CURRICULUM VITAE

Name: David W. Carley

Address: University of Illinois
845 S. Damen Ave. MC805
Chicago, IL 60612

Date of Birth: January 18, 1956

Education:

1978 BSEE	State University of New York at Stony Brook
1982 SM	Massachusetts Institute of Technology (*Electrical Eng.*)
1985 Ph.D.	Massachusetts Institute of Technology *and* Harvard University (*Medical Engineering/Medical Physics*)

Awards and Honors:

1974 - 1978	N. Y. State Regents Scholarship
1976	Tau Beta Pi *Engineering Honor Society (Secretary, 1977-8)*
1978	BSEE *Summa Cum Laude*
1978	Stony Brook Scholar-Athlete Award
1978 - 1979	HST Graduate Fellowship
1979 - 1982	Surdna Foundation Fellowship
1989 - 1992	Chicago Lung Association Career Investigator Award
1990	Veterans Administration Outstanding Performance Award
2010	University of Illinois Inventor of the Year Award
2013	Katherine M. Minnich Endowed Professorship

National and Regional Offices, Committees and Task Forces:

1989 - 1993	American Sleep Disorders Association National Scoring Manual Task Force
1993, 2001	Chicago Lung Association Program and Executive Committees
1997	American Sleep Disorders Association Consensus Conference on Respiratory Measurements and Syndrome Definitions
1998	American Thoracic Society Consensus Workshop on Arousal From Sleep
1998 -	American Thoracic Society *Chair*, Communications Committee Respiratory Neurobiology and Sleep Assembly
1998 -	American Thoracic Society Long Range Planning Committee Respiratory Neurobiology and Sleep Assembly
1998 -	American Sleep Disorders Association APSS Program Committee
1999 - 2000	Scientific Organizing Committee 7th International Symposium on Sleep and Respiration
2000 - 2002	American Thoracic Society Communications Committee
2000 - 2005	American Thoracic Society Website Editor
2001 - 2004	American Thoracic Society Chair, Information Systems Committee
2010 - 2012	American Thoracic Society Member, Research Advocacy Committee

Editorial Boards:

1996 - 2001	Journal of Applied Physiology
2000 - 2005	American Thoracic Society, Website Editorial Board
2008 -	Open Respiratory Medicine Journal

Professional Societies:

American Academy of Sleep Medicine
American Physiological Society
American Association for the Advancement of Science
Biomedical Engineering Society
American Federation for Clinical Research
World Federation of Sleep Research Societies
Sleep Research Society
American Thoracic Society

Professional Positions:

1985 - 1986	Assistant in Biomedical Engineering and Pediatrics Massachusetts General Hospital, Boston, MA
1985 - 1986	Instructor in Pediatrics and Biomedical Engineering Harvard Medical School, Boston, MA
1986 - 1988	Research Instructor University of Illinois College of Medicine at Chicago
1988 - 1991	Research Assistant Professor in Medicine University of Illinois College of Medicine at Chicago
1989 -	Executive Director of Respiratory Research Section of Respiratory and Critical Care Medicine University of Illinois College of Medicine at Chicago
1990 -	Director of Research Center for Sleep and Ventilatory Disorders University of Illinois Hospital
1991 - 2000	Research Associate Professor of Medicine University of Illinois College of Medicine at Chicago
1993 - 2000	Research Associate Professor of Pharmacology University of Illinois College of Medicine at Chicago
1998 - 2000	Associate Professor of Bioengineering University of Illinois at Chicago College of Engineering
2000 - 2006	Professor of Medicine, Bioengineering and Pharmacology University of Illinois at Chicago
2006 - 2013	Professor of Biobehavioral Health Science, Medicine, Bioengineering University of Illinois at Chicago
2006 -	Director, Center for Narcolepsy, Sleep and Health Research University of Illinois at Chicago
2013 - 2015	Katherine M. Minnich Endowed Professor of Biobehavioral Health Science, Medicine, Bioengineering
2016 -	Katherine M. Minnich Endowed Professor Emeritus of Biobehavioral Health Science, Medicine, Bioengineering

Grant Awards:

NIH, Biomedical Research Support Grant
Role: Principal Investigator
Stability of Chemical Control During Periodic Sleep Apnea.
1/1/87 - 12/31/87 Amount: $4,000

Chicago Lung Association
Role: Principal Investigator
Stability of Chemical Control During Periodic Sleep Apnea.
7/1/87 - 6/30/89 Amount: $ 35,000

The Whitaker Foundation
Role: Principal Investigator
Stability Analysis of Chemical Control During Periodic Sleep Apnea.
7/1/87 - 6/30/90 Amount: $145,900

Chicago Lung Association Career Investigator Award
Role: Principal Investigator
Sleep Induced Occlusive Apnea and the Importance of Arousal
7/1/89 - 6/30/92 Amount: $102,421

National Institutes of Health (R29-HL043860)
Role: Principal Investigator
Sleep-Induced Apnea: Role of State of Consciousness
7/01/90 - 6/30/95 Amount: $536,750

Campus Research Board
Role: Principal Investigator
Locus ceruleus mediated control of breathing during sleep
01/01/94-06/30/94 Amount: $4,139

Chicago Lung Association
Role: Co-Investigator (20%)
07/01/95 - 06/30/97 Amount: $35,000

Glaxo-Wellcome
Role: Co-Investigator (50%)
Effects of adenosine A1 receptor agonists on sleep apnea
03/01/96 - 11/01/96 Amount: $67,000

National Institutes of Health (R03-AG014564)
Role: Principal Investigator
Effects of aging on sleep apnea in the rat
03/01/97 - 02/28/98 Amount: $74,426

Campus Research Board
Role: Principal Investigator
Mechanisms of sleep apnea in aging
01/01/98 - 06/30/98 Amount: $12,500

National Institutes of Health (K07-HL003643; R Basner, PI)
Role: Co-Investigator (5%)
Illinois Cooperative Curriculum in Sleep Education
09/30/97 - 09/29/02 Amount: $432,000

American Heart Association of Metropolitan Chicago
Role: Principal Investigator
Cardiovascular determinants of sleep apnea
07/01/98 - 06/30/00 Amount: $59,770

Glaxo-Wellcome

Role: Principal Investigator
A single center, randomized double-blind, placebo controlled, two period crossover study to investigate the efficacy of intravenous GR79236 in patients with sleep apnea
11/01/98 – 10/31/99 Amount: $135,390

Synthelabo Research
Role: Co-Investigator (20%)
Effects of serotonin antagonists on sleep apneas in rats
04/01/99 – 09/30/99 Amount: $25,000

National Institutes of Health (R01-AG016303)
Role: Principal Investigator
Neurobiology of Sleep Apnea in Aging
07/01/99 – 06/30/06 Amount: $1,671,748

Organon Pharmaceutical
Role: Principal Investigator
A proof of concept trial for Remeron in sleep apnea syndrome
12/01/99 – 12/31/01 Amount: $140,000

Whitaker Foundation
Role: Co-Principal Investigator
Enhancement of Bioengineering at UIC:
Focus on Interfacial Molecular Bioengineering
01/04/00 – 01/03/03 Amount: $990,000

National Institutes of Health (R01-NR007719; M Faulkner, PI)
Role: Co-Investigator (5%)
Cardiovascular Risks in Adolescents with Diabetes
09/01/00 – 08/31/07 Amount: $1,407,895

Campus Research Board Multidisciplinary Award
Role: Principal Investigator
Pathogenesis and Treatment of Sleep Apnea: Serotonergic Mechanisms
07/01/01 – 06/30/03 Amount: $100,000

National Institutes of Health (R01-HL070870; M Radulovacki, PI)
Role: Co-Investigator (50%)
Intertrigeminal region control of sleep apnea
01/01/04 – 12/31/08 Amount: $1,559,000

BTG International
Role: Principal Investigator
Pharmacologic Treatment of Sleep Apnea
04/01/04 – 03/31/06 Amount: $250,000

Organon Pharmaceutical
Role: Principal Investigator
Pathogenesis and Treatment of Sleep Apnea
01/17/05 – 06/30/06 Amount: $250,000

BTG International (Redirection of Royalty Income)
Role: Principal Investigator
Novel Pharmacotherapeutics for Sleep Apnea
04/01/04 Amount: $137,000

BTG International
Role: Principal Investigator
Pharmacologic Treatment for Sleep Apnea (Clinical Pilot)
10/05 – 09/07 Amount: $587,000

Organon Pharmaceutical
Role: Principal Investigator
A randomized, double-blind, placebo-controlled, multicenter parallel-group dose ranging clinical trial to assess the efficacy and safety of Org4419-2 in the treatment of obstructive sleep apnea/hypopnea Syndrome
09/05 – 09/06 Amount: $79,560

Organon
Role: Program Director and Principal Investigator
Sleep Medicine Fellowship Program
07/01/05 – 06/30/10 Amount $250,000

National Institutes of Health (R01-AG016303)
Role: Principal Investigator
Neurobiology of Sleep Apnea in Aging
02/15/06 – 07/31/11 Amount: $1,588,750

UIC Center for Clinical and Translational Science Scholar Award
Role: Primary Mentor for Mary Kapella
Nurse-managed cognitive behavioral therapy for insomnia in COPD
7/07 – 6/09 Amount: $50,000

National Institutes of Health (R03-HD055984; T Magee, PI)
Role: Co-Investigator (5%)
Development of an objective measure of infant crying
3/08 – 2/10 Amount: $149,266

UIC Center for Clinical and Translational Science Scholar Award
Role: Mentor for Barbara McFarlin
Development of a new ultrasound technology to detect cervical ripening
7/08 – 6/10 Amount: $50,000

National Institutes of Health (K01-NR010749)
Role: K01 Mentor for Mary Kapella
Nurse-managed cognitive behavioral therapy for insomnia in COPD
6/08 – 5/11 Amount: $685,875

SteadySleep Rx, Co.
Role: Principal Investigator
Randomized, double-blind, placebo controlled study of the safety and efficacy of Marinol in patients with sleep apnea
10/08 – 10/14 Amount: $314,005

National Institutes of Health (R01-AG016303-09S1)
Role: Principal Investigator
Neurobiology of Sleep Apnea in Aging -- Supplement

07/01/09 – 07/31/11 Amount: $312,760

National Institutes of Health (F30-HL097403; J Waxman, PI)
Role: Mentor
Prediction of physiological events in people with sleep disordered Breathing
09/01/09 – 08/31/12 Amount: $126,885

Chancellor's Discovery Fund Award
Role: Co-Principal Investigator
Mechanisms of cognitive impairment in sleep apnea syndrome: feasibility studies in a novel animal model
07/01/10 – 06/30/12 Amount: $40,000

National Institutes of Health (KM1-CA156717; D Meltzer, PI)
Role: KM1 Mentor for Bharati Prasad
Comparative effectiveness research to enhance outcomes in African Americans with sleep apnea
02/16/11 – 02/15/13 Amount: $278,500

Chancellor's Discovery Fund Award
Role: Co-Principal Investigator
Oral appliance and pharmacologic agents in treatment of sleep apnea: a pilot clinical study
06/01/11 – 05/31/13 Amount: $50,000

Shaw Nursing Faculty Collaborative Research Grant
Role: Co-Principal Investigator
Utility and reliability of innovative and non-invasive technology for measurement of body temperature in the pediatric population
7/1/11 – 6/30/12 Amount: $29,064

National Institutes of Health (R13-HL112617)
Role: Principal Investigator
Sleep-related determinants of biobehavioral function
7/1/11 – 6/30/14 Amount: $154,378

National Institutes of Health (R01-AG016303)
Role: Principal Investigator
Neurobiology of Sleep Apnea in Aging
08/01/11 – 07/31/15 Amount: $1,162,500

National Institutes of Health (UM1-HL112856)
Role: Program Director and Principal Investigator
Cannabimimetic treatment of obstructive sleep apnea
5/15/12 – 6/30/16 Amount: $4,997,110

UICentre Seed Fund Award
Role: Principal Investigator
Novel cannabimimetic drugs for treatment of obstructive sleep apnea
7/1/13 – 6/30/15 Amount: $25,000

National Institutes of Health (R01NR013937)
Role: Co-Investigator (5%)

Efficacy and mechanisms of a behavioral therapy for insomnia coexisting with COPD
9/26/13 – 7/31/18 Amount: $2,364,539

National Institutes of Health (K99NR014369)
Role: Mentor
Neurobiological mechanisms of sympathetic regulation in sleep apnea
9/27/13 – 8/31/15 Amount: $198,590

Department of Veterans Affairs (1lK2CX001026)
Role: Primary Mentor
Targeted treatment of obstructive sleep apnea to reduce cardiovascular disparity
08/01/13 – 07/31/18 Amount: $963,055

Chancellor's Innovation Fund
Role: Principal Investigator
Proof of Concept for Real Time Prediction of Driving Performance & Safety
01/01/14 – 06/30/16 $65,000

National Institutes of Health (5TL1TR00049)
Role: Primary Mentor (Farabi; TL1 Predoctoral Scholar)
Sleep, glucose variability, CVD risk and CV stress in young adults with T1DM
01/15/14 – 05/15/15 $22,365

Chicago Biotechnology Consortium Postdoctoral Research Grant
Role: Principal Investigator
Co-localization of 5-HT3 and Cannabinoid Receptors on Rat Nodose Ganglion Cells
01/01/15 – 06/30/16 $13,520

American Association of Diabetes Educators/Sigma Theta Tau Collaborative Grant
Role: Co-investigator
Sleep, glucose variability, CVD risk and CV stress in young adults with T1DM
01/01/15 – 12/31/15 $6,000

National Institutes of Health (R00NR014369)
Role: Co-Investigator (5%)
Neurobiological mechanisms of sympathetic regulation in sleep apnea
9/01/15 – 8/31/18 Amount: $724,491

American Association of Orthodontists
Role: Co-Investigator
Oral appliance and pharmacologic agents in the treatment of sleep apnea: a pilot clinical study
06/01/16 – 05/31/17 Amount: $30,000

National institutes of Health (R56HL126876)
Role: Co-Investigator
Impact of sleep apnea on brain cholinergic signaling and cognition
9/15/16 – 8/31/17 Amount: $394,127

Manuscript Reviewer:

American Journal of Physiology
American Review of Respiratory Disease
American Journal of Respiratory and Critical Care Medicine
Annals of Bioengineering
Chest
IEEE Transactions on Biomedical Engineering
Journal of Applied Physiology
Journal of Physiology
Journal of Psychopharmacology
Journal of Sleep Research
Physiological Genomics
Sleep
Sleep and Breathing

Grant Reviewer:

Special Emphasis Panel: National Heart Lung and Blood Institute
Ad Hoc Reviewer: National Heart Lung and Blood Institute
Ad Hoc Reviewer: National Institute of Mental Health
External Reviewer: Department of Veterans Affairs Medical Research Service
Whitaker Foundation
American Lung Association of Metropolitan Chicago
Health Research Board of Ireland
Pennsylvania Department of Health
Florida Department of Education

National and International Symposia Chaired:

1. Respiratory responses during wakefulness, sleep and anesthesia.
   Annual meeting of the American Thoracic Society, 1990.

2. Automated sleep scoring.
   Annual meeting of the Associated Professional Sleep Societies, 1991.

3. Computer-aided sleep scoring systems.
   Annual meeting of the Association of Polysomnographic Technologists, 1991.

4. Experimental models of sleep apnea.
   Annual meeting of the Associated Professional Sleep Societies, 1996.

5. Measurement of sleep and sleepiness.
   Annual meeting of the Associated Professional Sleep Societies, 1999.

6. Animal models of sleep disordered breathing.
   World Federation of Sleep Research Societies International Symposium, Dresden, 1999.

7. Central mechanisms of apnea.
   Seventh international symposium on sleep and respiration, Sydney, Australia, 2000.

8. Brainstem mechanisms of apnea.
   World Federation of Sleep Research Societies International Symposium, Uruguay, 2001.

9. Serotonergic mechanisms during sleep, wakefulness and sleep disordered breathing.
   Annual meeting of the American Thoracic Society, 2002.

10. Functional genomics of sleepiness and sleep-related respiratory disorders. Eighth international symposium on sleep and respiration, Reykjavik, Iceland, 2002.

11. Pharmacological treatments for sleep disordered breathing: emerging strategies. Annual meeting of the Associated Professional Sleep Societies, 2003.

12. Pontine influences on respiratory stability/respiratory instability and CNS-regulation. 7th World Congress on Sleep Apnea, Helsinki, Finland, 2003.

13. Brainstem networks for respiratory control: relevance for sleep-related breathing disorders International Congress of the World Federation of Sleep Research and Sleep Medicine Societies. New Delhi, India, 2005.

Invited National and International Symposium Presentations:

1. Quantitative analysis of upper airway and respiratory muscle electromyograms and electroencephalogram during sleep. (Presented at the World Congress on Medical Physics and Biomedical Engineering, San Antonio, Texas, August, 1988).

2. Periodic breathing: a model with experimental observations. (Presented at the World Congress on Medical Physics and Biomedical Engineering, San Antonio, Texas, August, 1988).

3. Minimal modeling of human respiratory stability. (Presented at the UCLA Biomedical Simulation Resource Symposium on Modeling and Parameter Estimation in Respiratory Control, Anaheim, CA, March,1989.

4. Effects of arousal on mechanisms of apnea resolution in occlusive sleep apnea syndrome. (Presented at the First International Symposium on Sleep and Respiration, Banff, Canada, April, 1989).

5. An experimental model of repetitive transient arousal. (Presented at the Symposium on Sleep and Respiration in Aging Adults, Houston, Texas, March, 1991).

6. Quantitative analyses of state of vigilance in periodic breathing. Presented at the Symposium on Sleep and Respiration in Aging Adults, Houston, Texas, March, 1991.

7. A pure experimental model of human sleep fragmentation. (Invited Paper, presented at the annual meeting of the Associated Professional Sleep Societies, Phoenix, AZ, June, 1992).

8. Clonidine suppresses respiratory responses to arousing stimuli in the rat. (Presented at the international conference on *Cellular Consequences of Sleep*, Maui, Hawaii, March, 1993).

9. Methods for arousal detection, classification and quantification. (Presented at the annual meeting of the American Thoracic Society, San Francisco, CA, April, 1995).

10. Sleep apnea is increased by baroreceptor stimulation in the rat. (Presented at the Rappaport Symposium on Sleep and Respiration, Haifa, Israel, March, 1997).

11. Carley, DW and M Radulovacki. Adenosine and sleep apnea. (Presented at the fifth international symposium on sleep and breathing, Edinburgh, Scotland , October, 1997).

12. Systemic serotonin increases REM sleep apneas. (Presented at the annual meeting of the American Physiological Society, San Francisco, CA, April, 1998).

13. Cardiovascular determinants of sleep apnea. (Presented at the International Symposium on Cardiovascular Effects of Sleep Disordered Respiration, Haifa, Israel, January, 1999).

14. The rat model of sleep related breathing disorder. (Presented at the annual meeting of the American Thoracic Society, Toronto, CA, May, 2000).

15. Impact on fragmentation on recuperation during sleep. (Presented at the annual meeting of the Association of Professional Sleep Societies, Chicago, IL, June, 2001).

16. Pontine phasic events contributing to apnea genesis. (Presented at the World Federation of Sleep Research Societies International Symposium, Punte del Este, Uruguay, October, 2001).

17. Role of serotonin on respiratory stability during sleep in the rat. (Presented at the Annual meeting of the American Thoracic Society, Atlanta, GA, May, 2002).

18. Pharmacological treatments for sleep disordered breathing: early experience with serotonin antagonists in man. (Presented at the Annual meeting of the Associated Professional Sleep Societies, Chicago, IL, June, 2003).

19. Modulation of reflex and sleep apnea by pedunculo-pontine and intertrigeminal neurons. (Presented at the 7th World Congress on Sleep Apnea, Helsinki, Finland, July, 2003).

20. Novel sites and pathways for respiratory modulation by the pons.
(Presented at the International Congress of the World Federation of Sleep Research and Sleep Medicine Societies. New Delhi, India, 2005).

21. Unraveling OSA pathophysiology using rodent models: Effects of systemic drug treatments on sleep and breathing instability in rats. (Presented at the annual meeting of the American Thoracic Society, San Diego, CA, May, 2006).

22. State dependent control of breathing: Lessons from animal models. (Featured speaker, annual meeting of the American Thoracic Society, Toronto, CA, May, 2008).

Visiting Lectureships:

1. A mathematical feedback model of phasic respiration. Brompton Hospital, London, U.K., 1984. Host: David Southall, M.D.

2. Mathematical modeling of hypoxia induced periodic breathing. University of Pennsylvania, Philadelphia, PA, 1985. Host: Sukamay Lahiri, Ph.D.

3. Human respiratory control: a minimal mathematical model and experimental observations. University of Wisconsin at Madison, Madison, WI, 1989. Host: Jerome Dempsey, Ph.D.

4. Effects of arousal on mechanisms of apnea resolution. University of Calgary, Calgary, Alberta, CA, 1991. Host: John Remmers, M.D.

5. A rat model of central sleep apnea. Cleveland Clinic, Cleveland, OH, 1996. Host: Wallace Mendelsen, M.D.

6. A rat model of sleep disordered respiration. Rush University, Chicago, IL, 1997. Host: Rosalind Cartwright, Ph.D.

7. Automated detection and analysis of arousal from sleep. Case Western Reserve University, Cleveland, OH, 1998. Host: Susan Redline, M.D.

8. Neurobiology of Sleep Apnea. New York University, NY, NY, 2012. Host: David Rapoport, M.D.

Books Edited:

1. Carley, DW and M Radulovacki: *Sleep-Related Breathing Disorders: Experimental Models and Therapeutic Potential*. Marcel Dekker, NY, 2002.

Book Chapters:

1. Carley, DW and M Radulovacki. Adenosine effects in sleep apnea. In: Purinergic Approaches in Experimental Therapeutics. (K Jacobson and M Jarvis, eds). Wiley-Liss, NY, NY, pp.515-526, 1997.

2. Carley, DW and M Radulovacki. Adenosine and sleep apnea. In: The Role of Adenosine in the Nervous System. (Y Okada, ed). Elsevier Science, Amsterdam, pp. 269-274, 1997.

3. Carley DW and M Radulovacki. REM sleep and apnea. In: Rapid Eye Movement Sleep. (BN Mallick and S Inoue, eds). Narosa Publishing House, New Delhi, pp 286-300, 1999.

4. Carley, DW and M Radulovacki. Pathophysiology of sleep-related breathing disorders: unanswered questions. In: Sleep-Related Breathing Disorders: Experimental Models and Therapeutic Potential. (DW Carley and M Radulovacki, eds). Marcel Dekker, NY, pp. 3-16, 2002.

5. Radulovacki, M and DW Carley. The laboratory rat as a model of sleep-related breathing disorders. In: Sleep-Related Breathing Disorders: Experimental Models and Therapeutic Potential. (DW Carley and M Radulovacki, eds). Marcel Dekker, NY, pp. 3-16, 2002.

Publications:

1. Carley DW and DC Shannon. Control systems analysis of respiratory regulation. *Oscillations in physiologic systems: dynamics and control*. Institute of Measurement and Control, London, U. K. pp 43-47, 1984.

2. Shannon DC and DW Carley. Systems analysis applied to studies of respiratory control. *Neurogenesis of central respiratory rhythm: electrophysiological, pharmacological and pathological aspects*. (A. Bianchi and M. Denavit-Saubie, eds). MTP Press, London, U. K., pp 410-421, 1985.

3. Carley DW and DC Shannon. A minimal control system model of periodic breathing. *11th Northeast Bioengineering Conference*. W. Kuklinski and W. Ohley, eds, IEEE #85CH2203-8, pp 361-364, 1985.

4. Kelly DH, H Golub, DW Carley and DC Shannon. Pneumograms in infants who subsequently died of SIDS. *J Pediatrics,* 109:249-254, 1986.

5. Gordon VL, JP Welch, DW Carley, R Teplick and RS Newbower. Zero stability of disposable and reusable pressure transducers. *Medical Instrumentation,* 21(2):87-91,

1987.

6. Shannon DC, DW Carley and H Benson. Aging of modulation of heart rate. *Am J Physiol,* 253:H874-H877, 1987.

7. Carley DW, Ch Maayan, J Grimes and DC Shannon. Oscillations in respiratory parameters during periodic breathing. *9th Conf Eng Med Biol Soc* IEEE #CH2513-0-87, pp 2062-2063, 1987.

8. Maayan Ch, FB Axelrod, S Akselrod, DW Carley and DC Shannon. Evaluation of autonomic dysfunction in familial dysautonomia by power spectral analysis. *J Autonomic Nervous System*, 21:51-58, 1987.

9. Shannon DC, DW Carley and DH Kelly. Periodic breathing: quantitative analysis and clinical description. *Pediatric Pulmonolog,* 4:98-102, 1988.

10. Carley DW and DC Shannon. A minimal model of human periodic breathing. *J Appl Physiol*, 65:1400-1409, 1988.

11. Carley DW and DC Shannon. Relative stability of human respiration during progressive hypoxia. *J Appl Physiol*, 65:1389-1399, 1988.

12. Kelly DH, DW Carley and DC Shannon. Periodic Breathing. *Ann NY Acad Sci* 533:301-304, 1988.

13. Lopata M, E Önal, RM Aronson and DW Carley. Effects of inspiratory loading on ^{31}phosphorus magnetic resonance spectroscopy of the inspiratory intercostal muscles in humans. *Trans Assoc Amer Physicians,* 101:203-211, 1988.

14. Aronson RM, E Önal, DW Carley and M Lopata. Upper airway and respiratory muscle responses to continuous negative airway pressure. *J Appl Physiol,* 66:1373-1382, 1989.

15. Carley DW, E Önal, RM Aronson and M Lopata. Breath by breath interactions between inspiratory and expiratory duration in occlusive sleep apnea. *J Appl Physiol*, 66:2312-2319, 1989.

16. Carley DW, C Maayan, J Grimes and DC Shannon. Breath by breath respiratory timing and volume control during periodic breathing. *Am J Physiol,* 257:R653- R660, 1989.

17. Carley DW. Minimal modeling of human respiratory stability. In: Modeling and Parameter Estimation in Respiratory Control. Khoo MCK, ed, Plenum Press, New York, pp 171-80, 1989.

18. Lopata M, RM Aronson, DW Carley and E Önal. Role of the genioglossus in periodic breathing during sleep *Prog Clin Biol Res,* 345:227 – 229, 1990.

19. Lopata M, E Önal, RM Aronson and DW Carley. Effects of inspiratory loading on ^{31}phosphorus magnetic resonance spectroscopy of the inspiratory intercostal muscles in normal humans. *Chest*, 97: 97S, 1990.

20. Carley DW, E Önal and M Lopata. Quantitative analyses of state of vigilance in periodic breathing. In: Sleep and Respiration in Aging Adults. Kuna ST, Suratt PM, Remmers JE, eds, Elsevier, NY, pp 287-296, 1991.

21. Aronson RM, DW Carley, E Önal, J Wilborn and M Lopata. Upper airway muscle activity and the thoracic volume dependence of upper airway resistance. *J Appl Physiol*, 70:430 – 438, 1991.

22. Maayan Ch, DW Carley, F Axelrod, J Grimes and DC Shannon. Respiratory system stability and abnormal carbon dioxide homeostasis. *J Appl Physiol*, 72:1186-1193, 1992.

23. Bonnet M, DW Carley, M Carskadon, P Easton, C Guilleminault, R Harper, B Hayes, M Hirshkowitz, P Ktonas, S Keenan, M Pressman, T Roehrs, J Smith, J Walsh, S Weber and P Westbrook. EEG arousals: scoring rules and examples. *Sleep,* 15:173-184, 1992.

24. Bonnet M, DW Carley, M Carskadon, P Easton, C Guilleminault, R Harper, B Hayes, M Hirshkowitz, P Ktonas, S Keenan, M Pressman, T Roehrs, J Smith, J Walsh, S Weber and P Westbrook. Recording and Scoring Leg Movements. *Sleep*, 16:748 - 769, 1993.

25. Carlson DM, DW Carley, E Önal, M Lopata and RC Basner. Acoustically induced transient arousal increases pharyngeal and diaphragm muscle phasic EMG in normals. *J Appl Physiol*, 76:1553-1559, 1994.

26. Basner, RC, E Önal, DW Carley, EJ Stepanski and M Lopata. Effect of induced transient arousal on obstructive apnea duration. *J Appl Physiol*, 78:1469-1476, 1995.

27. Carlson, DM, E Önal, DW Carley, M Lopata and RC Basner. Palatal muscle electromyogram activity in obstructive sleep apnea. *Am J Respir Crit Care Med* 152:1022-1027, 1995.

28. Monti, D, DW Carley and M Radulovacki. Adenosine analogs modulate the incidence of sleep apneas in rats. *Pharm Biochem Behav,* 51:125 - 131, 1995.

29. Monti, D, DW Carley and M Radulovacki. p-SPA, a peripheral adenosine A1 analog reduces sleep apneas in rats. *Pharm Biochem Behav,* 53:1-5, 1996.

30. Carley, DW, S Trbovic and M Radulovacki. Effect of REM sleep deprivation on sleep apneas in rats. *Exp Neurol,* 137:291-293, 1996.

31. Carley, DW, S Trbovic and M Radulovacki. Effects of REM sleep deprivation on apnea in spontaneously hypertensive (SHR) and normotensive Wistar rats. *Physiol Behav,* 59:827-831, 1996.

32. Christon, J, DW Carley, D Monti and M Radulovacki. Effects of inspired gas on sleep-related apnea in the rat. *J Appl Physiol,* 80:2102-2107, 1996.

33. Carley, DW, S Trbovic and M Radulovacki. Hydralazine reduces elevated sleep apnea index in spontaneously hypertensive (SHR) rats to equivalence with normotensive Wistar-Kyoto rats. *Sleep,* 19:363-366, 1996.

34. Carley, DW, S Trbovic, D Monti and M Radulovacki. Effects of sleep fragmentation and clonidine administration on apnea in the rat. *Res Comm Biol Psychol Psychiat,* 20:95-111, 1996.

35. Radulovacki, M, S Trbovic and DW Carley. Acute hypotension reduces sleep apneas in Zucker lean and Zucker obese rats. *Sleep,* 19:767-773, 1996.

36. Carley DW, R Applebaum, RC Basner, E Önal and M Lopata. Respiratory and electrocortical responses to acoustic stimulation. *Sleep,* 19:S189-S192, 1996.

37. Radulovacki, M, SM Trbovic and DW Carley. Cardiopulmonary interactions following REM sleep deprivation in Sprague-Dawley rats. *Exp Neurol,* 145:371-375, 1997.

38. Trbovic, SM, M Radulovacki and DW Carley. Protoveratrines A and B increase sleep apnea index in Sprague-Dawley rats. *J Appl Physiol*, 83:1602-1606, 1997.

39. Carley DW, SM Trbovic, A Bozanich and M Radulovacki. Cardiopulmonary control in sleeping Sprague-Dawley rats treated with hydralazine. *J Appl Physiol* 83:1954-1960, 1997.

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