel.

(iii) *Postembryonic, metamorphic development of the olfactory system.* We long have been interested in neural development and plasticity in the ALs during the postembryonic development of *Manduca*. Among the outcomes of this line of research is the finding that certain, sexually dimorphic glomeruli characteristic of male and female ALs develop only if the AL is innervated, respectively, by axons of genetically male or female olfactory receptor cells.

My research program was funded through competitive research grants from federal agencies throughout the period 1971-2016, including funding from NIH, NSF, USDA, and DoD. I have also received research support from NATO and the University of Arizona as well as private sources including the American Heart Association, the A.P. Sloan Foundation, Monsanto Company, and the Hasselblad Foundation. My laboratory closed in May, 2016.

Invited Lectures and Seminars (2010-present)

- 2010 Stanford University Institute for Neuro-Innovation
 Pomona College, Claremont, CA [*Phi Beta Kappa Visiting Scholar*]
 Tennessee State University, Dept. of Biological Sciences
 Florida State University, Tallahassee [*Phi Beta Kappa Visiting Scholar*]
 Allegheny College, Meadville, PA [*Phi Beta Kappa Visiting Scholar*]
 Symposium in honor of Michael Arbib, "Multidisciplinary Approaches to Understanding the
 Mind and Brain," Tucson, AZ

- International Symposium in Honeybee Neuroscience, Berlin
 University of Oklahoma, Dept. of Zoology [*Presidential Dream Course in Neuroethology*]
 Yale University, Dept. of Cellular & Molecular Physiology
 University of Georgia, Dept. of Entomology
 Emory University, Neuroscience & Behavioral Biology Program
- 2011 Association of Anatomy, Cell Biology & Neurobiology Chairpersons Annual Meeting, Tucson
 8th International Congress of Comparative Physiology & Biochemistry, Nagoya, Japan [*plenary*]
 Gordon Research Conference on Neuroethology, Stonehill College, MA
 International Symposium on Invertebrate Neurobiology, Tihany, Hungary
 International Symposium on Molecular Insect Science, Amsterdam
 US-China Workshop on Insect Olfaction, Chinese Academy of Sciences, Beijing
 5th Asian-Pacific Conference on Chemical Ecology, Beijing [*plenary lecturer*]
 Argentinian Society for Neuroscience (SAN) Annual Meeting, Cordoba [*First Hector Maldonado Memorial Lecturer*]
 Siemens Stiftung Lecture, Munich, Germany
- 2012 UC-San Diego [*2012 Walter F. Heiligenberg Lecture*]
 University of North Carolina, Dept. of Biology [*2012 Lawrence Gilbert Distinguished Lecture*]
 American Association of Anatomists annual meeting, San Diego
 Max-Planck-Institut f. Neurobiologie, Munich [*Distinguished Lecturer*]
 Norwegian University of Science & Technology, Trondheim [*symposium speaker*]
 Washington University, St. Louis, Dept. of Biology
 Latin American Association for Chemical Ecology Annual Meeting, Cordoba [*plenary lecturer*]
- 2013 Yale Club of Southern Arizona
 University of Cincinnati, Dept. of Biology
 Universität Würzburg, Biozentrum
 Universität zu Köln, Institute of Zoology
 Universität Kassel, Dept. of Animal Physiology
 University of Sydney, Australia, School of Biological Sciences
 International Chemical Ecology Conference (ICEC2013), Melbourne, Australia
 Louisiana State University, Dept. of Biological Sciences
 University of Chicago, Dept. of Neurobiology
 Kuffler Symposium, Rockefeller University
- 2014 Confluence Center, University of Arizona
 Symposium on Biologically Inspired Robotics, AAAS Annual Meeting [*organizer & chair*]
 West Virginia University, Dept. of Biology
 Chilean Society for Neuroscience Annual Meeting, Valdivia [*plenary speaker*]
 University of Santiago, Chile
 2014 Inter-Academy Seoul Science Forum
- 2015 College of Charleston, SC [*Sigma Xi Darwin Week Lecturer*]
 Northern Michigan University, Marquette, MI [*Sigma Xi Lecturer*]
 Kansas State University, Manhattan, KS [*Sigma Xi Lecturer*]
 Physics Teachers of Southern Arizona meeting
- 2016 University of Michigan, Ann Arbor [*Sigma Xi Lecturer*]
 Lamar University, Beaumont, TX [*Sigma Xi Lecturer*]
 Case Western Reserve University, Cleveland OH
 NIH IRACDA Conference, Tucson, AZ
 2016 XXV International Congress of Entomology, Orlando FL [*Wigglesworth Lecturer*]

- Department of Neurobiology, Harvard Medical School, Boston [*50th anniversary celebration*]
- 2017 Florida State University, Tallahassee [*2017 James C. Smith Lecture*]
 University of New England, Biddeford, ME, Center for Excellence in the Neurosciences
 Israeli Entomological Society Annual Meeting in honor of Rachel Galun [*plenary lecture*]
- 2018 Yale Club of Southern Arizona
 Philippine-American Academy of Science & Engineering 38th Annual Meeting, Tucson
 ECRO 2018 Annual Meeting, Würzburg, Germany [*plenary lecture*]
 Caribbean Academy of Sciences, 21st General Meeting, Kingston, Jamaica [*plenary lecture*]
 Academia Sinica, 90th Anniversary Celebration, Taipei, Taiwan [*plenary lecture*]
- 2020 NAS Annual Meeting Symposium “NAS Grand Challenges”
 Twelfth General Assembly of the African Academy of Sciences, Nairobi [*Zoom talk as a panelist*]
 Annual Meeting of the Acoustical Society of America [*Zoom talk in a symposium*]
- 2021 Society for Neuroscience virtual meeting “Global Connectome” [*Zoom talk as a panelist*]
 International conference “Insect Olfaction & Taste in 24 Hours Around the Globe” [*panelist*]

PUBLICATIONS

John G. Hildebrand

h-Index 87; *i10*-index 189; >20,490 citations (4/26 – Google Scholar data)

Books

- Hall ZW, Hildebrand JG, Kravitz EA (eds) (1974) *Chemistry of Synaptic Transmission: Essays and Sources*. Newton MA, Chiron Press
- Sattelle DB, Hall LM, Hildebrand JG (eds) (1980) *Receptors for Neurotransmitters, Hormones and Pheromones in Insects*. Amsterdam, Elsevier/North Holland
- Hagedorn HH, Hildebrand JG, Kidwell MG, Law JH (eds) (1990) *Molecular Insect Science*. New York, Plenum
- Ciba Foundation Symposium 200 (1996) *Olfaction in Mosquito-Host Interactions*. West Sussex, UK, Wiley [meeting and book organized by JGH]
- Meinwald J, Hildebrand JG (eds) (2010) *Science and the Educated American: A Core Component of Liberal Education*. American Academy of Arts and Sciences [available as a book or as a downloadable PDF: <https://www.amacad.org/sites/default/files/publication/downloads/SLACweb.pdf>]

Original Reports

- Hildebrand JG, Law JH (1964) Fatty acid distribution in bacterial phospholipids; The specificity of the cyclopropane synthetase reaction. *Biochem* 3:1304-1308
- Hildebrand JG, Spector LB (1969) Succinyl phosphate and the succinyl Coenzyme A synthetase reaction. *J Biol Chem* 244:2606-2613
- Hildebrand JG (1969) *Succinyl phosphate and the succinyl Coenzyme A synthetase reaction*. Ph.D. dissertation, Rockefeller University
- Walsh CT, Hildebrand JG, Spector LB (1970) Succinyl phosphate: its non-enzymatic hydrolysis and reaction with Coenzyme A. *J Biol Chem* 245:5699-5708
- Hildebrand JG, Barker DL, Herbert E, Kravitz EA (1971) Screening for neurotransmitters: a rapid radiochemical procedure. *J Neurobiol* 2:231-246
- Barker DL, Herbert E, Hildebrand JG, Kravitz EA (1972) Acetylcholine and lobster sensory neurones. *J Physiol (Lond)* 226:205-229
- Hildebrand JG, Townsel JG, Kravitz EA (1974) Distribution of acetylcholine, choline, choline acetyltransferase and acetylcholinesterase in regions and single, identified axons of the lobster nervous system. *J Neurochem* 23:951-963
- Sanes JR, Hildebrand JG (1975) Nerves in the antennae of pupal *Manduca sexta* (Lepidoptera: Sphingidae). *Wilhelm Roux' Archiv* 178:71-78
- Sanes JR, Hildebrand JG (1976) Structure and development of antennae in a moth, *Manduca sexta*. *Devel Biol* 51:282-299

- Sanes JR, Hildebrand JG (1976) Origin and morphogenesis of sensory neurons in an insect antenna. *Devel Biol* 51:300-319
- Sanes JR, Hildebrand JG (1976) Acetylcholine and its metabolic enzymes in developing antennae of the moth, *Manduca sexta*. *Devel Biol* 52:105-120
- Sanes JR, Hildebrand JG, Prescott DJ (1976) Differentiation of insect sensory neurons in the absence of their normal synaptic targets. *Devel Biol* 52:121-127
- Schweitzer ES, Sanes JR, Hildebrand JG (1976) Ontogeny of electroantennogram responses in the moth *Manduca sexta*. *J Insect Physiol* 22:955-960
- Sanes JR, Prescott DJ, Hildebrand JG (1977) Cholinergic neurochemical development of normal and deafferented antennal lobes during metamorphosis of the moth, *Manduca sexta*. *Brain Res* 119:389-402
- Prescott DJ, Hildebrand JG, Sanes JR, Jewett S (1977) Biochemical and developmental studies of acetylcholine metabolism in the central nervous system of the moth, *Manduca sexta*. *Comp Biochem Physiol* 56C:77-84
- Maxwell GD, Tait JF, Hildebrand JG (1978) Regional synthesis of neurotransmitter candidates in the CNS of the moth *Manduca sexta*. *Comp Biochem Physiol* 61C:109-119
- Hildebrand JG, Hall LM, Osmond BC (1979) Distribution of binding sites for ¹²⁵I-labeled α -bungarotoxin in normal and deafferented antennal lobes of *Manduca sexta*. *Proc Natl Acad Sci USA* 76:499-503
- Starratt AN, Dahm KH, Allen N, Hildebrand JG, Payne TL, Rölller H (1979) Bombykal, a sex pheromone of the sphinx moth *Manduca sexta*. *Z Naturforsch* 34C:9-12
- Maxwell GD, Moore MM, Hildebrand JG (1980) Metabolism of tyramine in the central nervous system of the moth *Manduca sexta*. *Insect Biochem* 10:657-665
- Maxwell GD, Hildebrand JG (1981) Anatomical and neurochemical consequences of deafferentation in the development of the visual system of the moth *Manduca sexta*. *J Comp Neurol* 195:667-680
- Matsumoto SG, Hildebrand JG (1981) Olfactory mechanisms in the moth *Manduca sexta*: response characteristics and morphology of central neurons in the antennal lobes. *Proc Roy Soc Lond B* 213:249-277
- 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 Roy Soc Lond B* 213:279-301
- Schneiderman AM, Matsumoto SG, Hildebrand JG (1982) Trans-sexually grafted antennae influence development of sexually dimorphic neurones in moth brain. *Nature* 298:844-846
- Tolbert LP, Matsumoto SG, Hildebrand JG (1983) Development of synapses in the antennal lobes of the moth *Manduca sexta* during metamorphosis. *J Neurosci* 3:1158-1175
- Kingan TG, Hildebrand JG (1985) γ -Aminobutyric acid in the central nervous system of metamorphosing and mature *Manduca sexta*. *Insect Biochem* 15:667-675
- Hoskins SG, Homberg U, Kingan TG, Christensen TA, Hildebrand JG (1986) Immunocytochemistry of GABA in the antennal lobes of the sphinx moth *Manduca sexta*. *Cell Tiss Res* 244:243-252

- Kent KS, Harrow ID, Quartararo P, Hildebrand JG (1986) An accessory olfactory pathway in Lepidoptera: the labial pit organ and its central projections in *Manduca sexta* and certain other sphinx moths and silk moths. *Cell Tiss Res* 245:237-245
- Schneiderman AM, Hildebrand JG, Brennan MM, Tumlinson JH (1986) Trans-sexually grafted antennae alter pheromone-directed behavior in a moth. *Nature* 323:801-803
- Kent KS, Hildebrand JG (1987) Cephalic sensory pathways in the central nervous system of larval *Manduca sexta* (Lepidoptera: Sphingidae). *Phil Trans Roy Soc B* 315:1-35
- Homberg U, Kingan TG, Hildebrand JG (1987) Immunocytochemistry of GABA in the brain and suboesophageal ganglion of the sphinx moth *Manduca sexta*. *Cell Tiss Res* 248:1-24
- Christensen TA, Hildebrand JG (1987) Male-specific, sex pheromone-selective projection neurons in the antennal lobes of the moth *Manduca sexta*. *J Comp Physiol A* 160 553-569
- Waldrop B, Christensen TA, Hildebrand JG (1987) GABA-mediated synaptic inhibition of projection neurons in the antennal lobes of the sphinx moth *Manduca sexta*. *J Comp Physiol A* 161:23-32
- Kent KS, Hoskins SG, Hildebrand JG (1987) A novel serotonin-immunoreactive neuron in the antennal lobe of the sphinx moth *Manduca sexta* persists throughout postembryonic life. *J Neurobiol* 18:451-465
- Hishinuma A, Hockfield S, McKay R, Hildebrand JG (1988) Monoclonal antibodies reveal cell-type-specific antigens in the sexually dimorphic olfactory system of *Manduca sexta*. I. Generation of monoclonal antibodies and partial characterization of the antigens. *J Neurosci* 8:296-307
- Hishinuma A, Hockfield S, McKay R, Hildebrand JG (1988) Monoclonal antibodies reveal cell-type-specific antigens in the sexually dimorphic olfactory system of *Manduca sexta*. II. Expression of antigens during postembryonic development. *J Neurosci* 8:308-315
- Christensen TA, Hildebrand JG (1988) Frequency coding by central olfactory neurons in the sphinx moth *Manduca sexta*. *Chem Senses* 13:123-130
- Homberg U, Montague RA, Hildebrand JG (1988) Anatomy of antenno-cerebral pathways in the brain of the sphinx moth *Manduca sexta*. *Cell Tiss Res* 254:255-281
- Waldrop B, Hildebrand JG (1989) Physiology and pharmacology of acetylcholinergic responses of interneurons in the antennal lobe of the moth *Manduca sexta*. *J Comp Physiol A* 164:433-441
- Christensen TA, Mustaparta H, Hildebrand JG (1989) Discrimination of sex pheromone blends in the olfactory system of the moth. *Chem Senses* 14:463-477
- Kingan TG, Hildebrand JG (1989) Sexually dimorphic polypeptides in developing insect olfactory receptor cells. *J Neurosci* 9:1951-1960
- Homberg U, Hildebrand JG (1989) Serotonin-immunoreactive neurons in the median protocerebrum and suboesophageal ganglion of the sphinx moth *Manduca sexta*. *Cell Tiss Res* 258:1-24
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