



Seewiesen Colloquia

Speaker invited by: Research Group Hau

Thursday, 29. October 2015, 13:00 h, in House 4, Lecture Room

Effects of prenatal and postnatal environments on nestling and adult energy expenditure

Prof. Gary Burness

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Within a population there exists variation among individuals in physiological traits. There is increasing recognition that the rearing environment, including that experienced prenatally, can affect the adult phenotype and contribute to this variation. Using captive Japanese quail, we have been exploring the role that temperature, experienced either pre- or post-natally, has on an individual's growth rates and thermal physiology. To our surprise, we have found that effects can be long lasting, and influence adult energy expenditure. Using wild birds we have been testing whether maternally-derived antibodies, transferred to offspring via egg yolk, influence nestling metabolic rate and capacity to mount an immune response. Effects are detectable at the fledgling stage, although we cannot track effects in adults. These experimental systems highlight the role that early environmental effects have on an individual's energy expenditure however direct links with fitness remain to be shown.

Who is Gary Burness?

2007-	Associate Professor Trent University (Peterborough, ON, Canada)
2003-07	Assistant Professor, Trent University (Peterborough, ON, Canada)
2001-03	Post-doctoral fellow, Queen's University (Kingston, ON, Canada)
2000-01	Post-doctoral fellow, University of California Los Angeles (Los Angeles, CA, USA)
2000	PhD, University of British Columbia (Vancouver, BC, Canada)

Selected publications:

- Burness G, Huard JR, Malcolm E, and Tattersall GJ. (2013) Post-hatch heat warms adult beaks: irreversible physiological plasticity in Japanese quail. **Proceedings of the Royal Society of London B: Biological Sciences** 280 (1767) 20131436.
- Chin EH, Storm-Suke AL, Kelly RJ, and Burness G. (2013) Catch-up growth in Japanese quail (*Coturnix japonica*): relationships with food intake, metabolic rate and sex. **Journal of Comparative Physiology B** 183 (6) 821-831.
- Hossie TJ, Ferland-Raymond B, Burness G, and Murray DL. (2010) Morphological and behavioural responses of frog tadpoles to perceived predation risk: a possible role for corticosterone mediation? **Ecoscience** 17 (1) 100-108.
- Burness G, Casselman SJ, Schulte-Hostedde AI, Moyes CD, and Montgomerie R. (2004) Sperm swimming speed and energetics vary with sperm competition risk in bluegill (*Lepomis macrochirus*). **Behavioral Ecology and Sociobiology** 56 (1) 65-70.
- Burness GP, Diamond J, and Flannery T. (2001) Dinosaurs, dragons, and dwarfs: the evolution of maximal body size. **Proceedings of the National Academy of Sciences** 98 (25) 14518-14523.
- Burness GP, Ydenberg RC, and Hochachka PW. (2001) Physiological and biochemical correlates of brood size and energy expenditure in tree swallows. **Journal of Experimental Biology** 204 (8) 1491-1501.
- Burness GP, McClelland GB, Wardrop SL, and Hochachka PW. (2000) Effect of brood size manipulation on offspring physiology: an experiment with passerine birds. **Journal of Experimental Biology** 203 (22) 3513-3520.