

CURRICULUM VITAE

Peter Robin Hiesinger

PERSONAL

Name: Peter Robin Hiesinger
Date of Birth: July 8, 1972
Place of Birth: Germany

PRESENT POSITION

Assistant Professor (tenure track)
Department of Physiology (primary appointment)
Green Center Division for Systems Biology (secondary appointment)
Eugene McDermott Scholar in Biomedical Research
UT Southwestern Medical Center at Dallas
5323 Harry Hines Blvd, MC9040, Dallas, TX, USA

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EDUCATION AND TRAINING

1994	B.Sc. (Vordiplom), Biology, Albert-Ludwig-University of Freiburg, Germany
1997	M.Sc., Neurobiology, Albert-Ludwig-University of Freiburg, Germany
2000	Ph.D., Neurogenetics, Albert-Ludwigs-University of Freiburg, Germany
2000-2002	EMBO Postdoctoral Fellow, Baylor College of Medicine, Houston, TX
2002-2006	HHMI Research Associate, Baylor College of Medicine, Houston, TX
2006-present	Assistant Professor (tenure-track) Department of Physiology and Green Center for Systems Biology

EXTRACURRICULAR TRAINING / EXPERIENCE

1991-1992	Military Service, Wuppertal and Düsseldorf, Germany
1993-1995	Student Member of the Faculty Executive Committee (Fakultätsrat) of the Department of Biology, University of Freiburg
1996-1997	Student Member of the Diploma Examination Committee (Diplomprüfungsausschuss) of the Department of Biology, University of Freiburg
1995-1997	Assistant (wissenschaftliche Hilfskraft) at the Computing Center of the University of Freiburg (Administration of www.uni-freiburg.de)
1995-1997	Assistant (wissenschaftliche Hilfskraft) at the Library of the University of Freiburg (Programming for the electronic journal/database www.flybrain.org)
1996-1997	Co-Founder of the internet company Aktiv!NETZ GbR
1997-1998	Co-Founder and acting partner of Aktiv!NETZ Internet Presentations GmbH

AWARDS / HONORS / MEMBERSHIPS

Awards/Honors

1999	Boehringer Ingelheim Grant for a 3 months research project in Halifax, Canada
2000-2002	EMBO Long-Term Fellowship
2006	Endowed Scholar New Faculty Award, UT Southwestern Medical Center
2007	American Federation for Aging Research Junior Faculty Research Grant Award
2007	Whitehall Foundation Young Investigator Grant Award
2008	March of Dimes Basil O'Connor Starter Scholar Award 2008

Memberships

Society for Neuroscience, Genetics Society of America

REVIEW PANELS AND EDITORIAL ACTIVITIES

- 2011 Appointed to the Review Panel for Organization in the Neural Systems Cluster, *National Science Foundation (NSF)*
- 2007-present Ad hoc grant reviewer for
National Institute of Health (NIH)
National Science Foundation, (NSF)
Telethon Foundation, Italy
Medical Research Council, UK
Association for International Cancer Research, UK
Agence Nationale de la Recherche, France
- 2007-present Reviewer for: *Cell, Science, Neuron, PNAS, Journal of Cell Biology, Development, Human Molecular Genetics, PLoS Biology, PLoS One Developmental Biology, Journal of Histochem. and Cytochem., Journal of Physiology, Evolution & Development*

TEACHING AND SERVICE ACTIVITIES AT UT SOUTHWESTERN

Teaching

- 2006-present Core Course Literature Critique Discussion Group Leader
"Cells & Organelle Thread" (annual; also Coordinator, see under Service)
- 2007-present Introduction to Human Physiology (annual; three 2.5hr lectures)
- 2007-present Neurotransmission in *Drosophila* (annual; one 2hr lecture in 'Neurotransmission' Course)
- 2007-2009 Neuroscience Graduate Program Journal Club "Cell Biology & Synaptic Function" (annual)
- 2009-present Population Dynamics and Evolutionary Game Theory, Systems Biology (annual; three 2hr lectures)
- 2010-present Core Course Lecture 'G7 – Contemporary Genetic Analyses of Flies' (annual; one 1hr lecture; plus Discussion Session and Exam)
- 2010-present Lectures on Writing Research Proposals and Neurogenetics as part of the 'Fundamentals of Neuroscience' Course (annual; two 2hr lectures; also Director, see under Service)
- 2011-present Mechanisms of Disease Graduate Program Lecture on Membrane Biophysics (annual; one 2hr lecture)

Postdoctoral Trainees and Instructors

- 2008-present Chih-Chiang Chan, Ph.D., Postdoctoral Trainee
Travel Award, 1st Asia-Pacific Drosophila Research Conference 2011
- 2009-2011 Adam Haberman, Ph.D., Assistant Instructor
- 2009-present Dong Wang, Ph.D., Instructor

Graduate Students (Ph.D.)

- 2008-2011 Wallace Ryan Williamson
Best Graduate Student Poster at the 51st Annual Drosophila Research Conference, Washington DC, April 2010
Best Poster Award at the Annual Dept. of Neuroscience Retreat, UT Southwestern, May 4th, 2010
1st Image Competition Award. Annual Dept. of Neuroscience Retreat, UT Southwestern, May 4th, 2010
- 2011-present Egemen Agi

Graduate Rotation Students (Ph.D.)

2007	Wallace Ryan Williamson, Joshua Chang
2009	Jeremy Leitz, Kristen Szabla, Jeremy Semeiks
2010	Yuan Xi, Daniel Epstein, Samuel Poulos, Austin Reese, Chien-Der Lee
2011	Egemen Agi, Mehmet Neset Ozel

Service

2011-present	Member of the Graduate School Awards Committee
2008-present	Course Director: Fundamentals of Neuroscience (required course for all Neuroscience Graduate Students)
2008-present	Core Course Literature Critique Discussion Group Coordinator "Cells & Organelle Thread" (required for all 1 st year Graduate Students)
2007-2009	Member of Faculty Search Committee, Department of Physiology
2007-present	Thesis Committee Member: 1. Kalisa Myers (Mentor: Dr. Weichun Lin), 2006- 2008 2. Yea Jin Woo (as Chair; Mentor: Dr. T. Sudhof), 2007-2010 3. Emin Ozkan (as Chair; Mentor: Dr. I. Bezprozvanny), 2007-2010 4. Colleen Dewey (as Chair; Mentor: Dr. Gang Wu) 2007-2011 5. Ruei-Jiun Hung (as Chair; Mentor: Dr. Jonathan Terman) 2007-present 6. Michael Fine (Mentor: Dr. Donald Hilgemann) 2007-2011 7. Raniero Peru (as Chair; Mentor: Dr. Adrian Rothenfluh) 2008-present 8. Jeremy Leitz (Mentor: Dr. Ege Kavalali) 2010-present 9. Andra Robinson (Mentor: Dr. Gurol Suel) 2011-present 10. Adebimpe Kasumu (Mentor: Dr. Ilya Bezprozvanny) 2011-present

RESEARCH SUPPORT

Ongoing Research Support

2008-2013	NIH RO1EY018884, \$250,000/yr for 5 years (direct costs) Project Title: <i>Regulation of Synaptic Specificity in the Visual System by Intracellular Trafficking</i>
2009-2012	Co-PI NIH R01GM088803 \$109,000 over 3 years (direct costs) Project Title: <i>Molecular Studies of the Roles and Regulations of the v-ATPase V0 Sector</i> PI: Dr. F.A. Quiocho
2010-2013	Welch Foundation Research Grant, \$150,000 over 3 years Project Title: <i>The Role of the V0 ATPase in SNARE-mediated membrane fusion</i>
2010-2013	CPRIT Individual Investigator Award (PIs Drs. M. Buszczak and P.R. Hiesinger) \$721,209 over 3 years; Share: ~ \$114,000/yr for 3 years Project Title: <i>An Improved Transgenesis Platform for Systematic Screening of Tumor Suppressor Activity in Complete Gene Families in Drosophila</i>

Concluded Research Support

2009-2011	Administrative Supplement to NIH RO1EY018884 \$160,000 over 2 years (direct costs)
2008-2010	Whitehall Foundation Research grant, \$75,000/yr for 3 years Project Title: <i>Regulation of Synaptic Specificity in the Visual System by Rab proteins</i>
2007-2010	Welch Foundation Research Grant, \$50,000/yr for 3 years Project Title: <i>Biochemical characterization of a synaptic function of palmitoleic acid, the product of a novel $\Delta 9$ fatty acid desaturase</i>
2007-2009	American Federation for Aging Research Grant, \$30,000/yr for 2 years Project Title: <i>Unsaturated fatty acid regulation of neurotransmission in aging neurons</i>

PUBLICATIONS I: ORIGINAL RESEARCH ARTICLES (EXCLUDING REVIEWS)

1. Laissue, P.P., Reiter, C., **Hiesinger, P.R.**, Halter, S., Fischbach, K.-F., and Stocker, R.F. (1999). Three-dimensional reconstruction of the antennal lobe in *Drosophila melanogaster*. **J. Comp. Neurol.** 405, 543-552.
2. **Hiesinger, P.R.**, Reiter, C., Schau, H., and Fischbach, K.-F. (1999). Neuropil pattern formation and regulation of cell adhesion molecules in *Drosophila* optic lobe development depend on synaptobrevin. **J. Neurosci.** 19, 7548-7556. *Cover article.*
3. **Hiesinger, P.R.***, Scholz, M.*, Meinertzhagen, I.A., Fischbach, K.-F., and Obermayer, K. (2001). Visualization of synaptic markers in the optic lobe neuropils of *Drosophila* using a new constrained deconvolution method. **J. Comp. Neurol.** 429, 277-288. ***co-first and corresponding authors**
4. Morales, J., **Hiesinger, P.R.**, Schroeder, A.J., Kume, K., Verstreken, P., Jackson, F.R., Nelson, D.L., and Hassan, B.A. (2002). *Drosophila* Fragile X protein, DFXR, regulates neuronal morphology and function in the brain. **Neuron** 34, 961-972.
5. Pennetta, G., **Hiesinger, P.R.**, Fabian-Fine, R., Meinertzhagen, I.A., and Bellen H.J. (2002). *Drosophila* VAP-33A directs bouton formation at neuromuscular junctions in a dosage-dependent manner. **Neuron** 35, 291-306. *Cover article.*
6. Kango-Singh, M., Nolo, R., Tao, C., Verstreken, P., **Hiesinger, P.R.**, Bellen, H.J., and Halder, G. (2002). Shar-pei mediates cell proliferation arrest during imaginal disc growth in *Drosophila*. **Development** 129, 5719-5730. *Cover article.*
7. Zhai, R.G.*, **Hiesinger, P.R.***, Koh, T.-W., Verstreken, P., Schulze, K.L., Cao, Y., Jafar-Nejad, H., Norga, K.K., Pan, H., Bayat, V., Greenbaum, M.P., and Bellen, H.J. (2003). Mapping *Drosophila* mutations with molecularly defined *P* element insertions. **Proc. Natl. Acad. Sci. USA** 100, 10860-10865. ***co-first authors**
Featured Highlight in Nature Reviews Genetics 4, 849. *Casci, T. I can name it in three...*
8. Verstreken, P., Koh, T.-W., Schulze, K.L., Zhai, R.G., **Hiesinger, P.R.**, Zhou, Y., Mehta, S.Q., Cao, Y., Roos, J., and Bellen, H.J. (2003). Synaptojanin is recruited by Endophilin to promote synaptic vesicle uncoating. **Neuron** 40, 733-748.
Preview in Neuron 40, 665-667. *Song, W. and Zinsmaier, K.E. Endophilin and Synaptojanin hook up to promote synaptic vesicle endocytosis.*
9. Fabian-Fine, R., Verstreken, P., **Hiesinger, P.R.**, Horne, J.A., Kostyleva, R., Zhou, Y., Bellen, H.J., and Meinertzhagen, I.A. (2003). Endophilin promotes a late step in endocytosis at glial invaginations in *Drosophila* photoreceptor terminals. **J. Neurosci.** 23, 10732-10744. *Cover article.*
10. Bellen, H.J., Levis, R.W., Liao, G., He, Y., Carlson, J.W., Tsang, G., Evans-Holm, M., **Hiesinger, P.R.**, Schulze, K.L., Rubin, G.M., Hoskins, R.A., and Spradling, A.C. (2004). The BDGP gene disruption project: single transposon insertions associated with 40% of *Drosophila* genes. **Genetics** 167, 761-781.
11. Mehta, S.Q.*, **Hiesinger, P.R.***, Beronja, S., Zhai, R.G., Schulze, K.L., Verstreken, P., Cao, Y., Zhou, Y., Tepass, U., Crair, M.C., and Bellen, H.J. (2005). Mutations in *Drosophila sec15* reveal a function in neuronal targeting for a subset of exocyst components. **Neuron** 46, 219-232. ***co-first authors**
Preview in Neuron 46, 164-166. *Clandinin, T.R. Surprising twists to exocyst function.*
12. **Hiesinger, P.R.**, Fayyazuddin, A., Mehta, S.Q., Rosenmund, T., Schulze, K.L., Zhai, R.G., Verstreken, P., Cao, Y., Zhou, Y., Kunz, J., and Bellen, H.J. (2005). The v-ATPase V_0 subunit is required for a late step in synaptic vesicle exocytosis in *Drosophila*. **Cell** 121, 607-620. *Cover article.*
Preview in Cell 121, 496-497. *Bajjalieh, S. A new view of an old pore.*
13. Fayyazuddin, A., Zaheer, M., **Hiesinger, P.R.**, and Bellen, H.J. (2006). *giant fiber A (gfA)* encodes a nicotinic acetylcholine receptor that mediates synaptic transmission in the giant fiber circuit of *Drosophila*. **PLoS Biol.** 4(3):e63.
14. **Hiesinger, P.R.*#**, Zhai, R.G.*, Zhou, Y., Koh, T.-W., Mehta, S.Q., Verstreken, P., Schulze, K.L., Cao, Y., Fischbach, K.-F., Meinertzhagen, I.A., and Bellen, H.J.#, (2006) Activity-

- independent prespecification of synaptic partners in the visual map of *Drosophila*. **Curr. Biol.**, 16, 1835-43 ***co-first authors, # corresponding authors**
15. Zhai, R.G., Cao, Y., **Hiesinger, P.R.**, Mehta, S.Q., Schulze, K.L., Verstreken, P., Zhou, Y. and Bellen, H.J. (2006). *Drosophila* NMNAT Maintains Neural Integrity Independent of its NAD Synthesis Activity. **PLoS Biol.** 4(12):e416
 16. Zhang, J., Schulze, K.L., **Hiesinger, P.R.**, Suyama, K., Wang, S., Fish, M., Acar, M., Hoskins, R.A., Bellen, H.J., and Scott, M.P. (2007). 31 Flavors of *Drosophila* Rab Proteins. **Genetics** 176, 1307-22.
 17. Zhai, R.G., Zhang, F., **Hiesinger, P.R.**, Cao, Y., Haeuter, C.M., and Bellen, H.J. (2008). NAD Synthase NMNAT acts as a chaperone to protect against neurodegeneration. **Nature**, 452:887-91.

As Independent Group Leader:

18. Zhang, W., Wang, D., Volk, E., Bellen, H.J., **Hiesinger, P.R.**^{*}, and Quioco, F.A.* (2008). V-ATPase V₀ sector subunit a1 in neurons is a target of calmodulin. **J. Biol. Chem.**, 283(1), 294-300
***co-corresponding authors**
19. Williamson, W.R. and **Hiesinger, P.R.** (2010). Preparation of Developing and Adult *Drosophila* Brains and Retinae for Live Imaging. **J. Vis. Exp.**, 37. doi:10.3791/1936.
20. Williamson, W.R., Wang, D., Haberman, A. and **Hiesinger, P.R.** (2010). A dual function of V₀-ATPase a1 provides an endolysosomal degradation mechanism in *Drosophila* photoreceptors. **J. Cell. Biol.**, 189: 885-99. *Cover article.*
'In-Focus' article highlight in J. Cell. Biol. 189:773. Short, B. 'The acid test of v-ATPase function'.
21. Williamson, W.R., Yang, T., Terman, J.R. and **Hiesinger, P.R.** (2010). Guidance receptor degradation is required for neuronal connectivity in the *Drosophila* nervous system. **PLoS Biol.** 8(12):e1000553.
Cover article (Featured Image of December 2010 issue).
22. Smibert, P., Bejarano, F., Wang, D., Lopez-Garautet, D., Yang, J.S., Martin, R., Bortolamiol-Becet, D., Robine, D., **Hiesinger, P.R.** and Lai, E.C. (2011). A *Drosophila* genetic screen yields allelic series of core microRNA biogenesis factors and reveals post-developmental roles for microRNAs. **RNA**, 17(11):1997-2010.
23. Chan, C.C., Scoggin, S., Wang, D., Cherry, S., Dembo, T., Greenberg, B., Jin, E.J., Kuey, C., Lopez, A., Mehta, S.Q., Perkins, T.J., Brankatschk, M., Rothenfluh, A., Buszczak, M.* and **Hiesinger, P.R.*** (2011). Systematic Discovery of Rab GTPases with Synaptic Functions in *Drosophila*. **Curr. Biol.**, 21(20):1704-15. *** co-corresponding authors.**
24. Haberman, A.S., Wang, D., Williamson, W.R., Epstein, D., Meinertzhagen, I.A., and **Hiesinger, P.R.** (2012). A role for the synaptic vesicle SNARE neuronal Synaptobrevin in endolysosomal degradation and adult-onset neurodegeneration. **J. Cell Biol.**, *in press.*
25. Chan, C.C., Jin, E.J., Buszczak, M., and Hiesinger, P.R. (**submitted**). Similarities and potential redundancies of *Drosophila* rab GTPases based on expression profiling.
26. Wang, D., Williamson, W.R., Srinivasan, Sankaranarayanan, Epstein, D., Quioco, F.A., and Hiesinger, P.R. (**submitted**). V₀-ATPase subunit a1 regulates vesicle targeting through binding to t-SNARE acceptor complexes.

PUBLICATIONS II: REVIEWS, COMMENTARIES & BOOK CHAPTERS

1. **Hiesinger, P.R.** (2000). Ultrastructural investigation of the role of synaptic machinery during brain development in *Drosophila*. **Futura - Boehringer Ingelheim Fonds Journal** 15, 297-300.
2. **Hiesinger, P.R.** and Fischbach, K.-F. (2000). Hochauflösende und dreidimensionale Visualisierung der Gehirnentwicklung von *Drosophila*. **BioSpektrum**. 5/2000, 408-412.
3. **Hiesinger, P.R.** (2000). The evolution of the millenium bug. **Riv. Biol./Biology Forum** 93, 169-174.

4. Rein, K.*, **Hiesinger, P.R.***, Zoeckler, M., Kirsten, J., Fischbach, K.-F., and Heisenberg, M. (2000). Three-dimensional reconstruction of the *Drosophila* larval and adult brain. **Flybrain**, *www.flybrain.org*, Accession Number AB00120 ***co-first authors**.
5. **Hiesinger, P.R.** and Bellen H.J. (2004). Flying in the face of total disruption. **Nature Genetics** 36, 211-212.
6. Meinertzhagen, I.A. and **Hiesinger, P.R.** (2004). Visual system development, invertebrates. **Elsevier's Encyclopedia of Neuroscience**
7. **Hiesinger, P.R.** and Hassan, B.A. (2005). Genetics in the Age of Systems Biology. **Cell**, 123, 1173-4.

As Independent Group Leader:

8. Williamson, W.R. and **Hiesinger, P.R.** (2008). Synaptic Patterning by Morphogen Signaling. **Science Signaling**, 1(18): pe20.
9. Fischbach, K.-F. and **Hiesinger, P.R.** (2008). Optic Lobe Development. In: **Brain Development of Drosophila**, Series: Advances in Experimental Medicine and Biology, Vol. 628, Edited by G. Technau, Landes Bioscience.
10. **Hiesinger, P.R.** and Meinertzhagen, I.A. (2009). Visual System Development: Invertebrates. in: Squire LR (ed.) **Elsevier's Encyclopedia of Neuroscience**, volume 10, pp. 313-322. Oxford: Academic Press, Elsevier.
11. Williamson, W.R. and **Hiesinger, P.R.** (2010). On the role of V0a1-dependent degradation in Alzheimer Disease. **Comm. Int. Biol.** 3:6, 1-4.
12. Chan, C.C., Epstein, D., and **Hiesinger, P.R.** (2011). Intracellular trafficking in *Drosophila* visual system development: A basis for pattern formation through simple mechanisms (*peer-reviewed review*) **Developmental Neuroscience** 10.1002/dneu.20940.
13. Chan, C.C., Scoggin, S., **Hiesinger, P.R.*** and Buszczak, M.* (2012). Combining Recombineering and Ends-Out Homologous Recombination to Systematically Characterize *Drosophila* Gene Families: Rab GTPases as a Case Study. **Comm. Int. Biol.**, *in press*. * *co-corresponding authors*
14. Williamson, W.R., Chan, C.C. and **Hiesinger, P.R.** (*in press*). Subcellular Resolution Imaging in Neural Circuits. (*invited book chapter*). In "The making and un-making of neuronal circuits in *Drosophila*"; edited by Bassem Hassan.

CONFERENCE TALKS & INVITED SEMINARS

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|------|---|
| 2011 | University College London, LMCB Unit, UK
1 st Asia-Pacific <i>Drosophila</i> Research Conference Taipei, Taiwan
Charité and Freie Universitaet Berlin, Germany
52 nd <i>Drosophila</i> Research Conference, San Diego
Tufts University, Boston, USA
UT Southwestern, Dept. of Pharmacology |
| 2010 | EPFL – Ecole Polytechnique Federale de Lausanne, Switzerland
University of Lausanne, Switzerland
Reed College, Portland, OR
UT Southwestern, MSTP Works-In-Progress
UT Southwestern, Visual Sciences Seminar Series
FASEB Conference on Transport ATPases, Snowmass, Colorado
Gordon Conference for Visual System Development, Italy
Baylor College of Medicine, Houston
University of Miami, Miller School of Medicine |
| 2009 | NIH, Bethesda
University of Leuven, Belgium |
| 2008 | UT Southwestern, Department of Cell Biology |
| 2007 | SFB505 Seminar, University of Freiburg, Germany |

- Janelia Farm Research Conference
7th Meeting of the German Neuroscience Society, Goettingen, Germany
- 2006 European Neuroscience Institute/MPI, Gottingen, Germany
47th *Drosophila* Research Conference, Houston, TX
Emory University, Atlanta, Department of Physiology
UC San Diego, Neurobiology Section
Boston University
University of Muenster, Germany
Indiana University at Bloomington, Biocomplexity Institute
EMBL, Heidelberg, Germany
University of Manchester, UK
UC San Francisco, Department of Anatomy
- 2005 Neurobiology of *Drosophila* Conference, Cold Spring Harbor, NY, October.
IMP/Institute for Molecular Biotechnology, Vienna, Austria
46th *Drosophila* Research Conference, San Diego, CA
Max-Planck Institute for Experimental Medicine, Göttingen
MRC Cambridge, UK, Neurobiology Section
UT Dallas Southwestern, Department of Physiology
- 2004 Gordon Conference - Cell Biology of the Neuron, New London, NH
EMBO Fellows Meeting, Heidelberg, Germany
Gordon Conference - Visual System Development, Bristol, RI
Zeiss Confocal Imaging Symposium, Baylor College of Medicine, Houston
- 2003 Neurobiology of *Drosophila* Conference, Cold Spring Harbor, NY
- 2002 Gordon Conference - Visual System Development, Salve Regina University, Newport, RI
- 2000 Department of Zoology, University of Cambridge, UK
- 1999 Neurobiology of *Drosophila* Conference, Cold Spring Harbor, NY
27th Göttingen Neurobiology Conference 1999; Volume I, Thieme 1999, No 133
- 1996 Multimedia in Health Science Education, Copenhagen, Denmark