

Publications

1. **McDonald MD**, Wood CM (1998) Reabsorption of urea by the kidney of the freshwater rainbow trout. *Fish Physiol Biochem* 18: 375–386
2. **McDonald MD**, Wood CM, Wang Y, Walsh PJ (2000) Differential branchial and renal handling of urea, acetamide and thiourea in the gulf toadfish, *Opsanus beta*: evidence for two transporters. *J Exp Biol* 203: 1027–1037
3. Wood CM, Warne JM, Balment RJ, Wang Y, **McDonald MD**, Laurent P, Walsh PJ (2001) Do circulating plasma AVT and/or cortisol levels control pulsatile urea excretion in the gulf toadfish (*Opsanus beta*)? *Comp Biochem Physiol* 129A: 859–872
4. **McDonald MD**, Wood CM, Walsh PJ (2002) Transport physiology of the urinary bladder in teleosts: a suitable model for renal urea handling? *J Exp Zool* 292: 604–617
5. **McDonald MD**, Walsh PJ, Wood CM (2002) Branchial and renal excretion of urea and urea analogues in the plainfin midshipman, *Porichthys notatus*. *J Comp Physiol* 172B: 699–712
6. **McDonald MD**, Grosell M, Wood CM, Walsh PJ (2003) Branchial and renal handling of urea in the gulf toadfish, *Opsanus beta*: the effect of exogenous urea loading. *Comp Biochem Physiol* 134A: 763–776
7. **McDonald MD**, Wood CM (2003) Differential handling of urea and its analogues suggests carrier-mediated urea excretion in the freshwater rainbow trout. *Physiol Biochem Zool* 76: 791–802.
8. Wood CM, **McDonald MD**, Sundin L, Laurent P, Walsh PJ (2003) Pulsatile urea excretion in the gulf toadfish: mechanisms and controls. *Comp Biochem Physiol* 136B: 667–684
9. **McDonald MD**, Wood CM (2004) The effect of chronic cortisol elevation on urea metabolism and excretion in the rainbow trout (*Oncorhynchus mykiss*). *J Comp Physiol* 174B: 71–81
10. **McDonald MD**, Wood CM (2004) Evidence for facilitated diffusion of urea across the gill basolateral membrane of the rainbow trout (*Oncorhynchus mykiss*). *Biochim Biophys Acta* 1663: 89–96
11. Grosell M, **McDonald MD**, Wood CM, Walsh PJ (2004) Effects of prolonged copper exposure in the marine gulf toadfish (*Opsanus beta*). I. Hydromineral balance and plasma nitrogenous waste products. *Aquat Tox* 68: 249–262
12. Grosell M, **McDonald MD**, Wood CM, Walsh PJ (2004) Effects of prolonged copper exposure in the marine gulf toadfish (*Opsanus beta*). II. Copper accumulation, drinking rate and Na⁺/K⁺ ATPase activity in osmoregulatory tissues. *Aquat Toxicol* 68: 263–275

13. **McDonald MD**, Walsh PJ (2004) Dogmas and controversies in the handling of nitrogenous wastes: 5-HT₂-like receptors are involved in triggering pulsatile urea excretion in the gulf toadfish, *Opsanus beta*. J Exp Biol 207: 2003–2020
14. Wood CM, **McDonald MD**, Walker P, Grosell M, Barimo JF, Playle RC and Walsh PJ (2004) Bioavailability of silver and its relationship to ionoregulation and silver speciation across a range of salinities in the euryhaline gulf toadfish (*Opsanus beta*). Aquat Toxicol 70: 137–157
15. McDonald MD, Wood CM, Grosell M, Walsh PJ (2004) Glucocorticoid receptors are involved in the regulation of pulsatile urea excretion in toadfish. J Comp Physiol 174B: 649–658
16. Sloman KA, McDonald MD, Barimo JF, Winberg S, Wood CM, Walsh PJ (2005) Does pulsatile urea excretion serve as a social signal in the gulf toadfish, *Opsanus beta*? Physiol Biochem Zool 78: 724–735
17. Veauvy CM, **McDonald MD**, Van Audekerke J, Vanhoutte G, Van Camp N, Van der Linden A, Walsh PJ (2005) Ammonia affects brain nitrogen metabolism but not hydration status in the gulf toadfish (*Opsanus beta*) Aquat Tox 74: 32–46
18. **McDonald MD**, Grosell M (2006) Maintaining osmotic balance with an aglomerular kidney. Comp Biochem Physiol 143A: 447–458
19. Pane EF, **McDonald MD**, Curry NH, Blanchard J, Wood CM, Grosell M (2006) Hydromineral balance in the marine gulf toadfish (*Opsanus beta*) exposed to waterborne or infused nickel. Aquat Toxicol 80: 70–81
20. **McDonald MD**, Smith CP, Walsh PJ (2006) The physiology and evolution of urea transport in fishes. J Membr Biol 212: 93–107
21. **McDonald MD**, Gilmour KM, Barimo JF, Frezza PE, Walsh PJ, Perry SF (2007) Is urea pulsing in toadfish related to environmental O₂ or CO₂ levels? Comp Biochem Physiol 146A: 366–374
22. Walsh PJ, Veauvy CM, **McDonald MD**, Pamenter ME, Buck LT, Wilkie MP (2007) Piscine insights into comparisons of anoxia tolerance, ammonia toxicity, stroke and hepatic encephalopathy. Comp Biochem Physiol 147A: 332–343
23. **McDonald MD**, Walsh PJ (2007) Aglomerular kidney function when challenged with exogenous MgSO₄ loading or environmental MgSO₄ depletion. J Exp Zool 307A: 676–687
24. Veauvy CM, Walsh PJ, **McDonald MD** (2009) Effect of elevated ammonia on brain glutamine in the ureotelic gulf toadfish (*Opsanus beta*) and the ammoniotelic midshipman (*Porichthys notatus*). Physiol Biochem Zool 82: 345–52
25. **McDonald MD**, Vulesevic B, Perry SF, Walsh PJ (2009) Urea transporter and glutamine synthetase regulation and localization in gulf toadfish gill. J Exp Biol 212: 704–712

26. Scott CP, VanWye J, **McDonald MD**, Crawford DL (2009) Technical analysis of *Fundulus heteroclitus* cDNA microarrays. PLoS ONE 4: e4486.
DOI:10.1371/journal.pone.000 4486
27. Rodela TM, **McDonald MD**, Walsh PJ, Gilmour KM (2009) The regulatory role of glucocorticoid and mineralocorticoid receptors in pulsatile urea excretion of the gulf toadfish, *Opsanus beta*. J Exp Biol 212: 1849–1858
28. Morando MB, Medeiros LR, **McDonald MD** (2009) Fluoxetine treatment affects nitrogen waste excretion and osmoregulation in a marine teleost fish. Aquat Toxicol 95: 164–171
29. Laberge T, Walsh PJ, **McDonald MD** (2009) Effects of crowding on ornithine–urea cycle enzyme gene expression and activity of the gulf toadfish (*Opsanus beta*). J Exp Biol 212: 2394–2402
30. Rodela TM, Gilmour KM, Walsh PJ, **McDonald MD** (2009) Cortisol–sensitive urea transport across the gill basolateral membrane of the gulf toadfish, *Opsanus beta*. Am J Physiol 297: R313–R322
31. Correa AMS, **McDonald MD**, Baker AC (2009) Development of clade–specific *Symbiodinium* primers for quantitative PCR (qPCR) and their application to detecting clade *D* symbionts in Caribbean corals. Mar Biol 156: 2403–2411
32. **McDonald MD**, Gilmour KM, Walsh PJ, Perry SF (2010) Cardiorespiratory reflexes in the gulf toadfish, *Opsanus beta*: the role of 5-HT₂ receptors. Resp Physiol Neurobiol *In Press*
33. Medeiros LR, Mager EM, Grosell M, **McDonald MD** (submitted 09/09) The serotonin subtype 1A receptor regulates cortisol secretion in the Gulf toadfish, *Opsanus beta*. Gen Comp Endocrinol.
33. Wood CM, Grosell M, **McDonald MD**, Playle RC, Walsh PJ (2010) Effects of waterborne silver in a marine teleost, the Gulf toadfish (*Opsanus beta*): effects of feeding and chronic exposure on bioaccumulation and physiological responses. Aquat Toxicol 99: 138–148
34. Medeiros LR, Mager EM, Grosell M, **McDonald MD** (2010) The serotonin subtype 1A receptor regulates cortisol secretion in the Gulf toadfish, *Opsanus beta*. Gen Comp Endocrinol 168: 377–387
35. Barimo JF, Walsh PJ, **McDonald MD** (2010) Diel patterns of nitrogen excretion and behavior in the gulf toadfish (*Opsanus beta*) in laboratory versus outdoor mesocosm settings. Physiol Biochem Zool 83: 958–972
36. **McDonald MD**, Gonzalez A, Sloman KA (2011) Higher levels of aggression are observed in socially dominant toadfish treated with the selective serotonin reuptake inhibitor, fluoxetine. Comp Biochem Physiol 153C: 107–112
37. Genz J, **McDonald MD**, Grosell M (2011) Concentration of MgSO₄ in the intestinal lumen of *Opsanus beta* limits tolerance to hypersalinity. Am J Physiol 300: R895–R909

- 38.** Rodela, TR Esbaugh AJ, **McDonald MD**, Gilmour KM, Walsh PJ (2011) Evidence for transcriptional regulation of the urea transporter in the gill of gulf toadfish, *Opsanus beta*. Comp Biochem Physiol 160B: 72–80
- 39.** Rodela TR, Esbaugh AJ, Weihrauch D, Veauvy CM, **McDonald MD**, Gilmour KM, Walsh PJ (2012) Revisiting the effects of crowding and feeding in the gulf toadfish, *Opsanus beta*: the role of Rhesus glycoproteins in nitrogen metabolism and excretion. J Exp Biol 215: 301–313
- 40.** Rodela TR, **McDonald MD**, Walsh PJ, Gilmour KM (2012) Interactions between cortisol and Rh glycoprotein expression in ureogenic toadfish, *Opsanus beta*. J Exp Biol 215: 314–323
- 41.** **McDonald MD**, Wood CM, Walsh PJ (2012) 5-hydroxytryptamine initiates pulsatile urea excretion from perfused gills of the Gulf toadfish (*Opsanus beta*). Comp Biochem Physiol A 160: 30–37
- 42.** **McDonald MD** (2012) Homeostasis and feedback control loops. Nature Education In Press
- 43.** **McDonald MD***, Gilmour KM, Walsh PJ (2012) New insights into the mechanisms controlling urea excretion in fish. Resp Neurobiol Physiol In Press
- 44.** Mager EM, Medeiros LR, Lange AP, **McDonald MD** (2012) The toadfish serotonin 2A (5-HT_{2A}) receptor: molecular characterization and its potential role in urea excretion. Comp Biochem Physiol A In Press
- 45.** Rodela TR, Esbaugh AJ, Weihrauch D, **Veauvy CM**, McDonald MD, Gilmour KM, Walsh PJ (2012) Revisiting the effects of crowding and feeding in the gulf toadfish, *Opsanus beta*: the role of Rhesus glycoproteins in nitrogen metabolism and excretion. J Exp Biol 215: 301–313
- 46.** Rodela TR, McDonald MD, Walsh PJ, Gilmour KM (2012) Interactions between cortisol and Rh glycoprotein expression in ureogenic toadfish, *Opsanus beta*. J Exp Biol 215: 314–323
- 47.** McDonald MD, Wood CM, Walsh PJ (2012) 5-hydroxytryptamine initiates pulsatile urea excretion from perfused gills of the Gulf toadfish (*Opsanus beta*). Comp Biochem Physiol A 160: 30–37
- 48.** Mager EM, **Medeiros LR**, **Lange AP**, McDonald MD (2012) The toadfish serotonin 2A (5-HT_{2A}) receptor: molecular characterization and its potential role in urea excretion. Comp Biochem Physiol 163A: 319–26
- 49.** **Medeiros LR**, McDonald MD (2012) Elevated cortisol inhibits adrenocorticotropin hormone- and serotonin-stimulated cortisol secretion from the interrenal cells of the Gulf toadfish (*Opsanus beta*). Gen Comp Endocrinol 179: 414–420

- 51. Medeiros LR, Cartolano MC, McDonald MD** (2014) Crowding stress attenuates serotonin 1A receptor-mediated secretion of corticotropin releasing factor and adrenocorticotropin hormone in the Gulf toadfish. *J Comp Physiol* 184B: 259–271
- 52. Koldkjaer P, McDonald MD, Prior I, Berenbrink M** (2013) Pronounced in vivo hemoglobin polymerization in red blood cells of the Gulf toadfish. A general role for hemoglobin aggregation in vertebrate hemoparasite defence? *Am J Physiol* 305: R1190–1199
- 53. Bucking C, Edwards SL, Tickle P, Smith CP, McDonald MD, Walsh PJ** (2013) Immunohistochemical localization of urea and ammonia transporters in two confamilial fish species, the ureotelic gulf toadfish (*Opsanus beta*) and the ammoniotelic plainfin midshipman (*Porichthys notatus*). *Cell Tissue Res* 352: 623–637
- 54. Medeiros LR, McDonald MD** (2013) Cortisol-mediated downregulation of the serotonin 1A receptor subtype in the Gulf toadfish, *Opsanus beta*. *Comp Biochem Physiol* 164A: 612–21
- 55. Frere AW, McDonald MD** (2013) The effect of stress on gill basolateral membrane binding kinetics of 5-HT₂ receptor ligands: potential implications for urea excretion. *J Exp Zool* 319A: 237–248
- 55. McDonald MD, Gilmour KM, Walsh PJ** (2012) New insights into the mechanisms controlling urea excretion in fish. *Resp Neurobiol Physiol* 184: 241–248
- 56. Medeiros LR, McDonald MD** (2012) Elevated cortisol inhibits adrenocorticotropin hormone- and serotonin-stimulated cortisol secretion from the interrenal cells of the Gulf toadfish (*Opsanus beta*). *Gen Comp Endocrinol* 179: 414–420
- 57. Mager EM, Medeiros LR, Lange AP, McDonald MD** (2012) The toadfish serotonin 2A (5-HT_{2A}) receptor: molecular characterization and its potential role in urea excretion. *Comp Biochem Physiol* 163A: 319–26
- 58. McDonald MD, Wood CM, Walsh PJ** (2012) 5-hydroxytryptamine initiates pulsatile urea excretion from perfused gills of the Gulf toadfish (*Opsanus beta*). *Comp Biochem Physiol A* 160: 30–37
- 59. Rodela TR, McDonald MD, Walsh PJ, Gilmour KM** (2012) Interactions between cortisol and Rh glycoprotein expression in ureogenic toadfish, *Opsanus beta*. *J Exp Biol* 215: 314–323
- 60. Rodela TR, Esbaugh AJ, Weihrauch D, Veauvy CM, McDonald MD, Gilmour KM, Walsh PJ** (2012) Revisiting the effects of crowding and feeding in the gulf toadfish, *Opsanus beta*: the role of Rhesus glycoproteins in nitrogen metabolism and excretion. *J Exp Biol* 215: 301–313