

# CURRICULUM VITAE

## Yehuda Ben-Shahar

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### PERSONAL:

Born in Haifa, Israel, July 23<sup>rd</sup> 1969; married, two children.

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### APPOINTMENTS:

**July 2008** Assistant Professor, Department of Biology, Washington University in St. Louis.

**2003 - 2008** Postdoctoral Research Associate, Neuroscience, HHMI, University of Iowa, College of Medicine.

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### POSTDOCTORAL RESEARCH:

The neurobiology of Degenerin/ENaC cation channels. Mentor: MJ Welsh (HHMI, Iowa).

### Ph.D. THESIS:

cGMP-dependent protein kinase, behavioral plasticity, and foraging behavior in honey bees and fruit flies. Mentors: GE Robinson (Illinois) AND MB Sokolowski (Toronto, Canada)

### M.S. THESIS:

Performance on a reversal-learning test is associated with division of labor in the honey bee, *Apis mellifera*. Mentor: GE Robinson (Illinois).

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### EDUCATION:

**2002** Ph.D., Entomology, University of Illinois at Urbana-Champaign.

**1999** M.S., Entomology, University of Illinois at Urbana-Champaign.

**1996** B.Sc., Life Sciences, Tel-Aviv University, Tel Aviv, Israel.

### AWARDS and HONORS:

**2006** Univ. of Iowa, College of Medicine Research Week, Best Poster by a Postdoctoral Fellow/Resident Award.

**2006** Univ. of Iowa Department of Medicine Research Day. Best Poster by a Post-Doctoral Trainee Award.

**2005** Univ. of Iowa, College of Medicine Research Week, Best Poster by a Postdoctoral Fellow/Resident Award.

**2004** International Society for Neuroethology, Young Investigator Award.

**2003** Howard Hughes Medical Institute, Postdoctoral Fellowship.

**2001** Tuition waiver, Cold Spring Harbor Laboratory Summer Courses.

**2000** Travel aid, School of Integrative Biology, Univ. of Illinois.

- 2000** Program in Ecology and Evolutionary Biology, Univ. of Illinois, Travel grant.
- 2000** President's prize, First runner-up, Student oral presentations, Entomological Society of America - Annual Meeting.
- 1997** Francis M. Clark Research Travel Award. Univ. of Illinois, School of Life Sciences.

#### GRANTS RECEIVED:

- 07/01/09-06/30/12** Ben-Shahar (PI) NIDCD (NIH): Chemosensory roles for epithelial sodium channels. **\$300,000 (Direct)**
- 02/01/09-01/31/12** Ben-Shahar (PI) Children's Discovery Institute: The Role of Divalent Metal Cation Homeostasis in Obesity. **\$300,000 (total)**
- 7/01/08-6/30/09** Ben-Shahar (PI) McDonnell Center for Cellular and Molecular Neuroscience Small Grant: Chemosensory roles for Deg/ENaC ion channels. **\$40,000 (total)**

#### SCIENTIFIC PUBLICATIONS:

1. **Ben-Shahar Y**, Thompson CK, Hartz SM, Smith BH and Robinson GE (2000) Differences in performance on a reversal learning test and division of labor in honey bee colonies. *Animal Cognition*, 3:119-125.
2. Hartz SM, **Ben-Shahar Y** and Tyler M. (2001) Logistic growth curve analysis in associative learning data. *Animal Cognition*, 4:185-189.
3. **Ben-Shahar Y** and Robinson GE. (2001) Satiation differentially affects performance in a learning assay by nurse and forager honey bees. *Journal of Comparative Physiology [A]*, 187:891-899.
5. **Ben-Shahar Y**, Robichon A, Sokolowski MB and Robinson GE. (2002) Influence of gene action across different time scales on behavior. *Science*, 296:741-744. ("Must read", Faculty of 1000; reported in the NY Times; Washington Post; Ha'Aretz; German Public Radio; CBC Radio, Canada; South African Public Radio; Genome News Network; Mutant of the Month, *Nature Genetics*, December, 2006)
6. Robinson GE and **Ben-Shahar Y**. (2002) Social behavior and comparative genomics: new genes or new gene regulation? *Genes Brain and Behavior*, 1:197-203.
7. **Ben-Shahar Y**, Leung H-T, Pak WL, Sokolowski MB and Robinson GE. (2002) division of labor in honey bee colonies is influenced by cGMP-dependent changes in phototaxis. *Journal of Experimental Biology*, 206:2507-2515.
8. **Ben-Shahar Y**, Dudek N and Robinson GE. (2004) *malvolio*, manganese, and division of labor in honey bee colonies: deconstructing a complex phenotype. *Journal of Experimental Biology*, 207: 3281-3288. (Cover)
9. Fitzpatrick MJ, **Ben-Shahar Y**, Smid HM, Vet LEM, Robinson GE and Sokolowski MB. (2005) Candidate genes for behavioural ecology. *Trends in Ecology and Evolution* 20:96-104.

10. **Ben-Shahar Y** (2005) The *foraging* gene, behavioral plasticity, and honey bee division of labor. ***Journal of Comparative Physiology [A]*** 191:987-994.
11. Whitfield CW, **Ben-Shahar Y**, Brillet C, Leoncini I, LeConte Y, Rodriguez-Zas S and Robinson GE. (2006) Genomic dissection of behavioral maturation in the honey bee. ***Proceedings of the National Academy of Sciences*** 103: 16068–16075.
12. Williams KD, Busto M, Suster ML, So AK, **Ben-Shahar Y**, Leever SJ, and Sokolowski MB. (2006) Natural variation in *Drosophila melanogaster* diapause due to the insulin-regulated PI-3 kinase. ***Proceedings of the National Academy of Sciences*** 103:15911–15915.
13. **Ben-Shahar Y**, Nannapaneni K, Casavant TL, Scheetz TE and Welsh MJ. (2007) Eukaryotic operon-like transcription of functionally related genes in *Drosophila*. ***Proceedings of the National Academy of Sciences*** 104: 222–227. (“Must read”, Faculty of 1000)
14. Sun Y, Liu L, **Ben-Shahar Y**, Jacobs JS, Eberl DF and Welsh MJ. (2009) TRP channels distinguish gravity sensing from hearing in Johnston’s organ. ***Proceedings of the National Academy of Sciences*** 106:13606-13611
15. Shah AS\*, **Ben-Shahar Y\***, Moninger TO, Kline JN and Welsh MJ. (2009) Motile cilia of human airway epithelia are chemosensory. ***Science*** 325:1131-1134 (\*equal contribution) (**Cover**)

**SERVICE:**

**Peer reviewed for:**

**Journals**

*Insect Biochemistry and Molecular Biology*

*European Journal of Neuroscience*

*Journal of Comparative Physiology [A]*

*Brain, Behavior and Evolution*

*Neuroscience Research*

*Journal of Experimental Biology*

*Journal of Comparative Neurology*

*Journal of Biological rhythms*

*PLOS Biology*

*PLOS One*

*Journal of Insect Physiology*

*PLOS Genetics*

**Funding agencies**

The Austrian Academy of Sciences – basic biology grants, ad hoc reviewer

The Dutch Earth & Life Sciences Council, ad hoc reviewer

National Science Foundation (USA) – ad hoc reviewer (Behavioral Systems)

National Science Foundation (USA) – 2009 Doctoral Dissertation Improvement Grant - Review Panel member (Behavioral Systems)

## **INVITED PRESENTATIONS:**

- 2009** Seminar, Department of Biology, Saint Louis University
- 2008** Seminar, Department of Anatomy and Neurobiology, Washington University School of Medicine
- 2008** Seminar, Department of Developmental Biology, Washington University School of Medicine
- 2008** Seminar, Department of Genetics, Washington University School of Medicine
- 2008** Seminar, Department of Anatomy and Neurobiology, Washington University School of Medicine
- 2008** Seminar, Pain center, Department of Anesthesiology, Washington University School of Medicine
- 2007** Seminar, Center for Research in Neuroscience, McGill University
- 2007** Seminar, Janelia Farm Research Campus, HHMI
- 2007** Seminar, Department of Biology, University of Texas at San Antonio
- 2007** Seminar, Department of Entomology, University of California-Riverside.
- 2007** Seminar, Department of Biology, Boston University.
- 2007** Seminar, Department of Biology, University of Kentucky.
- 2007** Seminar, Physiology Department, Faculty of Medicine, Hebrew University, Jerusalem, Israel.
- 2007** Seminar, Section of Integrative Biology, University of Texas at Austin
- 2007** Seminar, Department of Biology, Washington University, St. Louis.
- 2007** Seminar, Department of Biology and the Biotechnology Program, University of Toronto at Mississauga, ON, Canada.
- 2007** Seminar, Department of Molecular, Cellular, and Developmental Biology, University of Michigan.
- 2006** Seminar, Interdisciplinary Neuroscience Program, University of Missouri-Columbia.
- 2006** Seminar, Department of Biochemistry, University of Iowa.
- 2004** Young Investigator Award Inaugural Talk, 7th International Congress of Neuroethology, Nyborg, Denmark.
- 2004** Invited Symposium, Non-Drosophilid Genetics Workshop, 45<sup>th</sup> Annual *Drosophila* Research Conference, Washington DC.
- 2003** Seminar, Department of Biology, University of Toronto at Mississauga, ON, Canada.
- 2003** Invited Symposium, Society for Integrative and Comparative Biology, Toronto, ON, Canada (with M.B. Sokolowski and G.E. Robinson).
- 2002** Invited Symposium, International Union for the Study of Social Insects (IUSSI) meeting, Japan (with G.E. Robinson).
- 2001** Invited talk, 42<sup>nd</sup> Annual *Drosophila* Research Conference, Hymenoptera Genetics Satellite Meeting, Washington DC.
- 2002** Seminar, Department of Entomology, University of Illinois.

- 2000** Invited Symposium, XXI International Congress of Entomology, Iguassu Falls, Brazil.
- 2000** Annual retreat seminar, Department of Cellular and Structural Biology, University of Illinois.
- 1999** Seminar, Department of Entomology, University of Illinois.

**CONTRIBUTED PRESENTATIONS:**

- 2008** Poster, 48<sup>th</sup> Annual ASCB Annual Meeting, San-Francisco, CA. (With Alok Shah).
- 2008** Poster, 49<sup>th</sup> Annual *Drosophila* Research Conference, San-Diego, CA.
- 2008** Poster, Univ. of Iowa, Dep. of Medicine research day.
- 2006** Poster, 36<sup>th</sup> Society for Neuroscience Meeting, Atlanta, GA.
- 2006** Poster, Univ. of Iowa, College of Medicine Research Week.
- 2006** Poster, Univ. of Iowa, Dep. of Medicine research day.
- 2006** Poster, 2<sup>nd</sup> Genes and Behavior Gordon Conference, Ventura, CA.
- 2005** Poster, Univ. of Iowa, College of Medicine Research Week
- 2005** Poster, 46<sup>th</sup> Annual *Drosophila* Research Conference, San-Diego, CA.
- 2004** Poster, 34<sup>th</sup> Society for Neuroscience Meeting, San-Diego, CA.
- 2003** Poster, 44<sup>th</sup> Annual *Drosophila* Research Conference, Chicago, IL.
- 2002** Poster, 32<sup>nd</sup> Society for Neuroscience Meeting, Orlando, FL.
- 2001** Poster, 31<sup>st</sup> Society for Neuroscience Meeting, San-Diego, CA.
- 2000** Talk, 2nd IUSSI North American Section Meeting, Huntsville, AR.
- 2000** Talk, Joint annual meeting of the Entomological Society of America and Entomological Society of Canada. Montreal, Quebec, Canada.
- 1999** Poster, 29th Society for Neuroscience Meeting, Miami, FL.
- 1998** Poster, International Society for Neuroethology, 5th International Congress, San Diego, CA.
- 1997** Talk, IUSSI North American Section Meeting, Nederland, CO.
- 1997** Talk, Midwest Regional Animal Behavior Society Conference, Columbus, OH.

**PROFESSIONAL EXPERIENCE:**

***Professional Courses***

- 2001** Neurobiology of *Drosophila* summer course, Cold Spring Harbor Laboratory, NY.
- 1999** Society for Neuroscience, Microarray Short Course, Miami, FL.

***Teaching***

**Washington University**

- 2009 FL** Guest lecturer, BME575 - Molecular Basis Of Bioelectrical Excitation
- 2009 FL** Co-Instructor, BIO 5571 - Molecular and Cellular Neuroscience
- 2009 FL** Instructor, BIO 3422 – Genes, Brains, and Behavior
- 2009 SP** Co-Instructor, BIO 5011 - Ethics and Research Science
- 2009 SP** Small Group Discussion leader, BIO 5491 - Advanced Genetics

**Prior Experiences**

- 2002** Teaching Assistant, Neurobiology of *Drosophila* Summer Course, Cold Spring Harbor Laboratory.
- 1998** Teaching Assistant for NCAA Athletes, General, Univ. of Illinois.
- 1997** Teaching Assistant, Introductory Biology (Evolution and Genetics), Univ. of Illinois.
- 1997** Teaching Assistant, Introductory Biology (Evolution and Genetics) for non-majors, Univ. of Illinois.

**Public outreach**

- 1997-1999** Honey bee biology, Annual Insect Expo, Univ. of Illinois.
- 1996-2001** "Bees and Beekeeping Summer Short Course," Univ. of Illinois (course organizer, 2001).

**PROFESSIONAL SOCIETIES:**

AAAS

The *Sigma Xi* Scientific Research Society

International Society for Neuroethology

Society for Neuroscience

Genetics Society of America

International Union for the Study of Social Insects