Chao-Yin Chen, Ph.D.

Clinical Interests

Central neuroplasticity in cardiovascular regulation

Blood pressure and heart rate are regulated by CNS on a moment-to-moment bases. Depending on the interaction between the genetic and environmental factors, the CNS regulatory output can result in either a normal or a pathological outcome. My research focuses on central regulation of cardiovascular function and how this regulation is altered in response to environmental factors such as exercise, stress, exposure to air pollution, hypertension, and obesity. We are particularly interested in how the neurons in the baroreflex pathways change their intrinsic and/or synaptic properties as well as the neurotransmitter/neuromodulator and the receptors involved in the altered regulatory output. Studies are carried out in two major brainstem nuclei: the first central site that receives and integrates sensory information (Nucleus Tractus Solitarii) and the final output for cardiac parasympathetic motor nerves (Nucleus Ambiguus).

Title

Associate Professor

Department

Pharmacology

Division

Pharmacology

Address/Phone

Genome and Biomedical Sciences Building, Genome & Biomedical Sciences Facility, 451 Health Sciences Dr Davis, CA 95616

Phone: 530-752-2884

Additional Phone

Phone: 530-754-6458

Education

Ph.D., Northeastern Ohio Universities College of Medicine, Rootstown, Ohio, 1996

B.S., Tunghai University, Taichung, Taiwan, 1986

M.S., Tunghai University, Taichung, Taiwan, 1988

Professional Memberships

American Physiological Society

Society for Neurosciences

Honors and Awards

American Physiological Society, Neural Control and Autonomic Regulation Young Investigator Award, 2003

David B. Smith Fellowship, 1996

Excellence for Doctoral Dissertation, 1996

Excellence in Research Award, 1995

UCDAVIS HEALTH SYSTEM

Chao-Yin Chen, Ph.D.

Outstanding Research Assistant Award, 1990

Select Recent Publications

Zhong, C-Y., Y-M. Zhou, K.R. Smith, I.M. Kennedy, C-Y. Chen, A.E. Aust, K.E. Pinkerton. Oxidative injury in the lungs of neonatal rats following short-term exposure to ultrafine iron and soot particles. J. Toxicol. Environ. Health. 2010;73(12):837-847.

Pham, H., A. C. Bonham, K. E. Pinkerton, C-Y. Chen. Central neuroplasticity and decreased heart rate variability following particulate matter exposure in mice. Environmental Health Perspective. 2009;117(9): 1448 – 53.

Chen, C-Y., A. G. Bechtold, J. M. Tabor, and A. C. Bonham. Post-exercise hypotension is associated with neurokinin 1 receptor internalization. J. Neurosciences. 2009;29: 2754-2761.

Chen, C-Y., J.P. Joad, J. Bric, A.C. Bonham. Central mechanisms I: plasticity of central pathways. Handb Exp Pharmacol. 2009;187: 187-201.

Chen, C-Y., D. Chow, N. Chiamvimonvat, K. A. Glatter, N. Li, Y. He, K. E. Pinkerton, and A. C. Bonham. Short-term second-hand smoke exposure decreases heart rate variability and increases arrhythmia susceptibility in mice. Am. J. Physiol. Heart Circ. Physiol. 2008;295(2):H632-H639.

S. Sekizawa, C-Y. Chen, A. G. Bechtold, J. M. Tabor, J. M. Bric, K. E. Pinkerton, J. P. Joad, and A. C. Bonham. Extended secondhand tobacco smoke exposure induces plasticity in nucleus tractus solitarius second-order lung afferent neurons in young guinea pigs. Eur. J. Neurosci. 2008;28(4): 771-78.

Chen C-Y, Bonham AC. Glutamate suppresses GABA release via presynaptic metabotropic glutamate receptors at baroreceptor neurons in rats. *J Physiol*, 562(Pt2):535-551, 2005.

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Joad JP, Munch PA, Brtic JM, Evans SJ, Pinkerton KE, Chen C-Y, Bonham AC. Passive smoke effects on cough and airways in young guinea pigs: Role of brainstem substance P. *Am J Respir Crit Med*, 169(4):499-504, 2004.

Chen C-Y, Bonham AC, Plopper CG, Joad JP. Neuroplasticity in nucleus tractus solitarius following episodic ozone exposure in infant primates. *J Appl Physiol*, 94(2):819-827, 2003.

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