

Curriculum Vitae

Minghong Ma, Ph.D.

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RESEARCH INTERESTS: Olfactory coding in mammals

EDUCATION:

- 1997-2001 **Yale University**, New Haven, Connecticut, USA
Postdoctoral Fellow, *Neuroscience*
- 1991-1997 **Columbia University**, New York, NY, USA
Ph.D., M.Phil. and M.A., *Neuroscience*
- 1988-1991 **Chinese Academy of Science**, Beijing, China
M.S., *Biophysics*
- 1984-1988 **Beijing University**, Beijing, China
B.S., *Physiology and Biophysics*

SELECTED HONORS AND AWARDS:

- 1999-2001 Postdoctoral Fellowship Award, Public Health Services
- 1997 Ph.D. with Distinction, Columbia University
- 1991-1997 Graduate Fellowship, Columbia University
- 1988 BS Thesis Award and Honor Graduate Award, Peking University
- 1985-1987 First Scholarship, Peking University

GRANTS:

1. R03 from NIDCD, NIH. **Functional characterization of the septal organ**. Funding Periods: Aug. 1, 2001-- July 31, 2004.
2. Whitehall Foundation Award. **Peripheral coding of olfaction**. Funding Periods: July 1, 2002-- June 31, 2005.

RESEARCH EXPERIENCE:

01/2003-present

Assistant Professor, Department of Neuroscience, UPenn School of Medicine

Research Projects: molecular and functional characterization of the mouse septal organ

Major Techniques: optical imaging; patch clamp; immunohistochemistry; molecular cloning; in

situ hybridization; cDNA microarray.

04/2001- 12/2002

Associate Research Scientist, Department of Neurobiology, Yale University

Research Projects: molecular and functional characterization of the mouse septal organ

Major Techniques: optical imaging; patch clamp; molecular cloning; in situ hybridization; cDNA microarray.

03/1997-03/2001

Postdoctoral Fellow, Dr. Gordon Shepherd's lab, Section of Neurobiology, Yale University

Research Projects: investigate olfactory signal transduction and coding strategies in mammals.

Major Techniques: optical imaging; patch clamp; infrared DIC and two-photon laser scanning microscopy; immunohistochemistry; molecular cloning.

10/1992-02/1997

Graduate Research Assistant, Dr. John Koester's Lab, Center for Neurobiology and Behavior, Columbia University

Research Projects: investigate ionic mechanisms underlying frequency-dependent spike broadening, and its synaptic consequences and behavioral significance in identified *Aplysia* neurons.

Major Techniques: voltage clamp; action potential clamp; dynamic clamp; computer modeling; calcium imaging; pharmacology; cell culture; *in vivo* electrical recordings from axons of identified neurons; behavioral testing.

07/1989-07/1991

Graduate Research Assistant, Dr. Diao Yun-cheng's Lab, Chinese Academy of Science

Research Projects: investigate synaptic effects of neural circuitry on the neurons in the primary visual cortex and in the superior colliculus.

Major Techniques: *in vivo* single-unit recordings of neurons from cats and golden hamsters; *in vivo* pharmacology.

09/1987 - 07/1988

Undergraduate Research Assistant, Drs. Zhou Peiai and Luo Liner's lab, Department of Biology, Peking University

Research Projects: investigate the electrical properties of the giant axons and their effects on synaptic transmission in cockroaches.

Major Techniques: intracellular and extracellular recordings from axons; pharmacology.

PROFESSIONAL MEMBERSHIPS:

Society for Neuroscience, since 1994

Association for Chemoreception Sciences, since 1997

PUBLICATIONS:

Research Articles and Book Chapters

1. Ma M, Grosmaître X, Iwema C, Baker H, Greer CA and Shepherd GM (2003) Olfactory signal transduction in the mouse septal organ. *J Neurosci*, 23: 317-324.
2. Ma M and Shepherd GM (2001) Recording from vertebrate olfactory receptor neurons: from isolated cells to intact epithelial preparations. In *Methods and Frontiers in Chemosensory Research*, ed. by Sidney A Simon and Miguel AL Nicolelis.
3. Ma M and Shepherd GM (2000) Functional mosaic organization of mouse olfactory receptor neurons. *Proc Natl Acad Sci, USA*, 97, 12869-12874.
4. Ma M, Chen WR and Shepherd GM (1999) Electrophysiological characterization of rat and mouse olfactory receptor neurons from an intact epithelial preparation. *J Neurosci Methods*, 92: 31-40.
5. Leinders-Zufall T*, Ma M*, and Zufall F (1999) Impaired odor adaptation in olfactory receptor neurons after inhibition of Ca²⁺/calmodulin kinase II. *J Neurosci*, RC19: 1-6. (*equal contribution)
6. Ma M and Koester J (1996) The role of K⁺ currents in frequency-dependent spike broadening in *Aplysia* R20 neurons: A dynamic clamp analysis. *J Neurosci* 16: 4089-4101.
7. Ma M and Koester J (1995) Consequences and mechanisms of spike broadening of R20 cells in *Aplysia californica*. *J Neurosci* 15: 6720-6734.
8. Sun JS, Li B, Ma MH and Diao YC (1994) Transcallosal circuitry revealed by blocking and disinhibiting callosal input in the cat. *Visual Neurosci* 11: 189-197.
9. Li B, Sun JS, Ma MH and Diao YC (1993) The influence of callosal afference onto the directional and orientational selectivities of single neurons in the 17/18 border region of the cat. *Acta Biophysica Sinica* 9: 407-414.
10. Ma MH, Li B, Sun JS and Diao YC (1991) Effects of GABA and bicuculline on the properties of visual superior colliculus neurons in golden hamsters. *Acta Physiologica Sinica* 43: 573-579.
11. Sun JS, Li B, Ma MH and Diao YC (1991) The influence of callosal afference on the responsiveness of single neurons at the 17/18 border region in the cat. *Acta Biophysica Sinica* 7: 495-500.

Selected Meeting Abstracts in the last two years

1. Minghong Ma, Carrie L. Iwema, Liu Jian, Charles A Greer and Gordon M Shepherd (2003) Molecular Organization of the Mouse Septal Organ. *AChemS Abstr*, 25, 377.
2. Xavier Grosmaître, Minghong Ma, Anne Vassalli, Peter Mombaerts, Gordon M. Shepherd (2003) Spatial relations between olfactory sensory neurons revealed in gene-targeted mice. *AChemS Abstr*, 25, 184.
3. Zhang X, Rogers M, Zhang X, Zou D, Liu J, Ma M, Shepherd GM, Firestein S (2003) High throughput microarray detection of olfactory receptor gene expression. *AChemS Abstr*, 25, 380.
4. Xavier Grosmaître, Minghong Ma, Anne Vassalli, Peter Mombaerts, Gordon M. Shepherd (2002) Spatial Organization of Olfactory Receptor Neurons: A Functional Analysis in Gene-Targeted Mice. *Soc. Neurosci. Abstra*, 28, 847.8.
5. Ma M, Greer CA and Shepherd GM (2001) Functional characterization of the mouse septal organ. *Soc Neurosci Abstra*, 27, 61.14.
6. Ma M, Greer CA and Shepherd GM (2001) The septal organ, an attractive model system for olfactory coding study. *AChemS Abstr*, 23, 367.