



International Graduate Course



Acid base and ion regulation in a hypercapnic world

December 3-14 (2018), College of Aquaculture and Fisheries, Can Tho University, Vietnam

Course Description

An innovative graduate level course taught by an international team of experts in comparative physiology. The tropical environment is frequently both deeply hypoxic and hypercapnic, which on an evolutionary scale has led to numerous appearances of vertebrate air-breathing. In addition, waterlogged tropical delta regions often house acid sulphate soils with very low pH (<3.5) waterways at the onset of the rainy-season. This course will examine the integrative physiology of air-breathing fish with particular focus on the challenges to acid and ion regulation encountered in the transition from aquatic to terrestrial habitats. The course will run from Monday, December 3 until Friday December 14, 2018 at the College of Agriculture and Fisheries, Can Tho University, Can Tho, Vietnam, and consist of lectures (see topic list below) and mini-projects. A wide variety of local fish species will be available for the projects including some living at below pH 4. Enrollment on the course will be limited to a maximum of 24 students. There will be a small course fee of \$200 (USD).

Lecture Topics and projects

.Biophysical properties of air and water, climate and the evolution of air breathing, environmental hypercapnia and global change, respiratory gas exchange and ventilatory control, circulatory “design”, blood gas transport, acid-base balance, ion balance and ammonia excretion. Animal Ethics.

Students will learn basic research techniques and analytical approaches through the projects. Available techniques include basic surgical techniques including catheterization, measurements of blood flow and ventilation, metabolic rate measurements using intermittent closed respirometry, blood gas measurements, and analysis of ions, pH and ammonia. A variety of fish species will be available including air-breathers and fish adapted to very low pH.

Faculty

- Mark Bayley, PhD.** Zoophysiology, Department of Biosciences, Aarhus University, Denmark
- Colin Brauner, PhD.** Department of Zoology, University of British Columbia, Canada
- James Hicks, PhD.** Ecology and Evolutionary Biology, University of California Irvine, USA
- Atsushi Ishimatsu, PhD.** Institute for East China Sea Research, Nagasaki University, Japan
- Sjannie Lefevre, PhD.** Department of Biosciences, University of Oslo, Norway
- Bill Milsom, PhD.** Department of Zoology, University of British Columbia, Canada
- Göran Nilsson, PhD.** Department of Biosciences, University of Oslo, Norway
- Do Thi Thanh Huong, PhD.** College of Aquaculture and Fisheries, Can Tho University, Vietnam
- Nguyen Thanh Phuong, PhD.** College of Aquaculture and Fisheries, Can Tho University, Vietnam
- Tobias Wang, PhD.** Zoophysiology, Department of Biosciences, Aarhus University, Denmark
- Chris Wood, PhD.** Department of Zoology, University of British Columbia, Canada

Application Deadline: 15-August-2018

Send application (cover letter indicating why the course will be relevant to your graduate work and CV) to Dr. Mark Bayley mark.bayley@bios.au.dk

