

2 June 2008

**MARK ARTHUR FRYE**

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**EDUCATION**

2000-2004	California Institute of Technology and UC Berkeley	Postdoctoral scholar
1995-2000	University of Washington	Ph.D. Zoology
1992-1994	Union College	M.S. Biology
1986-1990	State University of New York	B.A. Psychology

**ACADEMIC POSITIONS**

2007-present	Associate Editor, <i>Fly</i> (Landes Biosciences journal of <i>Drosophila</i> research)
2005-present	Assistant Professor, Department of Physiological Science, UCLA
2005-present	Faculty, Neural Systems and Behavior, Marine Biological Laboratory, Woods Hole MA

**HONORS AND AWARDS**

2007	W.M. Keck Foundation Research Excellence award
2007	McKnight Foundation Young Scholar Award semi-finalist
2006	Alfred P. Sloan Foundation Research Fellow
2005	Student Selected Speaker, Graduate Program in Insect Science, University of Arizona
2001	Best Paper, Division of Neurobiology, Society of Integrative and Comparative Biology

*Intramural honors*

2007	UCLA co-nominee, Packard Foundation Fellowship in Science and Engineering
2006	UCLA co-nominee, Searle Scholars Program

**FUNDING**

2007-2010	National Science Foundation: <i>Cross-modal sensory fusion for flight control in Drosophila</i>
2007-2009	Whitehall Foundation: <i>Molecular genetic analysis of locomotor circuits in Drosophila</i>

*Intramural funding*

2008	UCLA Faculty Research Grant: <i>Ultra-fast visual performance in a tropical bird</i>
2006	UCLA Faculty Career Award: <i>A high-throughput neurobehavioral genetic screen</i>

**RESEARCH ARTICLES (IN PREPARATION\*)**

\*Zhu Y, Nern, A, Zipursky SL, Frye MA (in prep) Neuronal basis for elementary motion detection analyzed in freely moving *Drosophila*.

\*Fei H, Chow DM, Simpson J, Romero R, Frye MA, Krantz D (in prep) Genetic rescue of the vesicular GABA transporter and the influence on complex visual behavior in *Drosophila*.

Chow DM, Frye MA (in press) Context dependent olfactory enhanced optomotor flight control in *Drosophila*. *J Exp Biol*

Theobald JC, Duistermars BJ, Ringach DL, Frye MA (2008) Flies see second-order motion *Curr Biol* 18(11):r464

Duistermars BJ, Frye MA (2008) Cross-modal visual input for odor tracking during fly flight. *Curr Biol* 18(4):270-275

Duistermars BJ, Chow DM, Condro M, Frye MA (2007) The spatial, temporal, and contrast properties of expansion and rotation flight optomotor responses in *Drosophila*. *J Exp Biol* 210:3218-3227

Frye MA, Dickinson MH (2007) Visual edge orientation shapes free-flight behavior in *Drosophila*. *Fly* 3:153-154

Duistermars BJ, Reiser M, Zhu Y, Frye MA (2007) Dynamic properties of large-field and small-field optomotor flight responses in *Drosophila*. *J Comp Physiol* 193:787-799

Reynolds A, Frye MA (2007) Free-flight odor tracking in *Drosophila* is consistent with a mathematically optimal intermittent scale-free search. *PLoS ONE* 2(4): e354

Dickinson MH, Farman GP, Frye MA, Bekyarova T, Maughan DW, Irvine T (2005) Molecular dynamics of a cyclically contracting insect flight muscle *in vivo*. *Nature* 433:330-333

Frye MA, Dickinson MH (2004) Motor output reflects linear superposition of visual and olfactory input in *Drosophila*. *J Exp Biol* 207:123-131

- Tammero LF\*, Frye MA\* , Dickinson MH (2004) Spatial organization of visuomotor reflexes in *Drosophila*. *J Exp Biol* 207:113-122 \*equal authorship
- Frye MA, Tarsitano M, Dickinson MH (2003) Odor localization requires visual feedback during free-flight in *Drosophila melanogaster*. *J Exp Biol* 206:843-855
- Frye MA (2001) Effects of stretch receptor ablation on the optomotor control of lift in the hawkmoth *Manduca sexta*. *J Exp Biol* 204:3683-3691
- Frye MA (2001) Encoding properties of the wing hinge stretch receptor in the hawkmoth *Manduca sexta*. *J Exp Biol* 204:3693-3702
- Persons MH, Fleishman LJ, Frye MA, Stimpfl ME (1999) Sensory response patterns and the evolution of visual signal design in anoline lizards. *J Comp Physiol* 184:585-607
- Frye MA Olberg RM (1995) Visual receptive field properties of feature detecting neurons in the dragonfly. *J Comp Physiol* 177:569-576

#### REVIEW ARTICLES AND BOOK CHAPTERS

- Bender JA, Frye MA (2009) Invertebrate body senses *Curr Biol* (in press\*)
- Theobald JC, Frye MA (2008) Animal Behavior: Flying back to front. *Curr Biol* 18(4):r169
- Frye MA (2007) The neuromechanics of fly flight control. In: Greenspan R, North G (eds) Advances in Invertebrate Neurobiology. Cold Spring Harbor Laboratory Press, ISBN 978-087969819-5
- Frye MA (2007) Behavioral Neurobiology: A vibrating gyroscope controls fly steering maneuvers. *Curr Biol* 17:134-136
- Frye MA, Gray J (2005) Mechanosensory integration for flight control in insects. In: Christensen T (ed) Methods in Insect Sensory Neuroscience, series Frontiers in Neuroscience. CRC Press, Boca Raton
- Frye MA, Dickinson MH (2004) Closing the loop between neurobiology and behavior in *Drosophila*. *Curr Opin Neurobiol* 14:729-736
- Frye MA, Dickinson MH (2003) A signature of salience in the *Drosophila* brain. *Nat. Neurosci.* 6:544-546
- Frye MA, Dickinson MH (2001) Fly flight: a model for the neural control of complex behavior. *Neuron* 32:385-388

#### PROCEEDINGS ARTICLES

- Frye MA (2009) Multi-sensory fusion in the fruit fly. *SPIE Optics and Photonics Proceedings* (in press\*)
- Humbert JS, Frye MA (2006) Extracting behaviorally relevant retinal image motion cues via wide-field integration. *Proceedings of the 2006 Proceedings of the IEEE American Control Conference 2006*, June 14-16, pp. 2724-2729

#### SYMPOSIA BY INVITATION

- 2008 SPIE Optics and Photonics conference on Bio-sensing
- 2008 Adaptive Motion of Animals and Machines (declined, schedule conflict)
- 2007 Entomological Society of Canada, Symposium on Neuroethology and Robotics
- 2007 HHMI Janelia Farm Research Campus, Insect Behavior: Small Brains, Big Functions
- 2007 International Congress for Neuroethology
- 2006 Caltech Center for Neuromorphic Systems Engineering retreat
- 2006 Southern California Learning & Memory Symposium
- 2005 Southern California *Drosophila* Conference

#### SEMINARS BY INVITATION

- 2009 University of Cincinnati Department of Biological Sciences
- 2008 University of Massachusetts Medical School, Department of Neurobiology
- 2008 The Rockefeller University, Lab of Neurobehavioral Genetics
- 2008 New York University, Department of Biology
- 2007 UC San Diego Department of Biology
- 2007 UC Riverside Colloquium in Neuroscience
- 2007 University of Southern California, Program in Neuroscience
- 2006 Johns Hopkins University, Department of Psychological and Brain Sciences
- 2005 Arizona Research Labs Center for Insect Science, University of Arizona
- 2005 UCLA Department of Molecular, Cellular, and Developmental Biology
- 2004 California State University Northridge Department of Biology

2004 UCLA Department of Physiological Sciences  
 2004 UC Irvine Department of Ecology and Evolution  
 2003 University of Arizona Division of Neurobiology  
 2002 University of California Berkeley Division of Insect Biology  
 1995 Union College Department of Biological Sciences

*Invited intramural seminars*

2007 UC Riverside graduate research seminar, chalk talk  
 2007 UCLA PEERS freshman seminar  
 2006 Johns Hopkins University, Department of Mechanical Engineering  
 2006 UCLA Molecular Biology Institute “Fly Night” seminar series  
 2005 UCLA Molecular Biology Institute “Fly Night” seminar series  
 2004 UCLA Department of Biochemistry  
 2003 California Institute of Technology Animal Behavior Interest Group  
 2002 UC San Francisco Dept. of Anatomy

**REFEREE FOR JOURNALS, GRANTING ORGANIZATIONS\* AND BOOKS<sup>+</sup>**

Science	Journal of Computational Neuroscience
Journal of Neuroscience	Vision Research
Journal of Experimental Biology	Arthropod Structure and Development
Journal of Comparative Physiology	European Journal of Entomology
National Science Foundation*	Japan Science and Technology Agency*
Current Biology	Public Library of Science (PLoS)
UCLA Oppenheimer Program*	Fly
Journal of Vision	Human Frontiers Science Program*
Experimental Evolution <sup>+</sup>	Journal of Chemical Ecology
Journal of Insect Science	IEEE Transactions on Biomedical Engineering
Journal of Neurophysiology	PLoS Computational Biology
Neuron	

**PROFESSIONAL AFFILIATIONS**

Society for Neuroscience  
 International Society for Neuroethology

**PRESENTATIONS AT PROFESSIONAL MEETINGS**

IEEE SPIE Optics and Photonics	Society for Mathematical Biology
Neural Circuits, Cold Spring Harbor Labs	Neuromechanics Symposium, Santa Fe Institute
International Conference on Invertebrate Vision	Society for Integrative and Comparative Biology (3 years)
International Symposium on Olfaction and Taste	Gordon Research Conference in Neurobiology and Behavior
Society for Neuroscience (6 years)	Biophysical Society
Canadian Entomological Society	IEEE American Control Conference
International Society for Neuroethology (4 years)	

**POSTDOCTORAL AND STUDENT TRAINEES (\*DENOTES CURRENT)**

\* Dr. Partha Krishnan (PhD Texas A&M University)  
 \* Dr. Jamie Theobald (PhD University of Washington)  
 \* Dawnis Chow (PhD student in Molecular Cellular Integrative Physiology, *NIH Graduate Training Grant Fellowship*)  
 \* Ivan Rodriguez-Pinto (undergraduate in Neuroscience, *UCLA CARE Scholar, winner Best Poster: Cali. Assoc. Minority in Science and Engineering annual symposium, Irvine CA*)  
 \* Jasmin Hu (undergraduate in Microbiology Immunology and Molecular Genetics, *Stone Research Award, College of Letters and Science Undergraduate Research Fellowship*)  
 \* Brian Duistermars (PhD student in Molecular Cellular Integrative Physiology, *NIH Graduate Training Grant Fellow, Young Graduate Award, Gressner Doctoral Fellowship, Best talk MCIP retreat*)  
 \* Dr. Yan Zhu (PhD Washington University, *BRI and FST Postdoctoral Scholar Awards*)  
 Victoria Choi (undergraduate in Physiological Science)  
 David Cao (PhD student in Bioengineering)  
 Manish Padhiar (undergraduate in Microbiology Immunology and Molecular Genetics)

Portia Bautista (undergraduate in Physiological Science, ethnic minority)  
Jennifer Rhodes (visiting undergraduate from UC Berkeley Bioengineering)

**TEACHING ACTIVITIES**

2006-present     UCLA, Comparative Animal Physiology (upper division elective)  
2005-present     Neural Systems and Behavior, summer course at the Marine Biological Laboratory, MA  
                    (intensive laboratory training course)  
1994              Introductory Animal Biology (core curriculum)

**EXTRAMURAL CONTRIBUTIONS**

Provided photographs and advice for children's book:  
"From Insect Wings to Flying Robots" by Toney Allman, © 2006 Thomson Gale, Detroit