

**BIOGRAPHICAL SKETCH**

Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2.  
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME Zhao, Haiqing	POSITION TITLE Associate Professor		
eRA COMMONS USER NAME hzhao5			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
Peking University, China	BS	1985	Physiology
Peking University, China	MS	1988	Physiology
Yale university	Ph.D	1998	Neuroscience

**A. Personal Statement**

Not required for a Ruth L. Kirschstein National Research Service Award (NRSA) application

**B. Positions and Honors.****Professional Experience**

1988 – 1990 Scientist, Tianjin Leeco Biotechnological, Inc., Tianjin, China  
 1998 – 2002 Postdoctoral Fellow, Howard Hughes Medical Institute, Johns Hopkins Medical School, Baltimore, MD  
 2002 – 2008 Assistant Professor, Department of Biology, Johns Hopkins University, Baltimore, MD  
 2008 – present Associate Professor Department of Biology, Johns Hopkins University, Baltimore, MD

**Honors**

1991 Award for Advancement of Science and Technology, by the State Education Commission, The people's republic of China. The second rank.  
 1991 – 1995 Yale University Fellowship  
 1994 The Don Tucker Memorial Award, by Association for Chemoreception Sciences.

**C. Selected Peer-Reviewed Publications** (selected from 17 peer reviewed publications)**Most relevant to the current application (Authors in Bold are CMDB students)**

1. Yijun Song, **Katherine D. Cygnar**, Botir Sagdullaev, Matthew Valley, **Sarah Hirsh**, **Aaron Stephan**, Johannes Reiser, and Haiqing Zhao. Olfactory CNG channel desensitization by  $Ca^{2+}$ /CaM via the B1b subunit affects response termination but not sensitivity to recurring stimulation. *Neuron* 2008. 58(3):374-86. PMC2587172.
2. **Tiara Booker-Dwyer**, **Sarah Hirsh**, and Haiqing Zhao. A unique cell population in the mouse olfactory bulb displays nuclear  $\beta$ -catenin signaling during development and olfactory sensory neuron regeneration. *Developmental Neurobiology* 2008. 68(7):859-69.
3. Ali Güler, **Jennifer Ecker**, Gurprit Lall, Shafiqul Haq, **Cara Altimus**, Hsi-Wen Liao, Alun Barnard, Hugh Cahill, Tudor Badea, Haiqing Zhao, Mark Hankins, David Berson, Robert Lucas, King-Wai Yau, and Samer Hattar. Melanopsin cells provide the principal conduit for rod/cone contribution to non-image forming vision. *Nature* 2008. 453(7191):102-5. NIHMS194680
4. **Katherine D. Cygnar** and Haiqing Zhao. Phosphodiesterase 1C is dispensable for rapid response termination of olfactory sensory neurons. *Nature Neuroscience* 2009. 12(4):454-62. PMC2712288.

5. **Aaron B. Stephan**, Eleen Y. Shum, **Sarah Hirsh**, **Katherine D. Cygnar**, Johannes Reisert, and Haiqing Zhao. ANO2 is the ciliary calcium-activated chloride channel that may mediate olfactory amplification. Proc Natl Acad Sci USA 2009. 106(28):11776-81. PMC2702256.

**Additional publications of importance to the field (olfactory sense)**

6. Haiqing Zhao, Stuart Firestein, and Charles A. Greer. NADPH-diaphorase localization in the olfactory system. NeuroReport 1994. 6:149-52.
7. Haiqing Zhao, Joji M. Otaki, and Stuart Firestein. Adenovirus-mediated gene transfer in olfactory neurons in vivo. Journal of Neurobiology 1996. 30(4):521-30.
8. Haiqing Zhao, Lidija Ivic, Joji M. Otaki, Mitsuhiro Hashimoto, Katsuhiko Mikoshoba, and Stuart Firestein. Functional expression of a mammalian odorant receptor. Science 1998. 279:237-42.
9. Haiqing Zhao and Randall Reed. X inactivation of the OCNC1 channel gene reveals a role for activity-dependent competition in the olfactory system. Cell 2001. 104:651-60.
10. Katherine D. Cygnar, **Aaron B. Stephan** and Haiqing Zhao Analyzing responses of mouse olfactory sensory neurons using the air-phase electroolfactogram recording. J Vis Exp. 2010 (37). pii: 1850. doi: 10.3791/1850.

**D. Research Support.**

**Ongoing**

1R01DC009946-01 Dougherty (Michigan State University, PI) 08/2008 – 07/2010  
NIH/NIDCD  
CRCNS: Signal Transduction in Mouse Olfactory Receptor Neurons  
This project will develop a mathematical model of olfactory transduction and test it using a number of genetically modified mice.  
Role: Co-PI

1R01DC007395-01A2 Zhao (PI) 02/2008 – 01/2013  
NIH/NIDCD  
Regulation of olfactory signal transduction  
The major goal of this project is to determine the role of transduction components using genetic and physiological techniques.  
Role: PI

**Completed**

Grant Reference Number: 2006-08-46 Zhao (PI) 09/2006 – 08/2009  
Whitehall Foundation  
Olfactory adaptation through regulation of CNG ion channels  
The major goal of the project is to examine the physiological significance of Ca<sup>2+</sup>/calmodulin-mediated CNG channel inhibition to olfactory adaptation.  
Role: PI

1 R03 DC006178-01A1 Zhao (PI) 01/2004 – 12/2006  
NIH/NIDCD  
Functional Role of Odorant Receptor Phosphorylation  
The major goal of the project is to understand how olfactory signal transduction is regulated at the level of the odorant receptor.  
Role: PI