

# Armin J Hinterwirth

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47°40'7.07"N 122°17'35.89"W

## Education

- 2005 - date University of Washington (UW), Seattle, WA: Graduate Student in Biology  
2006 Neural Systems & Behavior course at the Marine Biological Laboratories, Woods Hole, MA (6/11/2006 to 8/6/2006)
- 1995 - 2002 University of Vienna, Austria: Magister degree (with distinction) in Zoology  
2001 Lund University, Lund, Sweden  
2 week course: techniques in invertebrate neuroanatomy in B.S. Hansson's lab
- 1999 - 2000 University of Washington, Seattle, WA: As a visiting Undergraduate, I took courses in neurobiology, biomechanics, entomology, & limnology

## Awards

- 2007 Honorable Mention: NSF Graduate Research Fellowship Program  
Ingrith Deyrup-Olsen Teaching Award
- 2006 Surdna Foundation Scholarship  
Neural Systems & Behavior NIH Grant  
Sargent Endowment Award  
Honorable Mention: NSF Graduate Research Fellowship Program
- 2001 Research Fellowship from the Austrian Science Fund
- 1997-2001 Monetary stipends for excellent grades (Leistungsstipendium),  
University of Vienna

## Research experience

- 2005-2010 Graduate student (UW): conducted research on insect flight control that necessitated construction of computer-controlled flight arena and large free flight wind tunnel for insects (described here: <http://www.amphioxus.org/research.php>)
- 2005 Graduate student rotation (UW): histochemical tracking of a developing, MARCM-labeled motoneuron lineage in *Drosophila* (Truman Lab)
- 2003-2005 Research Assistant (The Rockefeller University, New York, NY):  
Technical assistance and construction of experimental apparatus used for auditory research in the laboratory of AJ Hudspeth. Development of an interferometer with subnanometer resolution.
- 2000-2002 Undergraduate Research at the University of Vienna, Austria  
Supervisors: H Tichy, Ph.D. & FG Barth, Ph.D  
Conducted and participated in neurophysiological studies concerning chemo- and thermoreceptors in insects. Three publications resulted from this work. Magister thesis title: "Creeping changes in food odor concentration: a study on the response capabilities of olfactory receptor cells in the American cockroach *Periplaneta americana*"

- 1999 Undergraduate Research at the University of Washington, Laboratory of D O'Carroll, PhD: I assisted with investigations on polarization sensitivity in lycosid spiders
- 1996 & 1998 Freelance work for the Styrian government, Austria  
Assessed the ecological quality of several streams for incorporation of the data into the GIS (geographical information system) of Styria

## Teaching

- 2007 & 2009 Teaching Assistant, University of Washington  
BIOL 427: Biomechanics
- 2006 Teaching Assistant, University of Washington  
BIOL 454/455: Entomology / Entomology Lab
- 2002 Teaching Assistant, University of Vienna  
Advanced course in neurophysiology (Spezialpraktikum Neurobiologie):  
Intracellular electrophysiological recording techniques
- 1999 Teaching Assistant, University of Vienna  
Course in neurophysiology (Tierphysiologische Übungen)

## Peer-reviewed publications

- Hinterwirth A, Daniel TL (2010) Antennae in the hawkmoth *Manduca sexta* (Lepidoptera, Sphingidae) mediate abdominal flexion in response to mechanical body rotations. *J Comp Physiol A* (in press)
- Daniel TL, Aldworth Z, Hinterwirth A, and Fox, J (2010) Insect inertial measurement units: Gyroscopic sensing of body rotation. In: Barth FG, Srinivasan MV (eds) *Frontiers in Sensing: Biology and Engineering*. Springer, Wien-New York, (in press).
- Gingl E, Hinterwirth A, Tichy H (2005) Sensory representation of temperature in mosquito warm and cold cells. *J Neurophysiol* 94(1):176-85
- Tichy H, Hinterwirth A, Gingl E (2005) Olfactory receptors on the cockroach antenna signal odour ON and odour OFF by excitation. *Eur J Neurosci* 22(12):3147-60
- Hinterwirth A, Zeiner R, Tichy H (2004) Olfactory receptor cells on the cockroach antennae: responses to the direction and rate of change in food odour concentration. *Eur J Neurosci* 19 :3389-92

## Other publications (non peer-reviewed)

- Daniel TL, Aldworth Z, Fox JL, Hinterwirth A and Mountcastle A (2009) Biologically Inspired Design : Blurring the Boundary Between Sensors and Actuators. NSF Workshop on Biosensors and Bioactuators, Taipei

## Presentations and published abstracts

- Hinterwirth A. & Daniel TL (2009) Oral presentation at the Society for Integrative and Comparative Biology, Annual Meeting, Boston, MA
- Hinterwirth A. & Daniel TL (2008) Multiple inputs mediate multiple outputs for flight control. Oral presentation at the Society for Integrative and Comparative Biology, Annual Meeting, San Antonio, TX

Hinterwirth A. & Daniel TL (2007) Multiple-input, multiple-output moths. Poster presentation at the International Society of Neuroethology Meeting, Vancouver BC, July 2007

Tichy H., Hinterwirth A. & Gingl E. (2006) Antagonistic On and Off olfactory receptor cells; Poster presentation at the Forum of European Neuroscience; Published in FENS Forum Abstracts, vol. 3, 2006

Kozlov AS, Risler RTA, Hinterwirth A and Hudspeth AJ (2006) Interferometric measurement of coherent stereociliary motion; Annual meeting of the Association for Research in Otolaryngology 2006

### **Papers in preparation**

Hinterwirth A, Daniel TL: Visual feedback modulates antennal muscle activity in *Manduca sexta*. Manuscript prepared for *Biology Letters*.

### **Other presentations**

Researched and designed a display on the biology of Costa Rican butterflies for a traveling exhibition prepared for the "Biologiezentrum Linz" (Biology Center, Linz, Austria) and the Botanical Institute of the University of Vienna. Displayed in Austria and Germany in 2001.

### **Miscellaneous skills and hobbies**

Language	Primary language German, fluent English
Computer	Proficient in Adobe Illustrator & Photoshop, Matlab, working knowledge of Java, Python, LaTeX, Arduino micro-controllers, web design (HTML, PHP, MySQL, Mediawiki), 3D design (SolidWorks, Google SketchUp, Blender)
Laboratory	Extra- and intracellular recordings with microelectrodes, neuroanatomical staining techniques, histological methods, microscopy (light, fluorescence, LSM, transmission and scanning electron microscopy), electronics skills, machining skills
Hobbies	Photography, computers and electronics, hiking, bicycling