

MICHAEL C. CRAIR, PH.D.
WILLIAM ZIEGLER III ASSOCIATE PROFESSOR
DEPARTMENT OF NEUROBIOLOGY
Yale University School of Medicine
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New Haven, CT 06510

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EDUCATION

- 1981-1985 *A.B. in Physics, with High Honors*
University of California at Berkeley
- 1985-1987 *M.A. in Physics*
University of California at Berkeley
- 1987-1991 *Ph.D. in Physics*
University of California at Berkeley
Thesis: "Non-Boltzmann Dynamics in Networks of Spiking Neurons"
Advisor: William Bialek, Ph.D.

POSTGRADUATE TRAINING

- 1991-1993 *Postdoctoral Researcher, supported by an N.S.F./J.S.P.S. Fellowship*
Kyoto University and Kyoto Prefectural Medical School, Kyoto, Japan
Advisors: Profs. Shigeru Shinomoto. (Physics) and Keisuke Toyama (Neuroscience)
- 1993-1997 *Postdoctoral Researcher, supported by an N.I.H./N.R.S.A. Fellowship*
University of California at San Francisco
Advisors: Profs. Robert Malenka (Neuroscience) and Michael Stryker (Neuroscience)

ACADEMIC APPOINTMENTS

- 1998-2006 *Assistant Professor, Department of Neuroscience, Baylor College of Medicine (BCM)*
- 1998-2006 *Assistant Professor, Program in Developmental Biology, Baylor College of Medicine*
- 2005-2006 *Assistant Professor, Program in Translational Biology and Molecular Medicine, BCM*
- 2006 *Associate Professor, Department of Neuroscience, Program in Developmental Biology, and Program in Translational Biology and Molecular Medicine, BCM*
- 2006 *Co-Director, Medical Scientist Training Program (MD/PhD program), BCM*
- 2007-present *Associate Professor, Department of Neurobiology, Department of Ophthalmology and Visual Science, Yale University School of Medicine*
- 2007-present *Director, Vision Core, Yale University*
- 2008-present *Director of Graduate Studies, Neurobiology Graduate Program, Yale University School of Medicine*
- 2009-present *William Ziegler III Associate Professor*

PROFESSIONAL SOCIETIES

ΣΠΣ, Physics Honors Society
American Association for the Advancement of Science
Association for Research in Vision and Ophthalmology
Society for Neuroscience

HONORS AND AWARDS

Outstanding Graduate Student Instructor, University of California at Berkeley, 1989
Faculty Associate in the Department of Physics, University of California at Berkeley (for excellence in Physics instruction), 1989
NSF/JSPS Post-Doctoral Fellowship, 1991-1993
National Research Service Award (NIH), 1993-1996
Alfred P. Sloan Foundation Research Fellow, 1998-2000
The Esther A and Joseph Klingenstein Foundation Fellowship Award in the Neurosciences, 1998-2001
John Merck Fund Scholar, 1998-2002
MRRC New Program Development Award, Baylor College of Medicine, 1999-2000
Curtis Hankamer Research Award, 1999-2000
Basil O'Connor Fellow, March of Dimes Foundation, 1999-2001
Marc Dresden Excellence in Graduate Education Award, Baylor College of Medicine, 2002
NARSAD-Sidney R. Baer, Jr. Foundation Young Investigator Award, 2004-2006
William Ziegler III Endowed Chair in Vision Research, 2009

REVIEW PANELS

Ad hoc grant reviewer for Medical Research Council (UK), 1999, 2003, 2005
Co-Director of the De Lange Conference on Neuroscience, 1999-2001
Ad hoc grant reviewer for NSF, 2001, 2003, 2005
NIH (NCI) Special Emphasis Study Section ZCA1, Washington DC, June 19-20, 2003
Co-Organizer of the Vision Research Conference, "The Mouse Visual System: From Photoreceptors to Cortex", April, 2004
External Peer Review of Department of Environmental Medicine and Visual Neuroscience, University of Nagoya, Japan, November 2005
NIH F02B study section, 2005 – 2007
NIH F03A study section, 2006 – present, Co-Chair
NIH MDCN-K(51) August 20, 2007
NIH (NEI) Special Emphasis Study Section ZEY1, Washington DC, Dec 10, 2007, Dec 5, 2008
Ad hoc grant reviewer for Swiss National Science Foundation, 2007
NIH SMI study section Regular Member, 2008-present

EDITORIAL ACTIVITIES

Guest Editor for *Vision Research*, 2004
Reviewer for: *Journal of Neuroscience*, *Journal of Neurophysiology*, *Nature*, *Nature Methods*, *Nature Neuroscience*, *Neuron*, *Development*, *Visual Neuroscience*, *European Journal of Neuroscience*, *Vision Research*, *Journal of Physiology*, *Journal of Comparative Neurology*, *Cerebral Cortex*, *Proceedings of the National Academy of Science*, *PLoS Biology*

CURRENT FUNDING

NIMH/NIH R01 grant titled, "*Development and Plasticity of Thalamocortical Synapses*"
Principal Investigator; Dates of funding: 2/15/2001 – 6/31/2012
Annual direct costs: ~\$200,000; Total direct costs: ~\$1,000,000

NEI/NIH R01 grant titled, "*Mechanisms of Visual Map Development*"
Principal Investigator; Dates of funding: 8/1/2005 – 6/30/2013
Annual direct costs: ~\$250,000; Total direct costs: ~\$1,000,000

NEI/NIH P30 grant titled, "Yale Core Grant for Vision Research"
Principal Investigator and Imaging Core Module Director;
Dates of funding: 5/01/1985– 4/30/2011
Annual direct costs: ~\$450,000; Total direct costs: ~\$1,800,000

NINDS/NIH T32 grant titled, "Neurobiology of Cortical Systems Training Grant"
Principal Investigator; Dates of funding: 7/01/1983– 6/30/2010
Annual direct costs: ~\$175,000; Total direct costs: ~\$875,000

PUBLICATIONS

PEER REVIEWED ARTICLES PUBLISHED, IN PRESS

1. M C Crair and W Bialek, 1990 "Non-Boltzmann Dynamics in Networks of Spiking Neurons", *Advances in Neural Information Processing Systems 2*, ed., D. Touretzky, Morgan Kaufmann, San Mateo, 109-116.
2. M C Crair and R C Malenka, 1995, "A Critical Period for Long-Term Potentiation at Thalamocortical Synapses", *Nature*, 375:325-328.
3. T Kurotani, M C Crair, Z Molnar, S Higashi, and K Toyama, 1996, "The Development of Rat Somatosensory (Barrel) Cortex Visualized by Optical Recording", *Protein, Nucleic Acid and Enzyme*, 41:758-765.
4. J T R Isaac, M C Crair, R A Nicoll and R C Malenka, 1997, "Silent Synapses during Development of Thalamocortical Inputs", *Neuron*, 18:269-280.
5. M C Crair, E S Ruthazer, D C Gillespie, M P Stryker, 1997, "Ocular Dominance Peaks at Pinwheel Center Singularities of the Orientation Map in Cat Visual Cortex", *Journal of Neurophysiology*, 77:3381-3385.
6. M C Crair, E S Ruthazer, D C Gillespie, M P Stryker, 1997, "Relationship between the Ocular Dominance and Orientation Maps in Visual Cortex of Monocularly Deprived Cats", *Neuron*, 19:307-318.
7. T Aihara, M Tsukada, M C Crair and S Shinomoto, 1997, "The Stimulus-dependent Induction of Long-Term Potentiation in the CA1 Area of the Hippocampus: Experiment and Model", *Hippocampus*, 7:416-426.
8. M C Crair, D C Gillespie and M P Stryker, 1998, "The Role of Visual Experience in the Development of Columns in Cat Visual Cortex", *Science*, 19:566-570.
9. A Antonini, D C Gillespie, M C Crair and M P Stryker, 1998, "Morphology of Single Geniculocortical Afferents and Functional Recovery of the Visual Cortex after Reverse Monocular Deprivation in the Kitten", *Journal of Neuroscience*, 18:9896-909.
10. S Higashi, M C Crair, T Kurotani, H Inokawa and K Toyama, 1999, "Altered Spatial Patterns of Functional Thalamocortical Connections in the Barrel Cortex After Neonatal Infraorbital Nerve Cut Revealed by Optical Recording", *Neuroscience*, 91:439-452.
11. M C Crair, 1999, "Neuronal Activity in Developing Circuits: Permissive or Instructive?" *Current Opinion in Neurobiology*, 9:88-93.
12. C Zhou, Y Qiu, F A Pereira, M C Crair, S Y Tsai, M Tsai, 1999, "The Nuclear Orphan Receptor COUP-TFI is Required for Differentiation of Subplate Neurons and Guidance of Thalamocortical Axons", *Neuron*, 24:847-859.

13. D C Gillespie, M C Crair and M P Stryker, 2000, "Neurotrophin-4/5 Alters Responses and Blocks the Effects of Monocular Deprivation in Cat Visual Cortex during the Critical Period", *Journal of Neuroscience*, 20:9174-9186.
14. M C Crair, J Horton, A Antonini and M P Stryker, 2001, "The Emergence of Ocular Dominance Columns in the Cat by Two Weeks of Age", *Journal of Comparative Neurology*, 430:235-249.
15. H-C Lu, E Gonzalez and M C Crair, 2001, "Barrel Cortex Critical Period Plasticity is Independent of Changes in NMDA Receptor Subunit Composition," *Neuron*, 32:619:634.
16. S W Wang, X Mu, W J Bowers, D-S Kim, D J Plas, M C Crair, H Federoff, L Gan and W H Klein, 2002, "Brn3b/Brn3c double knockout mice reveal an unsuspected role for Brn3c in retinal ganglion cell axon outgrowth", *Development*, 129:467-477.
17. H-C Lu, W-C She, D T Plas, P E Neumann, R Janz and M C Crair, 2003, "Adenylyl Cyclase I Regulates AMPAR Trafficking During Mouse Cortical 'Barrel' Map Development", *Nature Neuroscience*, 6:939-947.
18. D T Plas, A Visel, E R Gonzalez, W-C She and M C Crair, 2004, "Adenylate Cyclase 1 Dependent Refinement of Retinotopic Maps in the Mouse", *Vision Research*, 44:3357-64.
19. D Murali, S Yoshikawa, R R Corrigan, D J Plas, M C Crair, G C Oliver, K M Lyons, Y Mishina and Y Furuta, 2005, "Distinct Developmental Programs Require Different Levels of BMP Signaling During Mouse Retinal Development", *Development*, 132:913-23.
20. S Q Mehta, P R Hiesinger, S Beronja, R G Zhai, K L Schulze, P Verstreken, Y Cao, Y Zhou, U Tepass, M C Crair and H J Bellen, 2005, "Mutations in *Drosophila* Sec15 Reveal a Function in Neuronal Targeting for a Subset of Exocyst Components", *Neuron*, 46:219-32.
21. A R Chandrasekaran, D T Plas, E Gonzalez and M C Crair, 2005, "Evidence for an Instructive Role of Retinal Activity in Retinotopic Map Refinement in the Superior Colliculus of the Mouse", *Journal of Neuroscience*, 25:6929-38.
22. J P Carson, T Ju, H-C Lu, C Thaller, M Xu, S L Pallas, M C Crair, J Warren, W Chiu and G Eichele, 2005, "A Digital Atlas to Characterize the Mouse Brain Transcriptome", *PLoS Computational Biology*, 1:289-296.
23. D T Plas, J E Lopez and M C Crair, 2005, "Pre-target Sorting of Retino-collicular Axons in the Mouse", *Journal of Comparative Neurology*, 491:305-319.
24. H-C Lu, D A Butts, P S Kaeser, W-C She, R Janz and M C Crair, 2006, "Role of Efficient Neurotransmitter Release in Barrel Map Development", *Journal of Neuroscience*, 26:2692-2703.
25. M Inan, H-C Lu, M J Albright, W-C She and M C Crair, 2006, "Barrel Map Development Requires PKARII β -mediated cAMP signaling", *Journal of Neuroscience*, 26:4338-4349.
26. M Inan, M C Crair, 2007, "Development of cortical maps - Perspectives from the barrel cortex", *The Neuroscientist*, 13:49-61.
27. A R Chandrasekaran, R D Shah and M C Crair, 2007 "Developmental Homeostasis of Mouse Retinocollicular Synapses", *Journal of Neuroscience*, 14:1746-1755.
28. M J Albright, M C Weston, M Inan, C Rosenmund and M C Crair, 2007, "Increased Thalamocortical Synaptic Response and Decreased Layer IV Innervation in GAP-43 Knockout Mice", *Journal of Neurophysiology*, 98:1610-1625.
29. R D Shah and M C Crair, 2008 "Retinocollicular Synapse Maturation and Plasticity are Regulated by Correlated Retinal Waves", *Journal of Neuroscience*, 28:292-303.
30. T Kurotani, K Yamada, Y Yoshimura, M C Crair and Y Komatsu, 2008 "State-Dependent Bidirectional Modification of Somatic Inhibition in Neocortical Pyramidal Neurons", *Neuron*, 57:905-916.

31. T. Iwasato*, M Inan*, H Kanki, R S Erzurumlu, S Itohara and M C Crair, 2008 "Cortical Adenylyl Cyclase 1 is Required for Thalamocortical Synapse Maturation and Aspects of Layer IV Barrel Development" *Journal of Neuroscience*, 28:5931-5943.
32. D T Plas, O S Dhande, J E Lopez, D Murali, C Thaller, M Henkemeyer, Y Furuta, P Overbeek and M C Crair, 2008, "Bone Morphogenetic Proteins, Eye Patterning, and Retinotectal Map Formation in the Mouse", *Journal of Neuroscience* 28:7057-7067.
33. R D Shah and M C Crair, 2008, "Mechanisms of Response Homeostasis during Retinocollicular Map Formation" *Journal of Physiology* 586:4363-4369.
34. M C Crair and R D Shah, 2009, "Long-term Potentiation and Long-term Depression in Experience-Dependent Plasticity", *Encyclopedia of Neuroscience*, edited by Larry Squire et al. 5:561-570.
35. A R Chandrasekaran, Y Furuta and M C Crair, 2009, "Consequences of Axon Guidance Defects on the Development of Retinotopic Receptive Fields in the Mouse Colliculus", *Journal of Physiology* 587:953-963.

ARTICLES SUBMITTED

36. R D Shah, O S Dhande, A R Chandrasekaran, A Anishchenko, J Elstrott, T Iwasato, E Swindell, M Jamrich, S Itohara, M B Feller and M C Crair, 2008, "Adenylyl Cyclase 1 is Required for Activity Dependent Retinocollicular Map Refinement and Response Homeostasis", *Neuron*, (in revision).
37. H P Xu, H Chen, Q Ding, L Diao, P Wang, L Gan, M C Crair and N Tian, 2008, "Immune Molecules Mediate Neural Circuit Development by Regulating Glutamatergic Synaptic Transmission", *Cell*, (revision submitted).
38. O S Dhande, E Hua, Y Zhang, E S Ruthazer, M B Feller and M C Crair, 2008, "Transfection of single murine retinal ganglion cells by *in vivo* electroporation", *Neural Development*, (submitted).

INVITED SEMINARS/SYMPOSIA

INTERNATIONAL

- Kyoto Prefectural Medical School, Department of Physiology, "A Model Learning Rule for Hippocampal Plasticity", Kyoto, Japan, November, 1992
- University of Kyoto, Department of Physics, "Optical Imaging of Barrel Development in the Rat", Kyoto, Japan, April, 1993
- Tadashina Conference on Neuroscience, "Optical Imaging of Barrel Development in the Rat", Tadashina, Japan, May, 1993
- University of Nagoya, Department of Physiology, "Role of Sensory Experience and Neural Activity in Cortical Map Development, Nagoya, Japan, March, 2000
- University of Osaka, Department of Physiology, "Role of Sensory Experience and Visual Cortical Development", Osaka, Japan, March, 2000
- National Institute for Basic Biology Center of Excellence International Symposium, "Role of Sensory Experience in Visual Cortical Development", Okazaki, Japan, March, 2000
- National Academy of Science Frontiers in Science Symposium, "Activity Dependent Neural Circuit Development", Beijing, China, Sept 2001
- European Winter Conference on Brain Research, "Mechanisms of Sensory Map Development", Les Arcs, Switzerland, March, 2003

Gulbenkian Institute for Science Seminar, "Nature vs. Nurture in Sensory Map Development", Lisbon, Portugal, February, 2005

RIKEN Brain Sciences Institute, "Mechanisms of Sensory Map Development", Wako, Japan, November 2005

International Symposium on Molecular and Cellular Mechanisms of Environmental Adaptation, "Development of Thalamocortical Connections", Nagoya University, Nagoya, Japan, November 2005

Nagoya University, Department of Visual Sciences, "Spontaneous Retinal Waves During Development are Instructive in Retinotopic Map Refinement", Nagoya University, Nagoya, Japan, December 2005

Osaka University, Graduate School of Frontier Biosciences, "Nature vs. Nurture in Sensory Map Development", Osaka University, Osaka, Japan, December 2005

NATIONAL

University of California, San Francisco, Department of Psychiatry, "A Model Learning Rule for Hippocampal Plasticity", San Francisco, CA, November, 1992

University of California, Irvine, Department of Neuroscience, "Optical Imaging of Barrel Development in the Rat", Irvine, CA, October, 1994

University of Rochester, Cognitive Science Department Seminar Series, "Cortical Development and Plasticity", Rochester, NY, February, 1997

Case Western Reserve University, Neuroscience Department Seminar Series, "Cortical Development and Plasticity", Cleveland, OH, March, 1997

University of Pittsburgh, Neuroscience Department Seminar Series, "Cortical Development and Plasticity", Pittsburgh, PA, March, 1997

Case Western Reserve University, Bioengineering Department, "Cortical Development and Plasticity", Cleveland, OH, March, 1997

Baylor College of Medicine, Division of Neuroscience, "Cortical Development and Plasticity", Houston, TX, May, 1997

University of California at Los Angeles, Neuroscience Department Seminar Series, "Cortical Development and Plasticity", Los Angeles, CA, May, 1997

University of Pennsylvania, Neuroscience Department, "Cortical Development and Plasticity", Philadelphia, PA, June, 1997

Baylor College of Medicine, Developmental Biology Retreat, Feb., 1999

University of Florida, Neuroscience Department, "Cortical Development and Plasticity", Gainesville, FL, November, 1999

Baylor College of Medicine, Department of Cell and Molecular Biology, "Cortical Development and Plasticity", Houston, TX, February, 2000

Gordon Conference on Neural Development, "Role of Sensory Experience and Neural Activity in Cortical Map Development", Newport, RI, June, 2000

LTP, LTD and Synaptic Plasticity in the Brain, Satellite Symposium, "Synaptic Plasticity, Adenylyl Cyclase and Barrel Development", Society for Neuroscience, New Orleans, LA, November, 2000

University of Texas at Houston Health Science Center, Neurobiology and Anatomy Department Seminar, 'Mechanisms of Cortical Development and Plasticity', Houston, TX, November, 2000

Baylor College of Medicine MD/PhD Symposium, "Nature vs. Nurture: Exploring the roles of genetics and the environment in brain development", Galveston, TX, September, 2001

Louisiana State University, Neuroscience Department Seminar, "Mechanisms of Sensory Map Development and Plasticity", New Orleans, LA, October, 2001

University of California Alumni Club Annual Meeting, "Nature vs. Nurture in Brain Development", Feb., 2002

Brain Expo, "Brain Development", San Antonio Texas, July 2002

Cold Spring Harbor Lab Meeting, "Altered Thalamocortical Synapse Development in Barrelless Mice", September, 2002

MIT Department of Brain and Cognitive Sciences Seminar, "Mechanisms of Sensory Map Development", Boston, MA, October, 2002

UT Southwestern Neuroscience Department Seminar, "Mechanisms of Sensory Map Development", Dallas, TX, January, 2003

Baylor College of Medicine, Developmental Biology Retreat, "Mechanisms of Neuronal Map Development", Houston, TX Feb, 2003

University of California, San Diego and The Salk Institute for Neuroscience Seminar, "Mechanisms of Sensory Map Development", San Diego, CA, April, 2003

Society for Neuroscience Satellite Symposium on Cortical Development, "Mechanisms of Thalamocortical Synapse Development", New Orleans, LA, November, 2003

University of Texas, Houston Neuroscience Department Seminar, "Mechanisms of Visual Map Development", Houston, TX, Jan., 2004

Rice University, Psychology Department, "Nature vs. Nurture in Sensory Map Development", Houston, TX, February, 2004

Society for Neuroscience Mini Symposium on "Cellular and Molecular Mechanisms Patterning Cortical Connectivity", San Diego, CA, Oct., 2004

University of Virginia Neuroscience Department Symposium on "Mechanisms of Thalamocortical Synapse Development and Plasticity", Charlottesville, VA, Dec., 2004

Harvard Medical School Neuroscience Department Symposium on "Mechanisms of Visual Map Development", Boston, MA, Dec., 2004

Texas A&M University Symposium on Neurodevelopment, "Nature vs. Nurture in Sensory Map Development", Bryan, TX, April, 2005

Baylor College of Medicine, Menninger Department of Psychiatry and Behavioral Sciences Grand Rounds, "Nature vs. Nurture in Sensory Map Development", Houston, TX, May, 2005

Cullen Eye Institute Vision Research Seminar Series on "Neurophysiologic and Clinical Aspects of Amblyopia and Vision Development", Houston, TX, June, 2005

Houston Society for Engineering in Medicine and Biology, "Nature vs. Nurture in Sensory Map Development", Houston, TX, Feb 2006

Yale School of Medicine, Department of Neurobiology, "Mechanisms of Sensory Map Development", New Haven, CT, Mar 2006

NINDS/NIH Neurobiology Seminar, "Mechanisms of Sensory Map Development", Bethesda, MD, June 2006

Albert Einstein College of Medicine Neurobiology Department Seminar, "Nature vs. Nurture in Sensory Map Development", New York, NY, Mar 2007

Duke University, Department of Neuroscience, "Mechanisms of Retinotopic Map Development", Durham, NC, April 2007

Brown University, Department of Neuroscience, "Mechanisms of Sensory Map Development", Providence, RI, Oct 2007

Winter Conference on Brain Research, "Retinocollicular Response Homeostasis", Snowbird, UT Feb 2008

ARVO Symposium on Retinal Ganglion Cells in Model Organisms, "Response Homeostasis of Retinocollicular Receptive Fields", Ft. Lauderdale, FL April 2008

SFN Mini-Symposium on Homeostatic Plasticity in Intact Neural Circuits, "Response Homeostasis of Retinocollicular Receptive Fields", Washington, DC Nov 2008

University of Connecticut, Behavioral Neuroscience Seminar Series, "How 'Nature' and 'Nurture' Guide the Development of Visual Maps", Storrs, CT Oct 2008

University of Wyoming, Center for Neuroscience Seminar, "Mechanisms of Sensory Map Development", Laramie, WY, Oct 2008

Columbia University, VisioNYC, "Ankle Busters and Mavericks: Wave Size Matters in Visual Map Development", NY, Dec 2008

University of Chicago, Department of Neuroscience Seminar, "Nature vs. Nurture in Visual Map Development", Chicago, IL, Dec 2008

Cold Spring Harbor Lab, Meeting on Synapses: From Molecular to Circuits & Behaviors, "Retinal Wave Size Matters for Eye-Specific Segregation and Retinotopic Map Refinement", Cold Spring Harbor, NY, Apr 2009

TEACHING RELATED ACTIVITIES (SINCE 1998)

COURSES TAUGHT AND/OR COORDINATED AT BAYLOR COLLEGE OF MEDICINE (BCM)

1998-2001 Systems Neuroscience (Neuroscience Department core course); 6 hrs/yr; 4 lectures/yr; Co-Director of course.

1999-2006 The Nervous System (Medical School course); 3-4 hrs/yr; 3-4 lectures/yr.

1999-2001 Molecular Neuroscience (Neuroscience Department core course); 4.5 hrs/yr; 3 lectures/yr.

1998-2006 Neural Development (Developmental Biology core course, Neuroscience Department elective course). 5-6 hrs/yr; 5-6 lectures/yr; Co-Director of Course.

2001-2006 Integrative Neuroscience II (Neuroscience Department core course); 11-13 hrs/yr; 11-13 lectures/yr; Director of Course.

2001-2006 Learning and Memory (Neuroscience Department elective course); 3 hrs/yr; 3 lectures/yr.

COURSES TAUGHT AND/OR COORDINATED AT OTHER INSTITUTIONS WHILE AT BCM

2005 Neurodevelopment Course, Gulbenkian Institute for Science PhD Program in Biomedicine, Lisbon, Portugal; 8 hrs/yr; 5 lectures/yr.

2006 John Merck Fund Summer Institute on the Biology of Developmental Disabilities, Princeton, NJ

CURRICULUM DEVELOPMENT WORK AT BCM

1998 New course Co-Director, reorganized the curriculum for the Developmental Biology Core course, "Neural Development"

1998-2006 Member of the Examination Committee for the Program in Developmental Biology

1998-2006 Member of the Examination Committee for the Department of Neuroscience

1998-2006 Member of the Faculty Operating Committee of the Medical Scientist Training Program
 1998-2006 Member of the Thesis Committees of 21 Graduate Students in Other Laboratories
 1998-2006 Co-Director of the Developmental Biology Core course "Neural Development"
 1999-2006 Faculty Coordinator of the Department of Neuroscience Seminar Series
 1999-2006 Member of three Faculty Recruitment Committees in the Department of Neuroscience
 2000-2006 Member of the Steering Committee of the Program in Developmental Biology
 2001 Member of the Committee to Reorganize the Neuroscience Graduate Program curriculum
 2001-2006 Director of the Neuroscience Core course, "Integrative Neuroscience II".
 2001 Established elective course for the Neuroscience Graduate Program in "Neural Development"
 2005-2006 Member, Graduate Program in Translational Biology and Molecular Medicine
 2005-2006 Member of Committee to Reorganize the Core Curriculum for the Neuroscience Graduate Program
 2005-2006 Member of the Graduate School of Biomedical Sciences Executive Council
 2006 Member of the Graduate School of Biomedical Sciences Promotions Committee
 2006 Director, Neuroscience Core course, "Anatomy and Development of the Nervous System"

COURSES TAUGHT AND/OR COORDINATED AT YALE UNIVERSITY SCHOOL OF MEDICINE

2007 Neurodevelopment (Integrative Neuroscience Program elective course). 6 hrs/yr; 3 lectures/yr; Co-Director of Course.
 2007,2009 Principles of Neuroscience (Integrative Neuroscience Program core course) lecture on Neuronal Development
 2007-2009 Structural and Functional Organization of the Human Nervous System (Medical School and Graduate School core course) lecture on Eye Movements
 2007-2009 Structural and Functional Organization of the Human Nervous System (Medical School and Graduate School core course) laboratory instructor
 2009 Perspectives on Science and Engineering

CURRICULUM DEVELOPMENT WORK AT YALE UNIVERSITY SCHOOL OF MEDICINE

2007-pres Member, Medical School Admissions Committee
 2007-pres Member, Interdepartmental Neuroscience Program Admissions Committee
 2008-pres Member of Interdepartmental Neuroscience Program Executive Committee
 2008-pres Director of Graduate Studies, Neurobiology Graduate Program
 2008-pres Member of Biological and Biomedical Science Executive Committee

POSTDOCTORAL TRAINEES/ RESEARCH ASSOCIATES

Dong-Seob Kim, M.D., Ph.D., 1999-2001, Associate Professor, Department of Ophthalmology, Hanyang University School of Medicine, Seoul, South Korea.
Hui-Chen Lu, Ph.D., 1999-2005, Assistant Professor in Pediatrics and Neurology, Cain Foundation Laboratories, Baylor College of Medicine, Houston TX.
Hong-Ping Xu, Ph.D., 2007-present
Hong Li, Ph.D., 2008-present
James Ackman, Ph.D., 2008-present
Moran Furman, Ph.D., 2008-present

GRADUATE STUDENTS

AS MAJOR ADVISOR

Daniel T. Plas, Ph.D. in Neuroscience, 2005; Current Position: High school science teacher (TX)
Sunil Mehta, Ph.D. in Developmental Biology, 2005; Current Position: Resident in Psychiatry at UT Southwestern School of Medicine
Michael Albright, Ph.D. in Neuroscience, 2007; Current Position: Postdoctoral fellow in Neuroscience at Baylor College of Medicine
Anand Chandrasekaran, Ph.D. Candidate in Neuroscience, 2002-2006; Current Position: Postdoctoral fellow at Stanford University
Ruchir Shah, Ph.D. Ph.D. in Neuroscience, 2008; Current Position: Postdoctoral fellow at NYU
Melis Inan, Ph.D. Candidate in Developmental Biology, 2009; Current Position: Postdoctoral fellow at Weill/Cornell Medical School
Onkar Dhande, Ph.D. Candidate in Developmental Biology, 2005-present
Timothy Burbridge, Ph.D. Candidate in Neurobiology, 2009-present

AS THESIS COMMITTEE MEMBER

Cynthia Galvan, Ph.D. in Neuroscience, 2001
Beth Boudreaux, Ph.D. in Neuroscience, 2002, Postdoctoral Researcher at Northwestern
Sam McClure, Ph.D. in Neuroscience, 2003, Postdoctoral Researcher at Princeton
Tian-ming Yang, Ph.D. in Neuroscience, 2003, Postdoctoral Researcher at the University of Washington
Patrik Verstreken, Ph.D. in Developmental Biology, 2002, Postdoctoral Researcher at BCM
Kartik Pappu, Ph.D. in Developmental Biology, 2004, Postdoctoral Researcher at UCLA
Tycho Hoogland, Ph.D. in Neuroscience, 2004, Postdoctoral Researcher at BCM
Hita Adwanakar, Ph.D. in Neuroscience, 2005, Postdoctoral Researcher at UT Galveston
Jacqueline Lee Alldrit, Ph.D. in Physiology, 2005, High school teacher, CA
Michael Greenbaum, Ph.D. Candidate in Genetics, 2001-2003
Yarimar Carrasaquillo, Ph.D. in Neuroscience, 2005, Postdoctoral Researcher at Washington University
Adam Mayer, Ph.D. Candidate in Neuroscience, 2001-2007
Xu Liu, Ph.D. Candidate in Molecular and Cell Biology, 2002-2008
Tong Wey Koh, Ph.D. Candidate in Developmental Biology, 2002-2006
Marci Antion, Ph.D. Candidate in Neuroscience, 2002-2006
Bryan McGill Ph.D. Candidate in Neuroscience, 2002-2007
William Krause, Ph.D. Candidate in Molecular and Cell Biology, 2003-2008
Wilson Chwang, Ph.D. Candidate in Neuroscience, 2004-2007
Cindy Ly, Ph.D. Candidate in Neuroscience, 2004-2007
Joonyeol Lee, Ph.D. Candidate in Neuroscience, 2004-2007
Kahlil Martin, Ph.D. Candidate in Neuroscience, 2004-6, returned to medical school at BCM
Olivia Fitch, Ph.D. Candidate in Neuroscience, 2004-2007
Matt Weston, Ph.D. Candidate in Neuroscience, 2005-2007
Carlos Ballester, Ph.D. Candidate in Developmental Biology, 2005-2006

DIDACTIC LECTURES (SINCE 1998)

INTERNATIONAL AND NATIONAL

Brain Expo, San Antonio, TX, "Nature versus Nurture in Brain Development: How Genes and the Environment Combine to Guide Brain Development", July 2002
Gulbenkian Institute for Science PhD Program in Biomedicine, Lisbon, Portugal; "Neuromuscular Junction Activity-Dependent Development", Feb. 15, 2005
Gulbenkian Institute for Science PhD Program in Biomedicine, Lisbon, Portugal; "Spontaneous Neuronal Activity in Map Development", Feb. 15, 2005
Gulbenkian Institute for Science PhD Program in Biomedicine, Lisbon, Portugal; "Sensory Experience in Map Development", Feb. 16, 2005

Gulbenkian Institute for Science PhD Program in Biomedicine, Lisbon, Portugal; "Nature vs. Nurture in Sensory Map Development", Feb. 16, 2005

LOCAL (BCM AND YALE UNIVERSITY)

More than 150 lectures in 8 different Baylor College of Medicine and Yale University graduate and medical school courses on subjects in Neuroscience ranging from Neural Development, Systems Neuroscience, Biology of Schizophrenia, Sleep, Working Memory, Mouse Transgenic Models, Gene Regulation, Sensory Channels, etc.

SERVICE ACTIVITIES AT BAYLOR COLLEGE OF MEDICINE (BCM)

NEUROSCIENCE DEPARTMENT ASSIGNMENTS

Faculty Search Committee-Assistant Professor, Neuroscience, 1998-99
Examination Committee for the Program in Developmental Biology, 1998-2006
Examination Committee for the Department of Neuroscience, 1998-2006
Chair, Neuroscience Seminar Committee, 1998-2006
Co-Chair, De Lange Conference on Neuroscience, 1999-2001
Neuroscience Graduate Curriculum Reorganization Committee, 2001
Neuroscience Graduate Program Steering Committee, 2004-2006
Chair, Neuroscience Graduate Student Recruitment Committee, 2004-2006
Faculty Search Committee-Tenure Track Professor in Systems Neuroscience, 2005
Neuroscience Graduate Curriculum Reorganization Committee, 2005-2006
Faculty Search Committee-Tenure Track Professor in Molecular/Cellular Neuroscience, 2006

COLLEGE ADMINISTRATIVE ASSIGNMENTS

Faculty Oversight Committee, Medical Scientist Training Program, 1998-2006
Program in Developmental Biology Steering Committee, 2000-2006
Baylor College of Medicine Graduate School Recruitment Committee, 2005-2006
Baylor College of Medicine Graduate School Executive Council, 2005-2006
Director, Machine Shop Module, NEI Vision Core Grant, 2005-2006
Baylor College of Medicine Graduate School Promotions Committee, 2006
Co-Director, Baylor College of Medicine Medical Scientist Training Program (MD/PhD), 2006

SERVICE ACTIVITIES AT YALE UNIVERSITY

DEPARTMENT ASSIGNMENTS

Member, Department of Neurobiology Tenure-Track Faculty Search Committee, 2007
Coordinator, 'Club Neurobiology' Colloquium Series, 2007-pres
Member, Department of Ophthalmology Research Director Faculty Search Committee, 2007
Member, Department of Neurobiology Tenure-Track Faculty Search Committee, 2008
Member, Department of Ophthalmology Tenure-Track Faculty Search Committee, 2008,2009
Director of Graduate Studies, Neurobiology Graduate Program, 2008-pres

UNIVERSITY ADMINISTRATIVE ASSIGNMENTS

Yale University School of Medicine (MD) Admissions Committee, 2007-pres
Director, Yale University Vision Research Core Program, 2007-pres
Member, Yale University School of Medicine Electronic & Machine Shop Oversight Committee, 2007-pres
Director, Vision Research Imaging Core Module, 2007-pres
Member, Interdepartmental Neuroscience Program (INP) Admissions Committee, 2007-pres
Member, Biological and Biomedical Sciences (BBS) Executive Committee, 2008-pres

Member, Interdepartmental Neuroscience Program (INP) Executive Committee, 2008-pres