Yun Zhang, Ph. D.

Address: Department of Organismic & Evolutionary Biology
Center for Brain Science
Harvard University
Room 357.10, 52 Oxford Street, Cambridge, MA 02138
Email: yzhang@oeb.harvard.edu
Web: http://www.oeb.harvard.edu/faculty/zhang/zhang-oeb.html
Tel: 617-495-1107

CURRICULUM VITAE

Education

1996-2002 PhD, Neuroscience, Columbia University
1992-1996 BS, Molecular Biology and Biochemistry, Peking University

Position

2014-present Professor, Department of Organismic and Evolutionary Biology, Center for Brain Science, Harvard University
2011-2014 Associate Professor, Department of Organismic and Evolutionary Biology, Center for Brain Science, Harvard University
2006-2011 Assistant Professor, Department of Organismic and Evolutionary Biology, Center for Brain Science, Harvard University

Research Experience

2002-2006 Postdoctoral Scholar, Neuroscience, Laboratory of Dr. Cori Bargmann
HHMI, Rockefeller University (Moved from UCSF in 2004)
1996-2002 Graduate Student, Neuroscience, Laboratory of Dr. Martin Chalfie
Columbia University

Teaching Experience

2012-present Co-Developed and –instructed a laboratory course, LS100r
2012-present Guest lecturer for Biophysics 242r, “Special Topics in Biophysics”
2009-present Developed and established a new advanced-level undergraduate course - OEB 145, “Genes and Behavior” Harvard College/GSAS 48436
2007-present Guest lecturer for OEB 399, “Topics in Organismic and Evolutionary Biology”
2007-present Developed and established a new advanced-level course - OEB 223, “Topics in Neurogenetics” Harvard College/GSAS 1434
2007-2009 Developed a new advanced-level tutorial - Neurobiology 95a “Learning and Memory” Harvard College/GSAS 9013

2006-2009 Guest lecturer for OEB 57, “Animal Behavior”

Honors and Awards

2012-2013 MBB Faculty Award, Harvard University
2008-2012 John Merck Scholars Program Award (one of the two recipients nationwide)
2008-2010 Alfred P. Sloan Research Fellowship
2008-2010 March of Dimes Basil O'Connor Starter Scholar Research Award
2007-2010 Milton Fund, Harvard University
2007 Capranica Neuroethology Prize (one of the two recipients nationwide)
2007-2010 Klingenstein Fellowship Awards in the Neurosciences
2005-2006 F. M. Kirby Postdoctoral Fellowships in Sensory Neuroscience
2003-2004 American Heart Association Postdoctoral Research Award
1995-1996 Guanghua Fellowship for Academic Excellency, Peking University
1994-1995 Lianhe Fellowship for Academic Excellency, Peking University
1993-1994 Guanghua Fellowship for Academic Excellency, Peking University

Other Professional Experiences

Journal Referee:

Behavioral Neuroscience, BMC Neuroscience, Cell, Cell Host & Microbe, Cell Metabolism, Current Biology, Developmental Biology, Developmental Cell, EMBO Journal, Frontiers in Genetics of Aging, FASEB, Genetics, Journal of Experimental Biology, Journal of Neuroscience, Journal of Experimental Zoology, Learning and Memory, Nature, Nature Neuroscience, Neuron, Neuropsychopharmacology, Neural Development, Neuroscience Letters, PLoS Biology, PLoS Genetics, PLoS One, PLoS Pathogens, Proc Natl Acad Sci.

Grant Reviewer:

NSF Grant Reviewer
NIH Study Section Reviewer

Membership:

Society of Neuroscience

Conference Organizing:

Founding Chair, Gordon Research Conference (Modulation of Neural Circuits and Behavior), Hong Kong, 2015.
Organizing committee, *C. elegans* Neuroscience Meeting, Madison, WI, 2014.
ECRO, Symposium Chair (Circuit Mechanisms for Olfactory Behavior and Plasticity), Belgium, 2013.

I. RESEARCH

Publications: * denotes the publications that I correspond or co-correspond.

Publications (during the faculty position at Harvard)

* Shen, Y., Zhang, J., Calarco, J.A. and **Zhang, Y.** EOL-1, the homolog of the mammalian Dom3Z, regulates olfactory learning in C. elegans. **Journal of Neuroscience**, *in press* (2014).

* Allen, E.N., Ren, J., **Zhang, Y.** and Alcedo, J. Sensory systems: their impact on *C. elegans* survival. Invited Review. **Neuroscience**, E-pub online, DOI: 10.1016/j.neuroscience.2014.06.054.

* Harris, G., Shen, Y., Ha, H-I., Donato, A., Wallis, S., Zhang, X. and **Zhang, Y.** Dissecting the signaling mechanisms underlying preference of food odors. **Journal of Neuroscience,** 34(28): 9389-403 (2014).

* Luo, L., Wen, Q., Ren, J., Hendricks, M., Gershow, M., Qin, Y., Greenwood, J., Soucy, E., Klein, M., Smith, H.K., Colon-Ramos, D.A., Samuel, A.D. and **Zhang, Y.** Dynamic encoding of perception, memory and movement in a C. elegans chemotaxis circuit. **Neuron**, 82(5):1115-28 (2014).

* Fernandes de Abreu, D.A., Caballero, A., Fardel, P., Stroustrup, N., Chen, Z., et al., Antebi, A., Blanc, E., Apfeld, J., **Zhang, Y.**, Alcedo, J. and Ch'ng, Q.L. An insulin-to-insulin regulatory network orchestrates phenotypic specificity in development and physiology. **PLoS Genetics**, 10(3):e1004225. (2014).

* Luo, L., Cook, N., Venkatachalam, V., Martinez-Velazquez, L.A., Zhang, X., Calvo, A.C., Hawk, J., Macinnis, B.L., Frank, M., Ng, J.H., Klein, M., Gershow, M., Hammarlund, M., Goodman, M.B., Colon-Ramos, D.A., **Zhang, Y.** and Samuel, A.D. Bidirectional thermotaxis in Caenorhabditis elegans is mediated by distinct sensorimotor strategies driven by the AFD thermosensory neurons. **Proc Natl Acad Sci USA,** 111(7): 2776-2781 (2014).

* Bahrami, A. and **Zhang, Y.** When females produce sperm: genetics of C. elegans hermaphrodite reproductive choice. **Genes, Genomes, Genetics** 3(10):1851-1859 (2013).

* Hendricks, M. and **Zhang, Y.** Complex RIA calcium dynamics and its function in navigational behavior. **Worm** 2(3): e25546 (2013).

* Chen, Z., Hendricks, M., Cornils, A., Maier, W., Alcedo, J. and **Zhang, Y.** Two insulin-like peptides antagonistically regulate aversive olfactory learning in C. elegans. **Neuron** 77(3), 572-585 (2013).

* Qin, Y., Zhang, X. and **Zhang, Y.** A neuronal signaling pathway of CaMKII and Gqa regulates experience-dependent transcription of tph-1. **Journal of Neuroscience** 33(3): 925-935 (2013).

o Lee, H., Crane, M.M., **Zhang, Y.** and Lu, H. Quantitative screening of genes regulating tryptophan hydroxylase transcription in Caenorhabditis elegans using microfluidics and an adaptive algorithm. **Integrative Biology** 5(2): 372-380 (2013).

* Alcedo, J. and **Zhang, Y.** Molecular and cellular circuits underlying Caenorhabditis elegans olfactory plasticity. **Invertebrate Learning and Memory**, Chapter 10, edited by Randolf Menzel and Paul Benjamin, Elsevier, ISBN: B978-0-12-415823-8 (2013).

* Hendricks, M., Ha, H-I., Maffey, N. and **Zhang, Y.** Compartmentalized calcium dynamics in a C. elegans interneuron encode head movement. **Nature** 487, 99–103 (2012).

* Zhang, X. and **Zhang, Y.** DBL-1, a TGF-β, is essential for Caenorhabditis elegans aversive olfactory learning. **Proc Natl Acad Sci USA** 109(42):17081-17086 (2012).

o Cornils, A., Gloeck, M., Chen, Z., **Zhang, Y.** and Alcedo, J. Specific insulin-like peptides encode sensory information to regulate distinct developmental processes. **Development** 138(6), 1183-1193 (2011).

* Ha, H-I., Hendricks, M., Shen, Y., Gabel**,** C.V., Fang-Yen, C.M., Qin, Y., Colón-Ramos, D.A., Shen, K., Samuel, A.D. and **Zhang, Y.** Functional organization of a neural network for aversive olfactory learning in Caenorhabditis elegans. **Neuron** 68(6), 1173-1186 (2010). *The featured article of the issue.*

* Zhang, X. and **Zhang, Y.** Neural-immune communication in Caenorhabditis elegans. **Cell Host & Microbe** 5(5): 425-429 (2009).

* **Zhang, Y.** Neural mechanisms of Caenorhabditis elegans and pathogenic bacteria interactions. **Current Opinion in Microbiology** 11(3), 257-261 (2008).

o Luo, L., Gabel, C.V., Ha, H-I., **Zhang, Y.** and Samuel, A.D. Olfactory behavior of swimming C. elegans analyzed by measuring motile responses to temporal variations of odorants. **Journal of Neurophysiology** 99(5), 2617-2625 (2008).

Publications (during graduate and postdoc training)

o Pradel, E.[¶], **Zhang, Y.** [¶], Pujol, N., Matsuyama, T., Bargmann, C.I. and Ewbank, J.J. Detection and avoidance of a natural product from the pathogenic bacterium Serratia marcescens by Caenorhabditis elegans. **Proc Natl Acad Sci USA** 104(7), 2295-2300 (2007). [¶]: co-first author.

o **Zhang, Y.**, Lu, H. and Bargmann, C.I. Pathogenic bacteria induce aversive olfactory learning in Caenorhabditis elegans. **Nature** 438, 179-184 (2005).

o **Zhang, Y.** and Chalfie, M. MTD-1, a touch-cell-specific membrane protein with a subtle effect on touch sensitivity. **Mechanisms of Development** 119(1), 3-7 (2002).

o **Zhang, Y.**, Ma, C., Delohery, T., Nasipak, B., Foat, B.C., Bounoutas, A., Bussemaker, H.J., Kim, S.K. and Chalfie, M. Identification of genes expressed in C. elegans touch receptor neurons. **Nature** 418, 331-335 (2002).

Invited Talks

2014 Research Institute of Molecular Pathology, Vienna, Austria, Pending.
2014 Boston University School of Medicine, Boston, MA, Pending.

2014 Department of Psychology, Harvard University, Pending.
2013 Department of Neuroscience, UTSW, Dallas, TX.
2013 Institute for Neuro-Innovation and Translational Neuroscience, Department of Biology, Stanford University, CA.
2013 Department of Biological Sciences, Columbia University, New York, NY.
2013 Symposium Speaker and Chair, ECRO "Circuit Mechanisms for Olfactory Behavior and Plasticity", Leuven, Belgium.
2013 Calcium Signaling Gordon Research Conference, Renaissance Tuscany, Italy.
2013 Department of Zoology, University of Cambridge, England.
2013 MRC, University of Cambridge, England.
2013 Center for Developmental Neurobiology, King's College London, England.
2013 Rapporteur, Physical and Mathematical Principles of Brain Structure and Function, National Science Foundation & The Kavli Foundation, Washington DC.
2013 Program of Mind, Brain and Behavior Retreat, Harvard University.
2013 Department of Neurobiology, University of Massachusetts Medical School, Worcester, MA.
2013 Hong Kong University of Science and Technology, Hong Kong.
2013 Department of Biology, Wayne State University, MI.
2013 Department of Molecular and Integrative Biology, University of Michigan, MI.
2012 Peking University, Life Science Institute, Beijing, China.
2012 Cognitive Processing in Simple Organisms, Paris, France.
2012 International Symposium of Taste and Olfaction, Stockholm, Sweden.
2012 Brandies University, Neuroscience Program, MA.
2012 Center for Brain Science Annual Retreat, Harvard University.
2012 Neural Circuits and Behavior, Cold Spring Harbor Laboratory Conference, NY.
2009 Microbial Science Initiative Annual Symposium, Harvard University.
2008 Genes & Behavior Gordon Conference, Renaissance Tuscany, Italy.
2007 Microbial Science Initiative Seminar, Harvard University.
2007 Center for Brain Science Annual Retreat, Harvard University.
2006 Ion Channel Gordon Conference, Tilton School, NH.
2006 UC Los Angeles, Department of Molecular, Cellular and Integrative Physiology, CA.
2006 UC Berkeley, Department of Molecular and Cellular Biology, CA.
2006 Harvard Medical School, Department of Neurobiology, MA.
2006 University of Chicago, Department of Neurobiology, IL.
2006 Fred Hutchinson Cancer Research Center, Basic Science, WA.
2005 The 15th International C. elegans Meeting, UC Los Angeles, CA.
2005 American Society of Cell Biology Annual Meeting, San Francisco, CA.
2005 California Institute of Technology, Biology Division, CA.
2005 UT Austin, Center for Learning and Memory, TX.
2005 UT Southwestern Medical Center, Center for Basic Neuroscience, TX.
2005 UT Southwestern Medical Center, Department of Physiology, TX.
2005 American Society of Cell Biology Annual Meeting, Symposium "Building Sensory Networks", San Francisco, CA.
2004 West Coast *C. elegans* Meeting, UC Santa Barbara, CA.
2003 The 14th International *C. elegans* Meeting, UC Los Angeles, CA.

2001 The 13th International *C. elegans* Meeting, UC Los Angeles, CA.

Current Research Grants

Name: NIH Research Project Grant R01
9/1/2009- 08/31/2015 (with 1-year extension) $1,250,000 Total Direct Cost
Characterize molecular and cellular mechanisms of a neural network that regulates olfactory learning in *C. elegans.*
Role: PI

Name: NIH Research Program Project Grant P01
5/15/2013- 04/30/2018 $675,000 Total Direct Cost (Zhang Lab)
Molecular and cellular mechanisms for thermal robustness and multisensory integration in *C. elegans* navigation.
Role: Co-PI

Name: NIH Research Project Grant R01
9/1/2014- 08/31/2018 ~$500,000 Total Direct Cost (Zhang Lab)
Functional characterization of an ILP network that regulates learning.
Role: Lead-PI

Name: NIH Research Project Grant R01
9/1/2014- 08/31/2018 $880,000 Total Direct Cost
Characterize molecular and cellular mechanisms of a neural network that regulates olfactory learning in *C. elegans.*
Role: PI

Completed Research Grants

Name: John Merck Scholars Program Award
7/1/2008- 6/30/2014 (with 2-year extension) $300,000 Total Direct Cost
Functional mapping of the neural circuits underlying olfactory learning in *C. elegans.*
Role: PI

Name: William F. Milton Fund
01/01/2007-12/31/2008 $35,000 Total Direct Cost
Building an automated behavioral assay for *C. elegans* olfactory learning.
Role: PI

Name: Klingenstein Fellowship Awards in the Neurosciences
7/01/2007-6/30/2010 $150,000 Total Direct Cost
Study systems mechanisms that regulate an olfactory learning behavior.
Role: PI

Name: March of Dimes Basil O'Connor Starter Scholar Research Award
2/01/2008-1/31/2010 $135,000 Total Direct Cost
Conduct a genetic and systems analysis on an olfactory learning process.
Role: PI

Name: Sloan Research Fellowships
9/1/2008- 8/31/2012 $45,000 Total Direct Cost
Study molecular and cellular mechanisms that regulate olfactory learning.
Role: PI

Name: MBB faculty award
1/1/2012- 12/31/2012 $50,000 Total Direct Cost
Characterize neural circuits that control mating behavior in *C. elegans.*
Role: Co-PI

Current Laboratory Members

Postdoctoral Scholars:

Dr. Adam Bahrami:	2007-2009, Harvard Microbial Science Initiative Fellow. 2009-present, Postdoctoral scholar at Harvard University Department of OEB, Zhang Laboratory.
Dr. Gareth Harris	2010 – present, Postdoctoral scholar at Harvard University Department of OEB, Zhang Laboratory.
Dr. Jing Ren	2013-present: Postdoctoral scholar at Harvard University Department of OEB, Zhang Laboratory.
Dr. Konstantinos Kagias	2014-present: Postdoctoral scholar at Harvard University Department of OEB, Zhang Laboratory.

Graduate Students in PhD Programs:
Yu Serena Shen, OEB G6
Jingyi Yu, OEB G5
Bicheng Han, OEB G1

Previous Trainees

Postdoctoral Scholars:

Dr. Michael Hendricks (2008-2013)	Assistant Professor, McGill University, Canada.
Dr. Linjiao Luo (2011-2013)	Associate Professor, Nanjing University, China.
Dr. Heonick Ha (2006-2012)	Pattern Specialist, Massachusetts General Hospital.

Graduate Students in PhD Programs:

Dr. Yuqi Rose Qin (2007-2013), PhD	Postdoctoral Scholar, Biogen Idec, MA.
Dr. Zhunan Chen (2007-2013), PhD	Statistician, Liberty Mutual, MA.
Dr. Xiaodong Zhang (2007-2012), PhD	Consultant, McKinsey & Co.

II. TEACHING AND MENTORING EXPERIENCE

Teaching and Course Evaluations

Year		Course	Enrollment	Cue Guide Rating (Overall/Professor, out of 5)
2013-2014	Spring	OEB 223: Topics in Neurogenetics	14 (U:5; G:9)	4.3/4.6
	Spring	Life Science 100r	5	N/A
	Fall	OEB 145: Genes and Behavior	12 (U:11; G:1)	4.0/3.9
	Fall	Life Science 100r	4	N/A
2012-2013	Spring	OEB 223: Topics in Neurogenetics	12 (U: 11; G: 1)	4.5/4.4
	Spring	Life Science 100r	4 (U)	N/A
	Fall	OEB 145: Genes and Behavior	15 (U)	3.9/4.1
	Fall	Life Science 100r	4 (U)	N/A
2011-2012	Spring	OEB 223: Topics in Neurogenetics	3	4.5/4.5
	Fall	OEB 145: Genes and Behavior	4	4.6/5.0
2010-2011	Spring	Maternity leave, no teaching		
	Fall	Maternity leave, no teaching		
2009-2010	Spring	OEB 223: Topics in Neurogenetics	9	4.5/4.5
	Fall	OEB 145: Genes and Behavior	5	4.6/4.8
2008-2009	Spring	OEB 223: Topics in Neurogenetics	8	4.8/4.8
	Fall	Neurobiology 95a “Learning and Memory”	4	N/A
2007-2008	Spring	OEB 223: Topics in Neurogenetics	10	3.9/3.7
	Fall	Neurobiology 95a “Learning and Memory”	4	N/A
			Total 117	Average 4.4/4.4

Guest Lectures

2013	MCO Program Campus Visit with PKU Seniors
	Biophysics 242r, “Special Topics in Biophysics”
	MCO Graduate Student Recruitment Faculty Research Talk
	OEB 399 “Topics in Organismic and Evolutionary Biology”
2012	MCO Program Graduate Orientation Research Talks
	MCO Program “Model Organism Jamboree”
	Program in Neuroscience Graduate Orientation Research Talks
	OEB 399 “Topics in Organismic and Evolutionary Biology”
2011	MCO Program Graduate Student Orientation “Model Organism Jamboree”
	OEB 399 “Topics in Organismic and Evolutionary Biology”
2009	OEB 57 “Animal Behavior”
	MCO Program Graduate Student Recruitment
	MCO Program Graduate Student Orientation “Model Organism Jamboree”
	OEB 399 “Topics in Organismic and Evolutionary Biology”

2008	OEB 57 “Animal Behavior”
	OEB 399 “Topics in Organismic and Evolutionary Biology”
	MCO Program Graduate Student Recruitment
2007	Department of Neurobiology Graduate Student Orientation
	OEB 57 “Animal Behavior”
	OEB 399 “Topics in Organismic and Evolutionary Biology”
2006	OEB 399 “Topics in Organismic and Evolutionary Biology”

Undergraduate Mentoring and Advising

Senior Theses

Connie Zhong Harvard College 2014
Title: Characterizing the roles of cholinergic and GABAergic neurons in *C. elegans* gait control

Samuel Wallis Harvard College 2014
Title: Analyzing circuit properties for odor preference and plasticity

Julia Nguyen Harvard College 2014
Title: Sexual differences in olfactory learning

Sarah Bourne Harvard College 2007
Title: Insulin-like signaling in C. elegans aversive olfactory learning

Undergraduate Research

Alexandra Ding	Harvard College 2017
Vivian Yeoung	Harvard College 2014
Nicolas Maffey	Harvard College 2013
Shane Smith	Northeastern University 2012
Alessandra Donato	Armenise-Harvard summer fellowship, 2012 summer
Sarah Zhang	Harvard College 2011
Arash Gharib	Harvard College 2011
Ruby Ibanga	Harvard College 2010
Colleen Carlston	Harvard College 2009

Graduate Mentoring and Advising

Zhang Laboratory Graduate Students

Bicheng Han, OEB G1
Jingyi Yu, OEB G5
Yu Serena Shen, OEB G6
Zhunan Chen, OEB (2007-2013)
Yuqi Rose Qin, OEB (2007-2013)
Xiaodong Zhang, MCB (2006-2012)

Committee Member for

Farhan Ali:	PhD student in Olveczky Lab at Harvard University Department of Organismic and Evolutionary Biology

Ting Ren:	Master student in Dulac Lab at Harvard University Department of Molecular and Cellular Biology
Raymond Ko:	PhD student in Olveczky Lab at Harvard University Department of Organismic and Evolutionary Biology
Andrew Leifer:	PhD student in Samuel Lab at Harvard University Department of Physics
Aylia Mahammadi	PhD student in Ryu Lab at the University of Toronto Department of Physics
Youngeun (Kaitlyn) Choi	PhD student in Mango Lab at Harvard University Department of Molecular and Cellular Biology
Olga Minkina	PhD student in Hunter Lab at Harvard University Department of Molecular and Cellular Biology

Neutral Advisor:

Zhou Yu	MCO G1

III. ACADEMIC SERVICES

Members of Harvard Committees

2013	OEB undergraduate curriculum committee
	Neurobiology Standing Committee
	Hoopes Prize Committee
	MCO Graduate Program Student Recruitment Committee
	Mind, Brain, Behavior Standing Committee
2012	Neurobiology Standing Committee
	Hoopes Prize Committee
	MCO Graduate Program Student Recruitment Committee
	Center for Brain Science, Junior Faculty Search Committee, Harvard University
	Mind, Brain, Behavior Standing Committee
2011	Neurobiology Standing Committee
	Hoopes Prize Committee
	MCO Graduate Program Student Recruitment Committee
2010	Neurobiology Standing Committee
	Hoopes Prize Committee
	Neurobiology Department Graduate Program Student Recruitment Committee
2009	Neurobiology Standing Committee
	Hoopes Prize Committee
	MCO Graduate Program Student Recruitment Committee
	Graduate Funding Committee, Department of Organismic and Evolutionary Biology
2008	Neurobiology Standing Committee
	Hoopes Prize Committee

	MCO Graduate Program Student Recruitment Committee
2007	Neurobiology Standing Committee
	Hoopes Prize Committee
	MCO Graduate Program Student Recruitment Committee
2006	Neurobiology Standing Committee

Harvard Affiliations

The Neurobiology Program at Harvard Medical School
The Mind/Brain/Behavior Initiative at Harvard University
The Microbial Science Initiative at Harvard University

Other Professional Services

Journal Referee:

Behavioral Neuroscience, BMC Neuroscience, Cell, Cell Host & Microbe, Cell Metabolism, Current Biology, Developmental Biology, Developmental Cell, EMBO Journal, Frontiers in Genetics of Aging, FASEB, Genetics, Journal of Experimental Biology, Journal of Neuroscience, Journal of Experimental Zoology, Learning and Memory, Nature, Nature Neuroscience, Neuron, Neuropsychopharmacology, Neural Development, Neuroscience Letters, PLoS Biology, PLoS Genetics, PLoS One, PLoS Pathogens, PNAS

Grant Reviewer:

NSF Grant Reviewer (Programs in IOS)
NIH Study Section Reviewer

Conference Organizing:

Founding Chair, Gordon Research Conference (Modulation of Neural Circuits and Behavior), Hong Kong, 2015.
Organizing committee, *C. elegans* Neuroscience Meeting, Madison, WI, 2014.
ECRO, Symposium Chair (Circuit Mechanisms for Olfactory Behavior and Plasticity), Belgium, 2013.