# CURRICULUM VITAE

# RYAN W. BAVIS

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## RESEARCH INTERESTS

Respiratory physiology, particularly plasticity in the neural control of breathing.

## EDUCATION

1995-2000 The University of Montana, Missoula, MT
Degree: Doctor of Philosophy
Program: Organismal Biology and Ecology

*Dissertation:* Physiological Consequences of Exposure to Elevated Carbon Dioxide During Development in Birds

1991-1995 St. Mary's College of Maryland, St. Mary's City, MD
Degree: Bachelor of Arts, *Summa Cum Laude* with Honors Program Distinction
Program: Biology, Honors Program

*Honors Thesis:* Phenolic Content and Antibacterial Activity of Marine Sponges

## TEACHING AND RESEARCH POSITIONS

2016-present **Helen A. Papaioanou Professor of Biological Sciences**, Department of Biology, Bates College

2019-2020 **Visiting Scientist**, Department of Pediatrics, Case Western Reserve University

2015-2019 **Chair**, Department of Biology, Bates College

2015-2016 **Professor**, Department of Biology, Bates College

2009-2015 **Associate Professor**, Department of Biology, Bates College

2003-2009 **Assistant Professor**, Department of Biology, Bates College

2000-2003 **Postdoctoral fellow**, Department of Comparative Biosciences, University of Wisconsin, Madison; plasticity in the neural control of breathing

1999-2000 **Research assistant**, Division of Biological Sciences, The University of Montana; plasticity in the control of breathing, influence of $CO_2$ on development

1995-1999 **Teaching assistant**, Div. Biological Sciences, The University of Montana

1994-1995 **Research trainee**, Laboratory of Molecular Systematics, Smithsonian Institution's National Museum of Natural History Research Training Program; molecular identification of avian subspecies

1993-1995 **Honors Thesis and Independent Study**, Biology Department, St. Mary's College of Maryland; chemical ecology of marine sponges and plants

1993-1995 **Lab assistant and undergraduate teaching assistant**, Biology Department, St. Mary's College of Maryland

## PROFESSIONAL MEMBERSHIPS

2001-present American Physiological Society

1995-2003 Society for Integrative and Comparative Biology

1996-1999 Sigma Xi; The University of Montana Chapter

## PROFESSIONAL SERVICE

2020-present Secretary/Treasurer, Respiration Section, American Physiological Society

2019-2020 Guest editor for Special Issue of *Respiratory Physiology & Neurobiology* on "Respiratory Control Development"

2019 Co-chair for the "Featured Topic" mini-symposium "Carotid Body Sensing: More than Just an $O_2$ Sensor," Experimental Biology 2019, Orlando, FL, April 2019.

2018-present Respiration Section Steering Committee, American Physiological Society

2015-2020 Awards Committee (Chair, 2018-2020), Respiration Section, American Physiological Society

2016 Co-organizer and co-chair for the "Featured Topic" mini-symposium "Redundancy and Plasticity in Respiratory Control," Experimental Biology 2016, San Diego, CA, April 2016.

2013 Judge for undergraduate poster competition, 5$^{th}$ Northeast Regional IDeA Conference, Newark, DE, August 2013.

2011-present Steering Committee Member and Consortium PI for Bates College, Maine IDeA Network of Biomedical Research Excellence (INBRE) (PI: Patricia Hand / James

Coffman, Mount Desert Island Biological Laboratory)

2012 Co-organizer and co-chair for the "Featured Topic" mini-symposium "Development of Respiratory Control," Experimental Biology 2012, San Diego, CA, April 2012.

2009-2014 Editorial Board, *Journal of Applied Physiology*

2008-present Programming Committee, Respiration Section, American Physiological Society

2008-2012 Editorial Board, *Respiratory Physiology & Neurobiology*

2007-2008 Co-organizer and co-chair for Annual Control of Breathing Mixer/Hot Topics session, Experimental Biology 2007 (Washington, DC) and Experimental Biology 2008 (San Diego, CA).

2006 Co-organizer and co-chair for the symposium "Respiratory Plasticity after Changes in Oxygen Supply and Demand," First International Congress of Respiratory Biology, Bonn, Germany, August 2006.

2006 Co-organizer and co-chair for symposium "Transition from Postdoc to Faculty: Surviving the Initial Years," sponsored by American Physiological Society's Trainee Advisory Committee, Experimental Biology 2006, San Francisco, CA, April 2006.

2005-2007 Advisory Board, NIH/NIGMS grant "Professional Skills for Minority Students in Biomedicine: Interactive and Online Development Tools" (PI: Marsha Matyas, American Physiological Society)

2004-2005 Guest editor for Special Issue of *Respiratory Physiology & Neurobiology* on "Development of Respiratory Control" (Vol. 149/1-3, November 2005)

2003-2006 Respiration Section Steering Committee, American Physiological Society

2003-2006 Trainee Advisory Committee, American Physiological Society

2003 Organizer and chair for the "Featured Topic" mini-symposium "Developmental Plasticity of Respiratory Control," Experimental Biology 2003, San Diego, CA, April 2003.

***Ad hoc reviewer for grants:***

Israel Science Foundation (2010)
National Institutes of Health, RIBT Study Section (2009)
National Institutes of Health, Special Emphasis Panel (2011)
National Science Foundation (2006, 2008, 2013)

***Ad hoc reviewer for journals / books:***

*American Journal of Physiology: Regul., Integr. & Comp. Physiol.* (2006-2011, 2013-2015, 2017)
*American Journal of Physiology: Lung Cell. Mol. Physiol.* (2018)
*The Auk* (1997)
*Brain Research* (2009)

*Comparative Biochemistry and Physiology* (2001-2003, 2014, 2016)
*Experimental Neurology* (2015, 2016, 2021)
*Frontiers in Respiratory Physiology* (2011-2013, 2016, 2017, 2020, 2021)
*Journal of Applied Physiology* (2002, 2004, 2006, 2008-2012, 2014, 2018)
*Journal of Experimental Biology* (2020)
*Journal of Physiology* (2004, 2007, 2008, 2010, 2014, 2015, 2017-2019)
*Neuroscience Letters* (2008, 2009, 2012)
*Physiological and Biochemical Zoology* (1999)
*Physiological Reports* (2015, 2018)
*PLOS One* (2017)
*Respiratory Physiology & Neurobiology* (2002-2020)
*Sleep* (2009)

Roberts & Co. Publishers (2005)

***Doctoral defense committees:***

Laval University (2012)

## TEACHING AND MENTORING OF UNDERGRADUATE STUDENTS AT BATES COLLEGE

*(Details on teaching and mentoring at previous institutions are available upon request.)*

***Courses taught (regular teaching load = 5 course equivalents per year):***

BIO 114 – Extreme Physiology
BIO 190 – Organismal Biology/Lab
BIO 195F – Lab-Based Biological Inquiry: Phenotypic Plasticity and the Changing World
BIO 206 – Evolution and Interactions of Life
BIO 270 – Ecology and Evolution/Lab
BIO 335 – Avian Biology/Lab
BIO 337 – Animal Physiology/Lab
BIO 342 – Ecological & Evolutionary Physiology
BIO 460 – Junior Seminar
BIO 472 – Seminar and Research in Physiology
BIO s33 – Phenotypic Plasticity

***Mentoring of undergraduate research (since 2003):***

Senior thesis (Biology, Biological Chemistry / Biochemistry, or Neuroscience): 69 students
Independent study: 7 students
Summer research assistants: 38 students (6 of these students worked multiple summers)
Hourly research assistants / interns (academic year): 3 students

## COMMUNITY SERVICE

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|---|---|
| 2012 | Guest speaker, Cub Scouts Abnaki Day Camp, Sabattus, ME |
| 2004-2008 | Science fair judge, Lewiston High School, Lewiston, ME |
| 1999 | Guest speaker, Big Fork High School, Big Fork, MT |
| 1998 | Guest speaker, Clark Fork School, Missoula, MT |
| 1997 | Guest speaker, Lowell Elementary School, Missoula, MT |

## EXTRAMURAL RESEARCH SUPPORT

2013-2016 R15 HL114001 (PI: Ryan Bavis), $285,603 total direct costs (8/1/13-7/31/16), National

Heart, Lung, and Blood Institute (NHLBI), National Institutes of Health

2009-2010 Maine INBRE 2-P20-RR016463 (PI: Patricia Hand, Mount Desert Island Biological Laboratory), Bavis's subaward: $90,000 direct costs (5/1/09-4/30/10), National Center for Research Resources (NCRR), National Institutes of Health

2008-2011 R15 HL083972 (PI: Ryan Bavis), $150,000 total direct costs (6/1/08-12/31/11), National Heart, Lung, and Blood Institute (NHLBI), National Institutes of Health

2006 Giles F. Filley Memorial Award, $20,000, American Physiological Society

2005-2009 Maine INBRE 1-P20-RR016463 (PI: Patricia Hand, Mount Desert Island Biological Laboratory), Bavis's subaward: $399,889 total direct costs (8/5/05-4/30/09), National Center for Research Resources (NCRR), National Institutes of Health

2002-2003 Individual National Research Service Award, $44,212, National Institutes of Health

2000 Grant-in-Aid of Research, $700, Society for Integrative and Comparative Biology

1997 Grant-in-Aid of Research, $600, Sigma Xi

**INTRAMURAL RESEARCH SUPPORT**

2021 Bates Faculty Development Fund ($9,492), Bates College

2021 Faculty-Student Research Grant ($15,000), Bates College, by NIH grant P20 GM-103423 from the National Institute of General Medical Sciences (Maine INBRE)

2021 INBRE Collaboration with Partner Institution ($11,303), Bates College, by NIH grant P20 GM-103423 from the National Institute of General Medical Sciences (Maine INBRE)

2018 Faculty-Student Research Grant ($15,000), Bates College, by NIH grant P20 GM-103423 from the National Institute of General Medical Sciences (Maine INBRE)

2018 STEM Faculty-Student Research Grant ($6,737), Bates College

2017 Faculty-Student Research Grant ($15,000), Bates College, by NIH grant P20 GM-103423 from the National Institute of General Medical Sciences (Maine INBRE)

2017 Science Fellows Faculty-Student Research Grant ($6,088), Bates College

2016 Faculty-Student Research Grant ($15,000), Bates College, by NIH grant P20 GM-103423 from the National Institute of General Medical Sciences (Maine INBRE)

2015 Bates Faculty Development Fund ($10,000), Bates College

2014 Faculty-Student Research Grant ($7,500), Bates College, by NIH grant P20 GM-103423 from the National Institute of General Medical Sciences (Maine INBRE)

2013 Faculty-Student Research Grant ($15,000), Bates College, by NIH grant P20 GM-

103423 from the National Institute of General Medical Sciences (Maine INBRE)

2012 Faculty-Student Research Grant ($15,000), Bates College, by NIH grant P20 GM-103423 from the National Institute of General Medical Sciences (Maine INBRE)

2011 Faculty-Student Research Grant ($15,000), Bates College, by NIH grant P20 RR-016463 from the National Center for Research Resources (Maine INBRE)

2011 Bates Faculty Development Fund ($10,000), Bates College

2008 Faculty-Student Research Grant ($10,268), Bates College, by NIH grant P20 RR-016463 from the National Center for Research Resources (Maine INBRE)

2007 Faculty-Student Research Grant ($15,036), Bates College, by NIH grant P20 RR-016463 from the National Center for Research Resources (Maine INBRE)

2005 Student-Faculty Research Grant ($14,890), Bates College, by a grant from the Howard Hughes Medical Institute

2004 Student-Faculty Research Grant ($7,414), Bates College, by a grant from the Howard Hughes Medical Institute

## HONORS AND AWARDS

2016 Outstanding Mentor Award, Biology Division of the Council on Undergraduate Research

2006 Giles F. Filley Memorial Award for Excellence in Respiratory Physiology and Medicine, American Physiological Society

2003 Caroline tum Suden / Frances Hellebrandt Professional Opportunity Award, American Physiological Society

2002 Travel Award, Comparative Physiology Section, American Physiological Society

1995 Department Award in Biology, St. Mary's College of Maryland
Biology Service Award, St. Mary's College of Maryland
Calculus Prize, St. Mary's College of Maryland
St. Mary's Scholar, St. Mary's College of Maryland

1993-1995 Beta Beta Beta Biological Honors Society, St. Mary's College of Maryland

## SCHOLARSHIPS AND FELLOWSHIPS

2019-2020 Phillips Faculty Fellowship (to support full-year sabbatical), Bates College

2000-2002 NIH Postdoctoral Fellowship (Institutional Training Grant), University of Wisconsin

1999-2000 Honors Predoctoral Fellowship, The University of Montana

1992-1995 Margaret Brent - Leonard Calvert Fellowship, St. Mary's College of Maryland

1992-1993 SMC Academic Scholarship, St. Mary's College of Maryland

1991-1992 Hilda and Arthur Landers Scholarship, St. Mary's College of Maryland

**INVITED RESEARCH SEMINARS**
(*Intramural seminars and interviews excluded.*)

1. "Oxygen's influence on the maturation of the respiratory control system," Department of Physiology & Biophysics, School of Medicine, Case Western Reserve University, Cleveland, OH, September 2019.

2. "Plasticity in the timing of respiratory control development," Treizième Colloque Scientifique Étudiant De La Société Legallois Pour L'étude Du Contrôle Respiratoire, Orford, Quebec, Canada, February 2018.

3. "Influence of perinatal oxygen on the developing respiratory control system". In the symposium "Ventilatory control and function following perinatal insults," Experimental Biology 2017, Chicago, IL, April 2017.

4. **"**Developmental hyperoxia attenuates hypoxic ventilatory depression in neonatal rats". In the Featured Topic session "Central nervous system modulation of cardiorespiratory responses to hypoxia," Experimental Biology 2013, Boston, MA, April 2013.

5. "Hyperoxia and the developing respiratory control system," Wright State University, Dayton, OH, April 2013.

6. "Hyperoxia and the developing respiratory control system," Centre Hospitalier Universitaire de Québec, Laval University, Quebec City, Quebec, Canada, February 2012.

7. "Hyperoxia and the developing respiratory control system," Division of Neonatology, Rainbow Babies & Children's Hospital, Case Medical Center, Cleveland, OH, July 2011.

8. "Development of the hypoxic ventilatory response in hyperoxia," Dartmouth Medical School, Hanover, NH, August 2010.

9. "Chronic hyperoxia alters the early and late phases of the hypoxic ventilatory response in neonatal rats." In the Featured Topic session "Time Domains of the Hypoxic Ventilatory Response," Experimental Biology 2009, New Orleans, LA, April 2009.

10. "Hypoxia, hyperoxia and the development of the hypoxic ventilatory response." In the symposium "Respiratory Plasticity after Changes in Oxygen Supply and Demand," First International Congress of Respiratory Biology, Bonn, Germany, August 2006.

11. "Living in stale air: lessons from quail and swallows," Stanton Bird Club, Lewiston, ME, May 2005.

12. "Developmental plasticity in the respiratory control system: you are what you *breathe*?," Department of Biology, University of Southern Maine, Portland, ME, April 2005.

13. "Learning to breathe," Department of Biology, Colby College, Waterville, ME, October 2004.

14. "Gender-specific developmental plasticity of the hypoxic ventilatory response in rats." In the Featured Topic session "Developmental Plasticity of Respiratory Control," Experimental Biology 2003, San Diego, CA, April 2003.

15. "Developmental plasticity in ventilatory chemosensitivity: comparative aspects." In the symposium "Comparative aspects of chemoreceptors," 6th International Congress of Comparative Physiology and Biochemistry, Mt. Buller, Victoria, Australia, February 2003.

16. "Does chronic hypoxia during postnatal development elicit long-lasting changes in chemosensitivity in rats?" In the symposium "Acclimatization to hypoxia: supply vs. demand strategies," APS Intersociety Meeting: The Power of Comparative Physiology: Evolution, Integration, and Application, San Diego, CA, August 2002.

17. "Long-term facilitation of phrenic motor output following episodic hypoxia in carotid body denervated rats." In the Featured Topic session "Central and peripheral mechanisms of oxygen sensing," Experimental Biology 2002, New Orleans, LA, April 2002.

18. "Duration and severity of developmental hyperoxia influence subsequent impairment of hypoxic phrenic responses." In the Featured Topic session "Ontogeny of cardiorespiratory mechanisms: an evolutionary perspective," Experimental Biology 2002, New Orleans, LA, April 2002.

19. "Developmental window for hyperoxia-induced blunting of hypoxic phrenic responses in rats." Wisconsin Regulation of Respiration Symposium, University of Wisconsin, Madison, WI, July 2001.

20. "Developmental plasticity of the hypercapnic ventilatory response in quail." In the Featured Topic session "The evolution and modification of the hypercapnic ventilatory response," Experimental Biology 2001, Orlando, FL, April 2001.

21. "Developmental plasticity in the hypercapnic ventilatory response: does gender matter?" Wisconsin Regulation of Respiration Symposium, Kemp Natural Resources Station, Woodruff, WI, July 2000.

## PUBLICATIONS

*(underlined names = undergraduate co-authors)*

### *Manuscripts in refereed journals:*

1. Pinette M, **Bavis RW**. Influence of chronic hyperoxia on the developmental time course of the hypoxic ventilatory response relative to other traits in rats. Respir Physiol Neurobiol 280: 103483, 2020.

2. **Bavis RW**. Effect of perinatal hyperoxia on breathing. Compr Physiol 10: 597-636, 2020.

3. Song MJ, Pratt AE, **Bavis RW**. Development of ventilatory chemoreflexes in Coturnix quail chicks. Respir Physiol Neurobiol 276: 103411, 2020.

4. **Bavis RW**, Song MJ, Smachlo JP, Hulse A, Kenison HR, Peralta JP, Place JT, Triebwasser S,

Warden SE, McDonough AB. Ventilatory and carotid body responses to acute hypoxia in rats exposed to chronic hypoxia during the first and second postnatal weeks. Respir Physiol Neurobiol 275: 103400, 2020.

5. **Bavis RW**, Millström AH, Kim SM, MacDonald CA, O'Toole CA, Asklof K, McDonough AB. Combined effects of intermittent hyperoxia and intermittent hypercapnic hypoxia on respiratory control in neonatal rats. Respir Physiol Neurobiol 260: 70-81, 2019.

6. **Bavis RW**, Li K-Y, DeAngelis KJ, March RJ, Wallace JA, Logan S, Putnam RW. Ventilatory and chemoreceptor responses to hypercapnia in neonatal rats chronically exposed to moderate hyperoxia. Respir Physiol Neurobiol 237: 22-34, 2017.

7. **Bavis RW**, MacFarlane PM. Developmental plasticity in the neural control of breathing. Exper Neurol 287: 176-191, 2017.

8. Logan S, Tobin KE, Fallon SC, Deng KS, McDonough AB, **Bavis RW**. Chronic intermittent hyperoxia alters the development of the hypoxic ventilatory response in neonatal rats. Respir Physiol Neurobiol 220: 69-80, 2016.

9. **Bavis RW**, Blegen HJ, Logan S, Fallon SC, McDonough AB. Role of TrkB during the postnatal development of the rat carotid body. Respir Physiol Neurobiol 219: 18-24, 2015.

10. **Bavis RW**, van Heerden ES, Brackett DG, Harmeling LH, Johnson SM, Blegen HJ, Logan S, Nguyen GN, Fallon SC. Postnatal development of eupneic ventilation and metabolism in rats chronically exposed to moderate hyperoxia. Respir Physiol Neurobiol 198: 1-12, 2014.

11. **Bavis RW**, DeAngelis KJ, Horowitz TC, Reedich LM, March RJ. Hyperoxia-induced developmental plasticity of the hypoxic ventilatory response in neonatal rats: contributions of glutamate-dependent and PDGF-dependent mechanisms. Respir Physiol Neurobiol 191: 84-94, 2014.

12. Hill CB, Grandgeorge SH, **Bavis RW**. Developmental hyperoxia alters CNS mechanisms underlying hypoxic ventilatory depression in neonatal rats. Respir Physiol Neurobiol 189: 498-505, 2013.

13. **Bavis RW**, Fallon SC, Dmitrieff EF. Chronic hyperoxia and the development of the carotid body. Respir Physiol Neurobiol 185: 94-104, 2013.

14. Dmitrieff EF, Piro SE, Broge TA Jr., Dunmire KB, **Bavis RW**. Carotid body growth during chronic postnatal hyperoxia. Respir Physiol Neurobiol 180: 193-203, 2012.

15. **Bavis RW**, Dmitrieff EF, Young KM, Piro SE. Hypoxic ventilatory response of adult rats and mice after developmental hyperoxia. Respir Physiol Neurobiol 177: 342-346, 2011.

16. **Bavis RW**, Kim I, Pradhan N, Nawreen N, Dmitrieff EF, Carroll JL, Donnelly DF. Recovery of carotid body $O_2$ sensitivity following chronic postnatal hyperoxia in rats. Respir Physiol Neurobiol 177: 47-55, 2011.

17. Dmitrieff EF, Wilson JT, Dunmire KB, **Bavis RW**. Chronic hyperoxia alters the expression of neurotrophic factors in the carotid body of neonatal rats. Respir Physiol Neurobiol 175: 220–227,

2011.

18. Roeser JC, Brackett DG, van Heerden ES, Young KM, **Bavis RW**. Potentiation of the hypoxic ventilatory response by one day of hyperoxia in neonatal rats. Respir Physiol Neurobiol 176: 50-56, 2011.

19. Watson ML, Wells JV, **Bavis RW**. First detection of night flight calls by Pine Siskins. Wilson J Ornithol 123: 161-164, 2011.

20. Baker-Herman TL, **Bavis RW**, Dahlberg JM, Mitchell AZ, Wilkerson JER, Golder FJ, MacFarlane PM, Watters JJ, Behan M, Mitchell GS. Differential expression of respiratory long-term facilitation among inbred rat strains. Respir Physiol Neurobiol 170: 260-267, 2010.

21. **Bavis RW**, Young KM, Barry KJ, Boller MR, Kim E, Klein PM, Ovrutsky AR, Rampersad DA. Chronic hyperoxia alters the early and late phases of the hypoxic ventilatory response in neonatal rats. J Appl Physiol 109: 796-803, 2010.

22. Carroll JL, Kim I, Dbouk H, Yang DJ, **Bavis RW**, Donnelly DF. Time-dependence of hyperoxia-induced impairment in peripheral chemoreceptor activity and glomus cell calcium response. Adv Exper Med Biol 648: 299-306, 2009.

23. Donnelly DF, **Bavis RW**, Kim I, Dbouk HA, Carroll JL. Time-course of alterations in pre- and post-synaptic chemoreceptor function during developmental hyperoxia. Respir Physiol Neurobiol 168:189-197, 2009.

24. Atchley DS, Foster JA, **Bavis RW**. Thermoregulatory and metabolic responses of Japanese quail to hypoxia. Comp Biochem Physiol A 151: 641-650, 2008.

25. **Bavis RW**, Mitchell GS. Long-term effects of the perinatal environment on respiratory control. J Appl Physiol 104: 1220-1229, 2008.

26. **Bavis RW**, Simons JC. Developmental hyperoxia attenuates the hypoxic ventilatory response in Japanese quail. Respir Physiol Neurobiol 164: 411-418, 2008.

27. **Bavis RW**, Wenninger JM, Miller BM, Fergusson EK, Olson EB Jr., Mitchell GS, Bisgard GE. Respiratory plasticity after perinatal hyperoxia is not prevented by antioxidant supplementation. Respir Physiol Neurobiol 160: 301-312, 2008.

28. Doperalski NJ, Sandhu MS, **Bavis RW**, Reier PJ, Fuller DD. Sex differences in respiratory recovery following high cervical spinal hemisection in rats. Respir Physiol Neurobiol 162: 160-167, 2008.

29. Kilgore DL Jr., Boggs DF, Kilgore TJ, Colby C, Williams BR Jr., **Bavis RW**. Ventilatory and metabolic responses of burrowing owls, *Athene cunicularia,* to moderate and extreme hypoxia: analysis of the hypoxic ventilatory threshold *vs.* hemoglobin oxygen affinity relationship in birds. Comp Biochem Physiol A 150: 247-257, 2008.

30. **Bavis RW**, Russell KER, Simons JC, Otis JP. Hypoxic ventilatory responses in rats after hypercapnic hyperoxia and intermittent hyperoxia. Respir Physiol Neurobiol 155: 193-202, 2007.

31. **Bavis RW**, Powell FL, Bradford A, Hsia CCW, Peltonen JE, Soliz J, Zeis B, Fergusson EK, Fu Z, Gassmann M, Kim CB, Maurer J, McGuire M, Miller BM, O'Halloran KD, Paul RJ, Reid SG, Rusko HK, Tikkanen HO, Wilkinson KA. Respiratory plasticity in response to changes in oxygen supply and demand. Integr Comp Biol 47: 532-551, 2007.

32. **Bavis RW**, Johnson RA, Ording KM, Otis JP, Mitchell GS. Respiratory plasticity after perinatal hypercapnia in rats. Respir Physiol Neurobiol 153: 78-91, 2006.

33. **Bavis RW**. Developmental plasticity of the hypoxic ventilatory response after perinatal hyperoxia and hypoxia. Respir Physiol Neurobiol 149: 287-299, 2005.

34. Bisgard GE, Olson EB Jr., **Bavis RW**, Wenninger J, Nordheim EV, Mitchell GS. Carotid chemoafferent plasticity in adult rats following developmental hyperoxia. Respir Physiol Neurobiol 145: 3-11, 2005.

35. Golder FJ, Zabka AG, **Bavis RW**, Baker-Herman TL, Fuller DD, Mitchell GS. Time domains of the hypoxic phrenic response differ among inbred rat strains. J Appl Physiol 98: 838-844, 2005.

36. Hempleman SC, Kilgore DL Jr., Colby C, **Bavis RW**, Powell FL. Spike firing allometry in avian intrapulmonary chemoreceptors: matching neural code to body size. J Exper Biol 208: 3065-3073, 2005.

37. Baker-Herman TL, Fuller DD, **Bavis RW**, Zabka AG, Golder FJ, Doperalski NJ, Johnson RA, Watters JJ, Mitchell GS. BDNF is necessary and sufficient for spinal respiratory plasticity following intermittent hypoxia. Nature Neurosci 7: 48-55, 2004.

38. **Bavis RW**, Olson EB Jr., Vidruk EH, Fuller DD, Mitchell GS. Developmental plasticity of the hypoxic ventilatory response in rats induced by neonatal hypoxia. J Physiol 557: 645-660, 2004.

39. **Bavis RW**, Mitchell GS. Intermittent hypoxia induces phrenic long-term facilitation in carotid-denervated rats. J Appl Physiol 94: 399-409, 2003.

40. **Bavis RW**, Olson EB Jr., Vidruk EH, Bisgard GE, Mitchell GS. Level and duration of developmental hyperoxia influence impairment of hypoxic phrenic responses in rats. J Appl Physiol 95: 1550-1559, 2003.

41. Bisgard GE, Olson EB Jr., Wang Z-Y, **Bavis RW**, Fuller DD, Mitchell GS. Adult carotid chemoafferent responses to hypoxia after 1, 2, and 4 weeks of postnatal hyperoxia. J Appl Physiol 95: 946-952, 2003.

42. **Bavis RW**, Olson EB Jr., Mitchell GS. Critical developmental period for hyperoxia-induced blunting of hypoxic phrenic responses in rats. J Appl Physiol 92: 1013-1018, 2002.

43. Fuller DD, **Bavis RW**, Vidruk EH, Wang Z-Y, Olson EB Jr., Bisgard GE, Mitchell GS. Life-long impairment of hypoxic phrenic responses in rats following 1 month of developmental hyperoxia. J Physiol 538: 947-955, 2002.

44. **Bavis RW**, Kilgore DL Jr. Effects of embryonic $CO_2$ exposure on the adult ventilatory response in quail: does gender matter? Respir Physiol 126: 183-199, 2001.

45. Mitchell GS, Baker TL, Nanda SA, Fuller DD, Zabka AG, Hodgeman BA, **Bavis RW**, Mack KJ, Olson EB Jr. Intermittent hypoxia and respiratory plasticity. J Appl Physiol 90: 2466-2475, 2001.

46. **Bavis RW**, Seveyka J, Shigeoka CA. Another strategy for teaching histology to A&P students: Classification versus memorization. Am Biol Teach 62: 365-369, 2000.

47. Seveyka J, Shigeoka CA, **Bavis RW**. Analysis as a means of motion exploration & inquiry. Am Biol Teach 62: 140-144, 2000.

48. Shigeoka CA, **Bavis RW**, Seveyka J. Teaching musculoskeletal anatomy: A technique for active learners. Am Biol Teach 62: 198-201, 2000.

***Book chapters:***

1. Fuller DD, **Bavis RW**, Mitchell GS. Respiratory neuroplasticity: respiratory gases, development, and spinal injury. In: Ward DS, Dahan A, Teppema L, eds. *Pharmacology and Pathophysiology of the Control of Breathing*. Boca Raton: Taylor & Francis, pp.155-223, 2005.

2. Mitchell LJ, MacFarlane PM, **Bavis RW**, Martin RJ. Pathophysiology of apnea of prematurity. In: Polin RA, Benitz WE, Abman S, Rowitch D, eds. *Fetal and Neonatal Physiology*. 6th ed. Elsevier, in press.

***Invited editorials:***

1. **Bavis RW**. Poor diets, abnormal breathing, and SIDS risk. J Appl Physiol 110: 303-304, 2011.

2. **Bavis RW**, Carroll JL. Foreword. Respir Physiol Neurobiol 149: 1-2, 2005. [Introduction to Special Issue on “Development of Respiratory Control”]

***Manuscripts in review or in revision:***

None.

***Abstracts:***

1. Pinette M, **Bavis RW**. Early maturation of the hypoxic ventilatory response in hyperoxic rat pups: evidence for trait-specific heterokairy. FASEB J. 34: 1-1. doi:10.1096/fasebj.2020.34.s1.04084

2. Memishian W, Turnage MB, **Bavis RW**. No effect of adenosine or serotonin receptor blockade on the biphasic hypoxic ventilatory response of neonatal rats. FASEB J. 33(1_Supplement): 732.2, 2019.

3. Pratt AE, **Bavis RW**. Respiratory plasticity in adult rats after exposure to chronic hyperoxia. FASEB J. 33(1_Supplement): 731.3, 2019.

4. Benevides ES, Kavanagh JB, Wallace JA, **Bavis RW**. Does shipping late-gestation rats alter respiratory control in their offspring? FASEB J. 31: 625.2, 2018.

5. Cottingham PL, March RJ, **Bavis RW**. Influence of GABA receptor antagonists on the biphasic hypoxic ventilatory response of newborn rats. FASEB J. 32: 742.4, 2018.

6. Kavanagh JB, Pratt AE, Lewallen RM, **Bavis RW**. Plasticity in normoxic ventilation and apnea frequency in neonatal rats exposed to chronic hyperoxia. FASEB J. 32: 625.1, 2018.

7. Pratt, AE, Song M, **Bavis RW**. Postnatal development of hypoxic and hypercapnic ventilatory responses in Coturnix quail. FASEB J. 31: 860.1, 2018.

8. Muscato GM, Kim SM, McDonough AB, **Bavis RW**. Does reduced carotid body BDNF contribute to developmental hyperoxia-induced respiratory plasticity? FASEB J. 31: 1055.3, 2017.

9. Song M, Benevides ES, **Bavis RW**. Hypoxic ventilatory response of developing rats exposed to chronic hypoxia at various ages. FASEB J. 31: 1055.2, 2017.

10. MacDonald CA, O'Toole CA, Butler JA, McDonough AB, **Bavis RW**. Combined effects of intermittent hyperoxia and intermittent hypoxia on respiratory control development in rats. FASEB J. 30: 1299.9, 2016.

11. MacDonald CA, O'Toole CA, McDonough AB, **Bavis RW**. Combined effects of intermittent hyperoxia and intermittent hypercapnic hypoxia on development of the control of breathing in rats. 6th Northeast Regional Institutional Development Award (IDeA) Conference, September 24-26, 2015.

12. Millström AH, Kim SM, Asklof K, McDonough AB, **Bavis RW**. Combined effects of intermittent hyperoxia and intermittent hypercapnic hypoxia on respiratory control. FASEB J. 29: 659.16, 2015.

13. **Bavis RW**, Logan S, Blegen HJ, Fallon SC. K252a inhibits carotid body growth but not oxygen sensitivity. FASEB J 28: 1177.2, 2014.

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*Revised 7/21.*