

# CURRICULUM VITAE

## Wulfila Gronenberg

Department of Neuroscience  
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### Education

1972 - 74      Technical University Berlin, Germany: Chemistry  
1974 - 77      Free University Berlin, Germany: Biology  
1977 - 79      Free University Berlin, Germany: Zoology (Master's Program)  
1980 - 84      Free University Berlin, Germany: Zoology (Ph.D. Program)

### Chronology of Employment

1977 - 1984      Animal Physiology, Free University of West Berlin: Graduate Research Assistant  
1984 - 1984      Department of Biology, Technical University of West Berlin: Postdoctoral Research Assistant  
1985 - 1988      Department of Zoology, University of Frankfurt, Germany: Postdoctoral Research Associate  
1988 - 1990      Arizona Research Labs (ARL) Division of Neurobiology, University of Arizona: Postdoctoral Research Associate  
1991              ARL Division of Neurobiology, University of Arizona: Assistant Research Scientist  
1991-1995      Dept. of Behavioral Physiology and Sociobiology, University of Würzburg, Germany: Assistant Professor  
1995 - 1999      Dept. of Behavioral Physiology and Sociobiology, University of Würzburg: Associate Professor without tenure  
1999 - 2001      ARL Division of Neurobiology, University of Arizona: Associate Professor (tenure pending)  
2001 - current      ARL Division of Neurobiology (now Dept. of Neuroscience), U of A: Associate Professor (tenured)

### Institutions, degrees and dates awarded

March 1977      Free University Berlin, Germany: "Vordiplom" Biology (equivalent to BSc)  
Oct. 1979      Free University Berlin, Germany: "Diplom" Biology (equivalent to MSc)  
April 1984      Free University Berlin, Germany: Ph.D. Zoology  
Jan. 1995      University of Würzburg, Germany: "Habilitation"  
(prerequisite for serving as faculty in Germany)

### Major fields:

Neuroscience; neuroethology; animal behavior; zoology

## **Honors and Awards**

Honors College Faculty Mentor Award 2011

## **Service/Outreach** (limited to period in current rank)

### Local/State Outreach

Organized Society for Neuroscience Tucson chapter “Brain week” activities (2011/12)

Newspaper articles for ‘Arizona Daily Star’ (2008, 2013)

Hosted 1-3 high school students per year in lab for science projects (since 2006)

### National/International Service

Contributed to summer school course “Neural Systems and Behavior”, Marine Biological Laboratory, Woods Hole, MA (2005 - 2007; 3 weeks each)

Panel member, organizing committee 2004 International Neuroethology Congress in Denmark

2 week guest-lecture series at Agricultural university of Wuhan,

Academic editor, PLoS ONE

Editorial board member, ‘Arthropod Structure & Development’

Reviewer for > 40 journals; reviewed >200 manuscripts since 2003

Ad hoc reviewer for 26 NSF grant proposals, 12 other grant proposals since 2003

### Departmental Committees

Organized Departmental Seminar "Neurobiology Discussion Group" 2000- 2010

Search committee member (Shankar Karunanithi) 2003

Responsibility for Insect Rearing Facility 435

### College Committees

Neuroscience GIDP Graduate Program Executive Committee member (2003 - 2015)

Neuroscience GIDP Graduate Program Progress & Advisory Committee (2003 - 2015)

Neuroscience/Cognitive Science Undergraduate Major Progress Committee (since 2012)

### University Committees

Entomology/Insect Science GIDP Graduate Program, Executive Committee since 2008

Entomol./Insect Sci. GIDP Grad. Prog., Admissions Committee (since 2008; chair 2014/15)

Center for Insect Science (CIS): organized colloquium series “Hexapodium” since 2001

CIS: member of the "Postgraduate Excellence in Research and Teaching" (PERT) selection committee since 2007

CIS: member of “Chapman Award Committee” and “Travel and Research Award” Committees since 2008

CIS: temporarily chair (2015/16)

## Publications

### Chapters in scholarly books and monographs

- (2008) **Gronenberg W**, Riveros AJ: Social brains and behavior - past and present. In: J. Gadau, J. Fewell (eds.) Organization of Insect Societies - From genomes to socio-complexity; Harvard University Press pp. 377-401
- (1992) Milde JJ, **Gronenberg W**, Strausfeld NJ: The head-neck system of the blowfly *Calliphora*: 2. Functional organization and comparison with the spinx moth *Manduca sexta*. In: A. Berthoz, W. Graf and P.P. Vidal (eds.) The Head-Neck Motor System. New York: Oxford Press, pp. 65- 74
- \* (1987) Erber J, Homberg U, **Gronenberg W** : Functional role of the mushroom bodies in insects. In: A.P.Gupta (ed.), Arthropod brain. Wiley, N.Y, pp 485-513

### Refereed journal articles, published or accepted in final form

- (2015) Amador-Vargas S, **Gronenberg W**, Wcislo W, Mueller U: Specialization and group size: brain and behavioral correlates of colony size in ants lacking morphological castes. Proc R Soc B DOI: 10.1098/rspb.2014.2502
- (2014) Terrapon N, Li C, Robertson H, Ji L, Meng X, et al. "Molecular traces of alternative social organization in a termite genome. Nat. Commun. 5 Art. # 3636 DOI 10.1038/ncomms4636
- (2014) Muscedere ML, **Gronenberg W**, Moreau CS, Traniello JFA: Investment in higher-order central processing regions is not constrained by brain size in social insects. Proc. R. Soc. B 281: 20140217. <http://dx.doi.org/10.1098/rspb.2014.0217>
- (2014) **Gronenberg W**, Raikhelkar A, Abshire E, Stevens J, Epstein E, Loyola K, Rauscher M, Buchmann S: Honey bees (*Apis mellifera*) learn to discriminate the smell of organic compounds from their respective deuterated isotopomers. Proc. R. Soc. B 20133089. <http://dx.doi.org/10.1098/rspb.2013.3089>
- (2013) Jones MB, Leonard AS, Papaj DR, **Gronenberg W**: Plasticity of the worker bumblebee brain in relation to age and rearing environment. Brain Behav. Evol. 82:250-261 (DOI: 10.1159/000355845)
- (2013) Milton Giraldo Y, Patel E, **Gronenberg W**, Traniello JFA: Division of labor and structural plasticity in a serotonergic extrinsic mushroom body neuron in the ant *Pheidole dentate*. Neurosci Letters 534: 107– 111
- (2013) Mota T, **Gronenberg W**, Giurfa M, Sandoz JC: Chromatic Processing in the Anterior Optic Tubercle of the Honey Bee Brain. J Neurosci. 33:4-16
- (2012) Riveros AJ, **Gronenberg W**: Decision-making and associative color learning in harnessed bumblebees (*Bombus impatiens*). Anim. Cogn. 15: DOI: 10.1007/s10071-012-0542-6
- (2011) Muscedere ML, Traniello JFA, **Gronenberg W**: Coming of age in an ant colony: cephalic muscle maturation accompanies behavioral development in *Pheidole dentata*. Naturwiss. 98:783–793
- (2011) Mota T, Yamagata N, Giurfa M, **Gronenberg W**, Jean-Christophe Sandoz J-C: Neural Organization and Visual Processing in the Anterior Optic Tubercle of the Honeybee Brain. J. Neurosci. 31: 11443-11456
- (2011) Smith CR, Smith CD, Robertson HM et al.: The draft genome of the red harvester ant, *Pogonomyrmex barbatus*: a model for reproductive division of labor and social complexity. Proc Natl Acad Sci 108:5667-73

- (2010) Riveros AJ, **Gronenberg W**: Brain Allometry and Neural Plasticity in the Bumblebee *Bombus occidentalis*. *Brain Behav Evol* 75:138-148
- (2010) Gronenberg W, Couvillon MJ Brain composition and olfactory learning in honey bees. *Neurobiol Learn Memory* 93:435-443
- (2010) Riveros AJ, **Gronenberg W**: Body Size, Foraging Specialization and Resource Exploitation in Honeybees. *Behav Ecol Sociobiol* 64:955-966
- (2010) Couvillon MJ, Gloria DeGrandi-Hoffman, **Gronenberg W**: Africanized honey bees are slower learners than their European counterparts. *Naturwiss.* 97:153-160
- (2009) Riveros AJ, **Gronenberg W** (2009) Learning from learning and memory in bumblebees. *Communic. Integr. Biol* 2: 1-4
- (2009) Riveros AJ, **Gronenberg W**: Olfactory learning and memory in the bumblebee *Bombus occidentalis*. *Naturwiss.* 96:851-856
- (2009) Paulk A, Dacks A, **Gronenberg W**: Color processing in the medulla of the bumblebee (Apidae: *Bombus impatiens*). *J Comp Neurol* 513:441-456
- (2009) Snell-Rood EC, Papaj DR, **Gronenberg W**: Brain Size: A Global or Induced Cost of Learning? *Brain, Behavior, Evolution* 73:111-128
- (2009) Paulk AC, Dacks AM, Phillips-Portillo J, Fellous J-M, **Gronenberg W**: "Visual processing in the central bee brain" *J. Neurosci.* 29:9987-9999
- (2008) **Gronenberg W**: Structure and function of ant (Hymenoptera: Formicidae) brains: Strength in numbers. *Myrmecol. News* 11:25-36
- (2008) Paulk AC, Phillips-Portillo J., Dacks AM, Fellous J-M, **Gronenberg W**: The processing of color, motion, and stimulus timing are anatomically segregated in the bumblebee brain. *J. Neurosci.* 28:6319-6332;
- (2008) Paulk AC, **Gronenberg W**: Higher order visual input to the mushroom bodies in the bee, *Bombus impatiens*. *Arthrop Struct Dev* 37: 443-458
- (2008) DeGrandi-Hoffman G, Lucas T, **Gronenberg W**, Caseman D: Brains and brain components in African and European Honey Bees (Hymenoptera: Apidae) - a volumetric comparison. *J Apicult Res* 40:141-146
- (2007) **Gronenberg W**., Ash LE, Tibbetts EA Correlation between facial pattern recognition and brain composition in paper wasps. *Brain Beh Evol.* 71:1-14
- (2005) Mares S, Ash L, **Gronenberg W**: Brain allometry in bumblebee and honey bee workers. *Brain Behav Evol* 66:50-61
- (2005) Ramón F, **Gronenberg W**: Electrical potentials indicate stimulus expectancy in the brains of ants and bees. *J. Cell. Molec. Neurobiol.* 25:313-327
- (2004) **Gronenberg W**, López-Riquelme GO: Multisensory convergence in the mushroom bodies of ants and bees. *Acta Biologica Hungarica* 55:31-37
- (2004) Ehmer B, **Gronenberg W**: Mushroom body volumes and visual interneurons in ants: comparison between sexes and castes. *J Comp Neurol* 469:198-213
- (2002) Julian GE, **Gronenberg W**: Smaller brains in queen ants. *Brain Behav Evol.* 60:152-164
- (2002) Ehmer B, **Gronenberg W**: Segregation of visual input to the mushroom bodies in the honey bee (*Apis mellifera*). *J. Comp. Neurol.* 451: 362-373
- (2002) Paul J, **Gronenberg W**: Control of fast and slow muscle fibers in ant mandible muscles. *J Insect Physiol* 48: 255-267
- (2001) **Gronenberg W**: Subdivisions of hymenopteran mushroom body calyces by their afferent supply. *J Comp Neurol* 436:474-489

- (1999) Paul J, **Gronenberg W**: Optimizing force and velocity: mandible muscle fiber attachments in ants. *J Exp Biol* 202:797-808
- (1999) Just S, **Gronenberg W**: The control of mandible movements in the ant *Odontomachus*. *J Insect Physiol* 45: 231-240
- (1999) **Gronenberg W**, Schmitz H: Afferent projections of infrared sensitive sensilla in the beetle *Melanophila acuminata* (Coleoptera: Buprestidae). *Cell Tissue Res* 297:311-318
- (1999) **Gronenberg W**: Modality-specific segregation of input to ant mushroom bodies. *Brain Behav Evol* 54:85-95
- (1999) **Gronenberg W**, Liebig J: Smaller brains and optic lobes in reproductive workers of the ant *Harpegnathos*. *Naturwiss* 86:343-345
- (1999) **Gronenberg W**, Hölldobler B: Morphologic representation of visual and antennal information in the ant brain. *J Comp Neurol* 412:229-240
- (1998) **Gronenberg W**, Hölldobler B, Alpert GD: Jaws that snap: the mandible mechanism of the ant *Myrmica*. *J Insect Physiol* 44:241-253
- (1998) **Gronenberg W**, Hölldobler B: Ants - living in a world of odor and tactile stimuli. *Neuroforum* 98:242-251
- (1998) **Gronenberg W**, Brandao CRF, Dietz BH, Just S: Trap-jaws revisited: the mandible mechanism of the ant *Acanthognathus*. *Physiol Entomol* 23: 227-240
- (1997) Ehmer B, **Gronenberg W**: Antennal muscles and fast antennal movements in ants. *J Comp Physiol B* 167:287-296
- (1997) **Gronenberg W**, Paul J, Just S, Hölldobler B: Mandible muscle fibers in ants: fast or powerful? **Cell Tissue Res** 289:347-361
- (1997) Ehmer B, **Gronenberg W**: Proprioceptors and fast antennal reflexes in the ant *Odontomachus* (Formicidae, Ponerinae). *Cell Tissue Res* 290:153-165
- (1996) **Gronenberg W**, Heeren S, Hölldobler B: Age-dependent and task-related morphological changes in the brain and the mushroom bodies of the ant, *Camponotus floridanus*. *J Exp Biol* 119:2011-2019
- (1996) **Gronenberg W**: The trap-jaw mechanism in the dacetine ants *Daceton armigerum* and *Strumigenys* sp.. *J Exp Biol* 119:2012-2033
- (1996) **Gronenberg W**, Ehmer B: The mandible mechanism of the ant genus *Anochetus* (Hymenoptera, Formicidae) and the possible evolution of trap-jaws. *Zoology* 99:183-192
- (1996) **Gronenberg W**: Fast Actions in Small Animals: Springs and Click Mechanisms. *J Comp Physiol A* 178:727-734
- (1996) **Gronenberg W**: Neuroethology of Ants. *Naturwiss* 86:15-27
- (1995) Gilbert C, **Gronenberg W**, Strausfeld NJ: Oculomotor control in calliphorid flies: head movements during activation and inhibition of neck motor neurons corroborate neuroanatomical predictions. *J Comp Neurol* 361:285-297
- (1995) **Gronenberg W**, Milde JJ, Strausfeld NJ: Oculomotor control in calliphorid flies: organization of descending neurons to neck motor neurons responding to visual stimuli. *J Comp Neurol* 361:267-284
- (1995) **Gronenberg W**, Ehmer B: Tubular muscle fibers in ants and other insects. *Zoology* 99, 68-80
- (1995) **Gronenberg W**: The fast mandible strike in the trap-jaw ant *Odontomachus*: motor control. *J Comp Physiol A* 176:399-408

- (1995) **Gronenberg W**: The fast mandible strike in the trap-jaw ant *Odontomachus*: temporal properties and morphological characteristics. *J Comp Physiol A* 176:391-398
- (1994) Hölldobler B, Braun U, **Gronenberg W**, Kirchner WH, Peeters C: Trail communication in the ant *Megaponera foetens* (Fabr.) (Formicidae, Ponerinae). *J Insect Physiol* 40:585-593
- (1994) **Gronenberg W**, Tautz J: The sensory basis for the trap-jaw mechanism in the ant *Odontomachus bauri*. *J Comp Physiol* 174:49-60
- (1993) **Gronenberg W**, Peeters C: Central projections of the sensory hairs on the gemma of the ant *Diacamma*: substrate for behavioral modulation? *Cell Tissue Res* 273:401-415
- (1993) **Gronenberg W**, Tautz J, Hölldobler B: Fast trap jaws and giant neurons in the ant *Odontomachus*. *Science* 262:561-563
- (1992) **Gronenberg W**, Strausfeld NJ: Premotor descending neurons responding selectively to local visual stimuli in flies. *J Comp Neurol* 316:87-103
- (1991) **Gronenberg W**, Strausfeld NJ: Descending pathways connecting the male-specific visual system of flies to the neck and flight motor. *J Comp Physiol A* 169:413-426
- (1990) Strausfeld NJ, **Gronenberg W**: Descending neurons supplying the neck and flight motor of Diptera: organization and neuroanatomical relationships with visual pathways. *J Comp Neurol* 302:954-972
- (1990) **Gronenberg W**, Strausfeld NJ: Descending neurons supplying the neck and flight motor of Diptera: Physiological and anatomical characteristics. *J Comp Neurol* 302:973-991
- (1990) **Gronenberg W**: The organization of plurisegmental mechanosensitive interneurons in the central nervous system of the wandering spider *Cupiennius salei*. *Cell a Tissue Res* 260:49-61
- (1989) **Gronenberg W**: Anatomical and physiological observations on the organization of mechanoreceptors and local interneurons in the central nervous system of the wandering spider *Cupiennius salei*. *Cell Tissue Res* 258:163-175
- \*(1987) **Gronenberg W**: Anatomical and physiological properties of feedback neurons of the mushroom bodies in the bee brain. *Exp Biol* 46:115-125
- \*(1986) **Gronenberg W**: Physiological and anatomical properties of optical input fibers to the mushroom body in the bee brain. *J Insect Physiol* 32:695-704

### **Conferences/Scholarly Presentations**

#### Colloquia (invited presentations)

- (2011) Gronenberg, W: "Social Insects - Social Brains?" Invited lecture, University of Konstanz, Germany, Dept. of Biology
- (2011) Gronenberg, W: "Social insects - is anything special about their brains?" Invited lecture, Wake Forest University, Biology Department
- (2011) Gronenberg, W: "Brains in Social Insects" Invited lecture, Entomology Colloquium, University of Illinois, Urbana-Champaign
- (2006) "Santschi Lecture", Biology Dept., University of Zurich;
- (2006) "Mushroom bodies and Social Insects" Invited presentation, School of Life

Sciences, ASU

- (2004) "Social Insects - Large Societies, Small Brains." Zoological Colloquium, University of Frankfurt, Germany
- (2003)- "Sensory convergence in hymenopteran mushroom bodies" Univ. of Würzburg, Germany

Seminars (local; invited)

- (2013) Neuroscience data Blitz "An odor spectroscopy in the insect 'nose'?"
- (2012) Entomology/Insect Science Seminar, U of A: 'Quantum biology' in Insect Olfaction?
- (2010) GIDP Neuroscience data Blitz Sept. 2010: "Color learning and bee brains"
- (2010) Entomology/Insect Science Seminar, UofA,: "Bees, Brains and Behavior" Sept. 2010
- (2009) Cognitive Science Colloquium, UofA,: "Social Insects – social brains?"
- (2009) GIDP Neuroscience data Blitz: "Small brains, sophisticated neurons – brain and behavior in bees"
- (2008) GIDP Neuroscience data Blitz: "Mushroom bodies: insect learning and brain plasticity"
- (2008) GIDP Neuroscience retreat "Visual processing: from behavior to interneurons and temporal codes"
- (2007) GIDP Neuroscience data Blitz: "From cabbage learning to mushroom (body) neurons: insect behavioral and brain plasticity"
- (2005) Motor Control Group 'Doings' "Motion, color and the bee brain"
- (2005) Entomology Seminar "Bees and ants - sophisticated behavior and small brains"
- (2003) Ecology/Evolutionary Biology Seminar "From nerve cells to behavior: Arthropod Neuroethology"
- (2003) GIDP Neuroscience Data Blitz "Visual and olfactory Processing in Insect mushroom bodies"
- (2002) Motor Control 'Doings'
- (2002) Motor Control, 'motor bytes'

Symposia (invited contributions)

- (2009) "Central brain regions and the control of advanced behavior in bees". Arizona State University & Barrow Neurological Institute Neuroscience Symposium
- (2004) "Segregation of sensory input to the mushroom bodies of bees and ants." Presentation at "3D Brain Imaging Symposium"; sponsored by German Ministry of Technology (Berlin)
- (2004) "Mushroom bodies in Hymenoptera - a comparative view". Symposium "The Insect Brain as a model for Basic and Intermediate Levels of Cognitive Functions" European Science Foundation; Seix, France
- (2004) "What is special about the brains of social insect?" Santa Fe Institute, social insects workgroup meeting in Margetshöchheim, Germany (organizer: R. Page, J. Gadau)
- (2001) Work group at Santa Fe Institute for the Study of Complex Systems: "Evolutionary Dynamics of Social Organization in Insect Societies"; invited contribution

Conferences (submitted contributions)

- (2011) Riveros AJ, **Gronenberg W**: Learning and memory, experience, and brain plasticity in bumblebees. Gordon Conference, Neuro-ecology; Stonehill College, Easton, MA
- (2011) Mota T, **Gronenberg W**, Sandoz J-C, Giurfa M: "Neural Organization and Visual Processing in the Anterior Optic Tubercle of the Honeybee Brain". Poster at 34th European Conference on Visual Perception, Toulouse, France, September 2011
- (2010) Riveros AJ, **Gronenberg W**: "Foraging task specialization and sensory allometry in 'normal', feral, and artificially selected honeybees". Intern. Union Study Social Insects, Copenhagen, Denmark
- (2010) Riveros AJ, **Gronenberg W**: "Color conditioning of the proboscis extension response in bumblebees" Intern. Soc. Neuroethology, Salamanca, Spain
- (2010) Paulk AC, **Gronenberg W**: Color vision from the periphery to the central bumblebee brain: what about timing? Intern. Soc. Neuroethology, Salamanca, Spain
- (2010) Mota T, **Gronenberg W**, Yamagata N, Giurfa M, Sandoz J-C: "Anatomical and functional optical imaging study of visual processing in the anterior optic tubercle of honeybees" Intern. Soc. Neuroethology, Salamanca, Spain
- (2009) **Gronenberg W**: " Central processing of visual information in Hymenoptera". Janelia Farm meeting "Visual Processing in Insects: from Anatomy to Behavior "
- (2008) **Gronenberg W**, Paulk A : "Visual information processing in the bee brain." Soc. Neuroscience, Washington
- (2008) Paulk AC, Phillips-Portillo J., Dacks AM, Fellous J-M, **Gronenberg W**: "Anatomical segregation of color, motion and timing in the bee brain" Invertebrate Vision meeting, Lund, Sweden
- (2007) Schmitz H, Schmitz A, Kreiss E, Gebhardt M, **Gronenberg W**: Navigation to Forest Fires by Smoke and Infrared Reception: the Specialized Sensory Systems of "Fire-Loving" Beetles. Institute of Navigation 63 Ann. Meeting 2007, Cambridge, MA
- (2007) Paulk A, **Gronenberg W**: Higher order visual supply to a learning and memory center, the mushroom body. 8th Intern. Neuroethol. meeting, Vancouver
- (2007) Riveros A, **Gronenberg W**: Learning, memory retention and division of labor in the bumblebee *Bombus occidentalis* (Hymenoptera: Apidae)." 8th Intern. Neuroethol. Meeting, Vancouver
- (2006) Riveros AJ, **Gronenberg W**: Learning and memory retention abilities and division of labor in the bumblebee *Bombus occidentalis* (Hymenoptera: Apidae). 43. ann. meeting Animal Behavior Society
- (2006) Riveros AJ, **Gronenberg W**: Behavioral maturation and response to olfactory conditioning in the bumblebee *Bombus occidentalis* (Hymenoptera: Apidae). Intern. Union f. Study of Social Insects; IUSI Washington 2006
- (2004) **Gronenberg W**: Mandible Movements: Biting and Prey Capture. International Congress of Entomology; Brisbane, Australia
- (2004) **Gronenberg W**: Sensory Integration in Higher Brain Centers of Insects. International Congress of Entomology; Brisbane, Australia
- (2004) **Gronenberg W**, López Riquelme GO, Ehmer B: Mushroom Bodies in



- Hymenoptera - Centers of Multisensory Convergence. International Congress of Neuroethology, Nyborg, Denmark (August 9-13, 2004)
- (2003) **Gronenberg W**, Ehmer B, Julian G: Multisensory convergence in the mushroom bodies of ants and bees. Meeting of Internat. Soc. Invertebr. Neurobiol. in Tihany, Hungary
- (2003) **Gronenberg W**, Ehmer B: Sensory convergence in mushroom bodies of bees and ants. Soc. Neurosci. Abstr., Vol. 29, 595.1
- (2002) Julian G, **Gronenberg W**: Morphological Plasticity in Ant brains. Soc. Neurosci. Abstr., Vol. 28, 877.6
- (2002) Ehmer B, **Gronenberg W**: Sex and Caste Specific Visual input to Hymenopteran mushroom bodies. Soc. Neurosci. Abstr., Vol. 28, 877.7
- (2002) **Gronenberg W**: Ant brains: visual information and plasticity. Organized symposium "Information processing in the brain of social insects" , meeting of the International Union for the study of social insects (USSI) in Sapporo, Japan
- (2001) Julian G, Ehmer B, **Gronenberg W**: Interspecific differences and plasticity of hymenopteran mushroom bodies. Soc. Neurosci. Abstr., Vol. 27, 308.13
- (2001) Julian G, **Gronenberg W** (2001): Brain plasticity and behavioral transitions in ants. 6th Intern Congr Neuroethol Bonn: 238
- (2001) **Gronenberg W**: Visual behavior & brain anatomy of ants. International Conference on Invertebrate Vision. Lund

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List of collaborators (last five years)

Amador-Vargas Sabrina (U. of Texas at Austin)

Bingman, Verner (Bowling Green State U., Ohio)

Buchman, Stephen (Entomology; U of A)

Couvillon, Margaret (University of Sussex, UK)

Davidowitz, Goggy (U of A)

DeGrandi-Hoffman, Gloria (Carl Hayden Bee Research Center, Tucson, Arizona)

Gadau Jürgen (School of Life Sciences, ASU, Phoenix, Arizona)

Giurfa, Martin (University of Toulouse, France)

Hebets Eileen (U. of Nebraska)

Jones, Beryl (U. of Illinois at Urbana-Champaign)

Leonard, Annie (Biology Dept., University of Nevada, Reno)

Liebig, Jürgen (School of Life Sciences, ASU, Phoenix, Arizona)

Milton Giraldo (Biology Dept., Boston University)

Moreau, Corrie (Field Museum and University of Chicago)

Mota, Theo (Federal University of Minas Gerais, Belo Horizonte, Brazil)

Mueller, Ulrich (U. of Texas at Austin)

Muscudere, Mario (HHMI Postdoctoral Faculty Fellow, Boston U.)

Papaj, Daniel (EEB Dept., U of A)

Rauscher Michael (Neuroscience Dept., U of A)

Sandoz, Jean-Christophe (Universite Paris-Sud)

Traniello, James (Biology Dept., Boston University)

Wcislo, William (Smithsonian Tropical Research Institute, Panama)

Wiegmann, Daniel (Bowling Green State U., Ohio)  
 Yamagata, Nobuhiro (Neuroscience, Tohoku University, Japan)

Visiting scientists hosted in lab

Stephen Trumbo, PhD; University of Connecticut; March - April 2015  
 Andre Riveros, PhD; STRI Panama; Sept.-Oct. 2012  
 July - August 2011  
 Katherine Robertson, Ph.D., Westminster College; June-July 2013  
 Ajay Narendra , PhD; Australian National University; Oct.-Nov. 2011  
 Richard Hofstetter, PhD; NAU Flagstaff; Oct. 2009  
 Helmut Schmitz, PhD; University of Bonn (Sept. 2007)

Postdoctoral research trainees supervised

Andre Riveros, PhD (2010)  
 Margareth Couvillon, PhD; PERT postdoc (2007-2010)  
 Elizabeth Tibbetts, PhD; PERT postdoctoral trainee (2004- 2005)  
 Birgit Ehmer, PhD; NSF research associate; 2001 - 2003  
 Glennis Julian, PhD; NRSF fellow; 2001 - 2003

Graduate students - thesis advisor

<b>Year</b>	<b>Student</b>	<b>Program</b>
2013 - current	Nicole Fischer	EEB
2010 - current	Vishwas Gowda	EIS
2013 - current	Rebekah Keating	NRSC
2012- current	Neha Bandekar	MCB
2011 - '13	Tuan Cao	EEB
2005 - '10	Andre Riveros	INSC
2003 - '08	Angelique Paulk	INSC
2007 - '10	Jane Strohm	
2002 - '05	Janice Pereira	INSC

Graduate students - lab rotations

<b>Year</b>	<b>Student</b>	<b>Program</b>
2008 - '10	Ysabel Giraldo	Boston U.
2012	Darcy Gordon	Boston U.
2012	Frane Kamhi	Boston U.
2010	Mario Muscedere	Boston U.
2011	Lisa Wang	EEB
2013	Rebekah Keating	NRSC 700
2013	Michael Rauscher	EIS 920
2011	Avery Russell	EIS 900
2011	Elliot Immler	NRSC 700
2015	Judith Tello	NRSC
2014	David Duron	UROG-PREP

2013	Cao, Tuan	ECOL 920
2013	Bandekar, Neha	MCB 910
2011	Ming Huang	ENTO
2012	Gabriella Ramirez	U. of Buenos Aires
2011	Sabrina Amador Vargas	UT Austin
2011	Megan Torvund	NRSC 700
2010	Jane Strohm	NRSC910
2009	Theo Mota	U. Toulouse, France
2008	Nhi Duong	INSC 900
2006	Nadia Corral-Frias	NRSC 700
2005	Janice Pereira	
2001	Suzy Kim	NRSC 700
2001	German Octavio López Riquelme	UNAM Mexico

Graduate students - committee member

<b>Year</b>	<b>Student</b>	<b>Program</b>
2010-2014	Ysabel Giraldo	Boston U.
2012	Darcy Gordon	Boston U.
2012	Franne Kamhi	Boston U.
2010-2013	Mario Muscedere	Boston U.
2011-2014	Lisa Wang	EEB
2015	Michael Rauscher	NRSC
2011 - '15	Avery Russell	EIS
2010 - '14	Chan Lin	EIS
2010 - '15	Elliot Immler	NRSC
2011 - '15	Judith Tello	NRSC
2012 - '15	Gabriella Wolff	NRSC
2010- '13	Lilian Patron	NRSC
2010 - '13	Nhi Duong,	INSC
2008 - '12	David Andrew	NRSC
2006 - '12	Ming Huang	ENTO
2009 - '11	Bruce Eckholm	ENTO
2011	Jaika Ojha	ENTO
2006 - '11	Josh Martin	NRSC
2007 - '11	Aaron Beyerlein	Insect Sci
2008 - '10	Tim Melano	ECE
2008 - '10	Milos Babic	NRSC
2006 - '09	Jon Dyhr	NRSC
2008	Jason Worrell	PHYS
2001- '07	Suzy Kim	NRSC
2002 - '07	Anne-Marie Czicko	NRSC

2006- '07	Christopher Theal	NRSC
2005- '07	David Lent	NRSC
2002 - '07	Andrew Dacks	INSC
2002 - '07	Rebecca Spokony	INSC
2006 - '07	Tiffany Lucas	ENTO
2003- '07	Emilie Snell-Rood	EEB
2003- '07	Kristen Potter	EEB
2003 - '06	Jeff Hudson	NRSC
2001 - '06	Taryn Jackson	NRSC
2002 - '03	Barrett Klein	EEB
2001 - '03	Eileen Hebets	EEB
2000 - '02	Hyung-Wook Kwon	ENTO
2001 - '07	German Octavio López Riquelme	UNAM Mexico