

**BIOGRAPHICAL SKETCH**

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NAME: Linda F. Hayward, PhD		POSITION TITLE Associate Professor	
eRA COMMONS USER NAME lindah			
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
University of California, Santa Cruz, CA	BA	1976-1981	Psychobiology
University of Washington, Seattle, WA	MS	1982-1984	Kinesiology
Northwestern University, Chicago, IL	PhD	1985-1990	Physiology
University of Iowa, Iowa City, IA	Postdoc	1990-1997	Cardiovascular Neurophys.

**A. Positions and Employment:**

1982-1984 Graduate Student, Department of Kinesiology, Univ. Washington, Seattle, WA.  
 1984-1985 Research Assistant, Rehabilitation Department, VA Medical Center, Seattle, WA.  
 1985-1990 Graduate Student, Dept. of Physiology, Northwestern Univ., Chicago, IL.  
 1990-1994 Postdoctoral Associate, Dept. Internal Medicine, Univ. of Iowa, Iowa City, IA  
 1995-1997 Assistant Research Scientist, Dept. Internal Medicine, Univ. of Iowa, Iowa City, IA.  
 1997-2004 Assistant Professor, Dept. of Physiological Sciences, McKnight Brain Institute and the Dept. of Neuroscience (Affiliate appointment), Univ. of Florida, Gainesville, FL  
 2004-present Associate Professor, Dept. of Physiological Sciences, McKnight Brain Institute and Dept. of Neuroscience (Affiliate appointment), Univ. of Florida, Gainesville, FL.

**A1: Other Experience and Professional Memberships:**

2000- 2003 Grant Peer Reviewer, American Heart Association, Southeastern Research Consortium, Committee 3  
 June 2001 Ad Hoc Reviewer, NIH, NHLBI, Respiratory and Applied Physiology Study Section.  
 2002-present Member, American Heart Association, Florida/Puerto Rico Affiliate Research Committee  
 Nov. 2003 Ad Hoc Reviewer, NIH, NHLBI, Cardiovascular and Renal Study Section.  
 1997-present Ad Hoc Reviewer, American Journal of Physiology: Heart and Circulatory Physiology.  
 1997-present Ad Hoc Reviewer, American Journal of Physiology: Regulatory  
 1990-present Society Memberships: American Physiological Society, Society for Neuroscience, American Heart Association, AAAS.

**A2. Honors:**

1990 Sigma Xi contest finalist, Northwestern Univ., Chicago, IL  
 1990-1991 Institutional Fellowship, Univ. of Iowa, Iowa City, IA  
 1996-1997 Central Investment Research Enhancement Award Univ. of Iowa, Iowa City, IA  
 2001-2003 Who's Who in America and Who's Who in Science and Engineering  
 June 2002 Robert J Boucek MD Research Award, Am. Heart Assoc. Stuart, Fl.  
 April 2003 CE Cournelius Young Investigator Award, Univ. of Florida College of Vet. Med.

**B. Selected Peer-Reviewed Publications:****Book Chapters:**

1. Norman, W., and Hayward LF. Neurobiology of Sleep. In: Sleep Medicine, Lippincott Williams & Wilkins, Philadelphia, PA, 2004.
2. Hayward, LF., Mueller, PM., and Hasser, EM. Adrenergic receptors. In: The Encyclopedia of Endocrine Diseases, Academic Press, San Diego, CA., 2004.

**Selected Peer Reviewed Manuscripts:**

1. Hayward, L., Hay, M., and Felder, R.B. Acute resetting of the carotid sinus baroreflex by aortic depressor nerve stimulation. *Amer. J. Physiol.* 264:H1215-H1222, 1993
2. Hayward, LF. and Felder, R.B. Peripheral chemoreceptor inputs to the lateral parabrachial nucleus of the rat. *Amer. J. Physiol.* 268:R707-R714, 1995.
3. Hegarty, AA., Hayward, LF., and Felder, R.B. Sympathetic responses to stimulation of area postrema in decerebrate and anesthetized rats. *Amer. J. Physiol.* 268:1086-H1095, 1995
4. Hayward, LF. and Felder, R.B. Cardiac rhythmicity among NTS neurons and its relationship to sympathetic outflow in rabbits. *Amer. J. Physiol.* 269: H923-H933, 1995.
5. Hegarty, AA., Hayward, L.F., and Felder, R.B. The influence of circulating angiotensin II and vasopressin on neurons of the nucleus of the solitary tract. *Amer. J. Physiol.* 270: R675-R681, 1996.
6. Hayward, LF., and Felder, R.B. Lateral parabrachial nucleus modulates the arterial baroreflex in the anesthetized rat. *Amer. J. Physiol.* 274:R1274-1282, 1998.
7. Hayward, LF., and Felder, R.B. Electrophysiological properties of rat lateral parabrachial neurons in vitro. *Amer. J. Physiol.* 276:R696-R706, 1999.
8. Hayward, LF., Johnson, A.K., and Felder, R.B. The arterial chemoreflex in conscious normotensive and hypertensive adult rats? *Amer. J. Physiol.* 276: H1215-H1222, 1999.
9. Hayward, LF., Evidence for alpha-2 adrenoreceptor modulation of the arterial chemoreflex in the caudal solitary nucleus of the rat. *Amer. J. Physiol.* , 281: R1464-1473, 2001.
10. Hayward, LF., Riley, A.P., and Felder, R.B., Alpha-2 adrenergic receptors in the NTS facilitate baroreflex function in adult SH rats. *Amer. J. Physiol.* 282: H2336-H2345, 2002.
11. Hayward, LF. and von Reiztenstein, M., Increased c-fos expression in central gray following both arterial chemoreceptor and baroreceptor stimulation in rats. *Amer. J. Physiol.*, 283:H1975-H1984 2002.
12. Hayward, LF., Swartz, CL., and Davenport, PW. Respiratory response to activation or disinhibition of the dorsal periaqueductal gray in rats *J. Appl. Physiol.* 94:913-922, 2003.
13. Hayward, LF., and Castellanos, M. Increased Fos expression in the lateral parabrachial nucleus following dorsal periaqueductal gray stimulation in rats. *Brain Res.* 974, 153-166, 2003.
14. Berry, RB. and Hayward, LF. Selective augmentation of genioglossus EMG activity by L-5-Hydroxytryptophan (L-5HTP) in the rat. *Pharm. Biochem and Behav.*, 74:877-882, 2003.
15. Hayward, LF., Castellanos, M., and Davenport, PW. Activation of parabrachial neurons mediates the cardiorespiratory response to dorsal periaqueductal gray stimulation *J. Appl. Physiol.* 96(3):1146-54, 2004.
16. Hayward, LF. and Castellanos, M. Activation of the dorsal periaqueductal gray induces Fos-like immunoreactivity in select non-cholinergic mesopontine neurons in the rat. *Neurosci. Letters*, 360 (1-2): 5-8. 2004.
17. Berry, RB, Koch, G., and Hayward, LF. Low Dose Mirtazapine Increases Genioglossus Activity in the Anesthetized Rat. *Sleep.*, 28: 78-84, 2005.
18. Zhang, W., Hayward, LF., Davenport, PW. Respiratory muscle responses elicited by dorsal periaqueductal gray stimulation in rats. *Amer. J. Physiol.*; 289(5):R1338-47. 2005.

**Selected Abstracts (from 2001-present):**

1. Berry, RB, Hayward, LF. and Britt, EB. Selective augmentation of genioglossus EMG activity by low dose 5-Hydroxytryptophan (5-HTP) in the rat. *Am. J. Resp. and Critical Care Medicine*, 163: A835, 2001.
2. Berry, RB, Hayward, LF. and Britt, EB. Selective augmentation of genioglossus EMG and nerve activity by low dose 5-Hydroxytryptophan (5-HTP) in the rat. *Sleep*, 24: A71, 2001.
3. Huang, CH, Martin, AD, Hayward, LF. and Davenport, PW. Inspiratory muscle strength modulates inspiratory neural drive in normal subjects. *Soc. Neurosci. Abstr.*, 2001.

4. Hayward, LF. Localization of lateral parabrachial neurons with descending projections to the NTS activated during stimulation of the dorsal periaqueductal gray in rat. FASEB Summer Conferences, 2002.
5. Hayward, LF, Swartz, CL., Davenport, PW. Respiratory response to activation or disinhibition of the midbrain central gray in rats. Soc. Neurosci. Abstr., 2002.
6. Hayward, LF, Castellanos, M., and Davenport, PW. Bilateral blockade of the lateral parabrachial nucleus (LPBN) attenuates the respiratory response evoked by stimulation of the dorsal PAG. Soc. Neurosci. Abstr., 2003
7. Zhang, W., Hayward, LF., and Davenport, PW. The relationship between respiratory pattern and the frequency and magnitude of electrical stimulation of the dorsal periaqueductal grey matter. *Amer. Thoracic Society*, 2003.
8. Berry RB, Koch GL, Hayward LF. Effect of Mirtazapine on Genioglossus Activity in Anesthetized Rats. *Sleep*, 2003.
9. Zhang, W., Hayward, LF., Davenport, PW., Effect of activation of the dorsal periaqueductal gray (DPAG) on the ventilatory response to peripheral chemoreceptor stimulation. *Soc. Neurosci. Abstr.* 2004.
10. Berry, RB., Koch, GL., and Hayward, LF. Low dose mirtazapine increases genioglossus activity in the anesthetized rat. *Am. Thoracic Society*, 2004
11. Zhang, W., Hayward, LF, and Davenport, PW. Effect of dorsal periaqueductal gray (dPAG) activation on the volume-timing reflex in rats. FASEB J. 2005
12. Castellanos, M., Reynolds CR, Davenport, PW and Hayward LF, Activation of GABA-A receptors in the dorsolateral pons depresses respiration in both normotensive and hypertensive rats. FASEB J. 2005
13. Hansen, JK Reynolds, CR Tanis, AC Hayward, LF Fast vs. slow hemorrhage: cardiovascular and c-Fos responses in the conscious rat, FASEB J. 2005
14. Reynolds, C., and Hayward, LF. C-Fos immunoreactivity in the brainstem following disinhibition of the dorsomedial hypothalamus. *Soc. Neurosci. Abstr.* 2005.
15. Castellanos, M., Reynolds, C., and Hayward, LF. Spectral analysis reveals cardiorespiratory variability between normotensive and hypertensive conscious and urethane anesthetized rats. *Soc. Neurosci. Abstr.* 2005.
16. Porter, K., Ahlgren, J., & Castellanos, M., Hayward, LF. Heart rate variability and the rate of hemorrhage: a partnership in characterizing autonomic regulation *Soc. Neurosci. Abstr.* 2005.
17. Chou Y.-L., Stanley, JT. Berry RB., Davenport, PW. Anderson, JJ. and Hayward, LF., Effect of systemic administration of 5-HTP on respiratory muscle activity in sleeping rats. FASEB J., 2006.
18. Chou, Y.-L, Vujisic, K., Stanley, JT., Berry, RB., Davenport, PW., Anderson, JJ., and Hayward, LF. Modulation of respiratory muscle activity in sleeping rats following systemic administration of mirtazapine. Xth Oxford Conference on the Modeling and Control of Breathing, 2006.
19. Reynolds, C., Vujisic, K., and Hayward, LF. Disinhibition of the dorsomedial hypothalamus induces an increased frequency of augmented breaths in the anesthetized rat. Xth Oxford Conference on the Modeling and Control of Breathing, 2006.

### C. Research Support:

#### Ongoing Research Support:

**RO1 HL076518** Period 04/2004-03/2008 PI

NIH/NHLBI

"Supramedullary control of respiration"

Major goal: to identify role of specific brainstem nuclei in mediating the cardiorespiratory response during fear and dorsal medial hypothalamic stimulation.

**0555226B** Period 07/2005—06/2007 PI

AHA-FL-Puerto Rico

"Central mechanisms underlying hemorrhagic sympathoinhibition"

Major goal: to identify role of specific brainstem nuclei in mediating cardiovascular changes during severe hemorrhage induced at different rates.

#### Pending Research Support:

Florida Dept. of Health Period 07/2006-07/2008 Co-I

James and Esther King Biomedical Research Program

“The role of nicotine in the neural control of respiratory and cardiovascular systems”

Major goal: Subproject #4 To identify the impact of prenatal nicotine exposure on the cardiorespiratory response to hypoxia and hyperthermia.

**Completed Research Support:**

**Cypress Bioscience**                      Period 03/2005-03/2006,                      Co-I  
Cypress Bioscience

“Effect of serotonergic and noradrenergic compounds on respiratory muscles in rat”

Major goal: to characterize the influence of different drugs on upper airway muscle activity during sleep in the chronically instrumented rat.

**R01 HL63232**                      Period 07/1/1999-06/30/2004,                      P.I.  
NIH-R01,

“Periaqueductal gray modulation of sympathetic drive”

Major goal: to characterize the role of the parabrachial nucleus in descending sympathoexcitatory responses evoked from the dorsal periaqueductal gray.

**UF-Res. Devel. Award**                      Period 7/1/2003 –12/30/2004                      P.I.  
Univ. of Florida CVM

“Functional and genomic changes in the periaqueductal gray in hypertension”

**095624**                      Period 7/01/2002-6/30/2004                      P.I.,  
AHA FL- PR

“Contributions of the lateral parabrachial nucleus and GABA-A receptors to the development and maintenance of hypertension”