

EDITORIAL

Marking the ‘retirement’ of Chris Wood from McMaster University

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Professor Chris Wood stands alone as the world’s preeminent researcher and authority in the broad field of comparative physiology and biochemistry. His scientific achievements are awe-inspiring – Chris has published over 600 papers (and counting) and has been cited a staggering 20,000 times!

For 40 years, Chris has shaped the global evolution of fish physiology research, beginning with his elegant characterization of the autonomic neuronal control of the cardiovascular system and extending to his current focus on the interrelationships between digestion and physiological performance. Throughout his career, he has seamlessly integrated pure and applied research in areas touching on climate change, aquatic acidification and metal toxicity – it is this blend of fundamental and applied research that gives his work such broad appeal.

Chris is affectionately known as the ‘Yoda’ of comparative physiologists, not only because of the uncanny physical resemblance but also because of the fact that he has mentored more than 100 graduate students and postdoctoral fellows. These numbers by themselves are staggering, but even more impressive is that roughly 40% of his trainees have gone on to attain academic positions. Thus, nearly single handed, Wood is repopulating the universities of the world with the next generation of comparative physiologists; an illustrated academic genealogy of Chris Wood (1976–2012) is shown in Fig. S1 in the supplementary material.

In 2009, a group of physiologists representing some of Chris’s past trainees decided it would be fitting to hold a symposium to commemorate his scientific accomplishments and to recognise his looming 65th birthday and pending ‘retirement’ from McMaster University, Canada. Ultimately, this led to *Woodstock 2012 (An Aquatic Exposition)* (Knight, 2012), which was attended by 86 delegates representing 16 countries (Figs 1, 2). The symposium was organized into four main themes, representing the key areas in which Chris has worked: (1) ionic and acid–base regulation: fundamental to applied aspects; (2) metals and toxicology; (3) feeding and nitrogen excretion and (4) gas transfer, metabolism and exercise. Each of these areas is represented in the special collection of six papers featured in the current issue of JEB.

The paper by Bury and colleagues (Bury et al., 2014) reviews the utility of gill cell cultures for aquatic environmental monitoring and was inspired by the seminal research of Chris and his collaborator Peter Pärt, who first established the gill cell culture model as a tool to evaluate branchial osmoregulation (Pärt et al, 1993; Wood and Pärt, 1997). Some of Chris’s most influential work relates to the impact of acid rain on the physiology of fish. Based on an acclaimed series of studies, Wood and his primary collaborator, Gord McDonald, produced a model (McDonald and Wood, 1981) that explained the toxic effects of low environmental pH on ionic and acid–base balance. The paper by Kwong et al. reviews the physiology of fish living at low pH and promotes the zebrafish as a model species to study aquatic acidification (Kwong et al., 2014).

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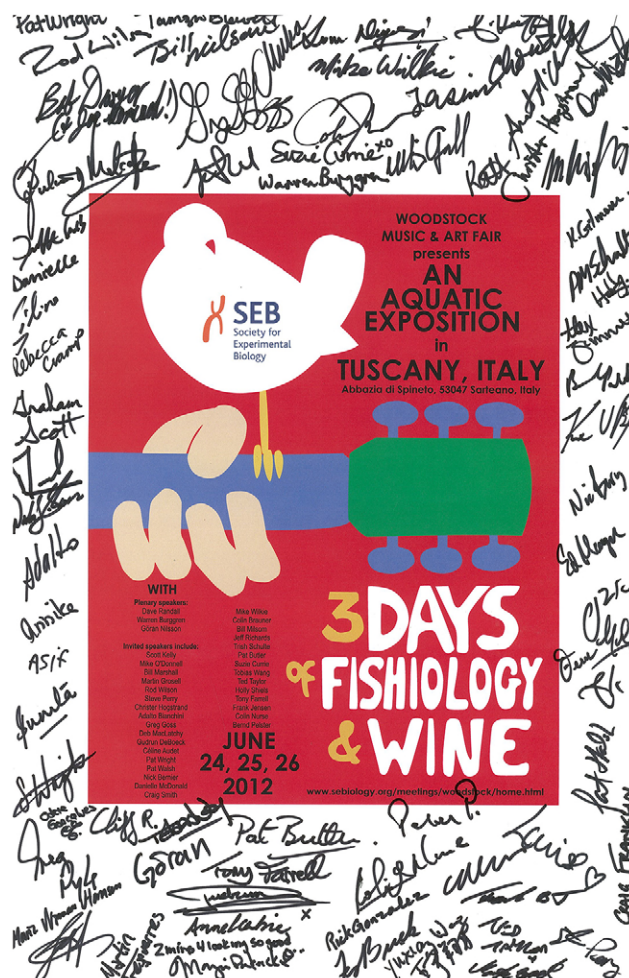


Fig. 1. Copy of the poster advertising Woodstock 2012, signed by some of the delegates.

Chris has long been fascinated by the links between chemoreception and the ensuing downstream physiological responses. Indeed, his research was instrumental in establishing CO_2/H^+ as a specific respiratory stimulant in fish (Wood and Munger, 1994). Fast-forward 20 years and the paper by Tresguerres and colleagues summarises the evidence that CO_2/H^+ sensing in aquatic animals is, in part, linked to the signalling molecule soluble adenylyl cyclase (Tresguerres et al., 2014). Salman and coauthors continue with this theme while focusing on the ontogeny of CO_2 and O_2 sensing (Salman et al., 2014).

Believe it or not, epigenetics is an area that Chris has not yet addressed experimentally although, like many comparative physiologists, he has probably often pondered the reasons for unusually high variance in comparative physiology data or the occasional bewildering differences observed when repeating simple experiments. In a somewhat provocative paper, Burggren suggests



Fig. 2. Chris Wood (centre, with paper in his hand) and other delegates at *Woodstock 2012*.

that the unusually high variation in comparative physiology data sets may be rooted in epigenetic phenomena (Burggren, 2014).

The final paper in this mini-series (Taylor et al., 2014) summarizes the field in which Chris cut his teeth: cardiovascular control systems (Wood and Shelton, 1975). As such, this review also pays tribute to a pioneer in comparative physiology (and mentor to both Ted Taylor and Chris Wood): Graham Shelton. I think it is fitting to include a quote from the Acknowledgements of the Taylor et al. paper, penned by Ted Taylor himself: “His [Chris’s] generation of Canadian biologists was a special breed; many tracing their scientific origins back to Graham Shelton, my teacher and onetime mentor. Chris remains pre-eminent amongst them.”

It is particularly fitting that this collection of papers is appearing in JEB. Quite simply, JEB is Chris’s favourite journal; it has published 123 of his papers since 1974. Incredibly, Chris has published more papers in JEB than most researchers publish in a lifetime, anywhere! The bibliometric data from these JEB papers are mind-numbing; an average of 55 citations per paper for a total of nearly 7000 citations and an h-index of 50! Despite his retirement from McMaster University, don’t expect Chris’s research output to slow down any time soon – he holds a Research Professorship at University of Miami, USA, an Adjunct Professorship at University of British Columbia, Canada, and is a CNPQ Fellow at the Amazon Research Institute, Manaus, Brazil. Enjoy your ‘retirement’, Chris!

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Supplementary material

Supplementary material available online at
<http://jeb.biologists.org/lookup/suppl/doi:10.1242/jeb.103440/-DC1>

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