



CURRICULUM VITAE TOBIAS WANG

Born May 22, 1967 in Aarhus (Denmark).

Married to Ida Binow Poulsen. Two daughters (Ronja and Selma, born 2006 and 2008).

Professor of Zoophysiology at Aarhus University

Honours and Prizes

- 1999 Presidents medal from *The Society of Experimental Biology*.
- 2004 Honorary Professor at The University of Birmingham.
- 2010 Award of Merit for outstanding contribution at Can Tho University, Vietnam.
- 2012 Aarhus University's Research Communication Award.
- 2012 Elected member The Royal Danish Academy of Sciences and Letters.
- 2017 Knight of Dannebrog (Ridder af Dannebrogordenen).
- 2018 Jens Christian Skou fellowship from Aarhus Institute of Advanced Studies

Academic services

Editorial board member of *Physiological and Biochemical Zoology* (2001-)

Advances of Experimental Biology (2004-2009), *The Journal of Experimental Biology* (2006-), *Journal of Comparative Physiology* (2007-), *International Journal of Zoology* (2008-2013), *Frontiers in Aquatic Physiology* (2010-), *Acta Physiologica* (2012-), *Comparative Biochemistry and Physiology* (2014-), *Experimental Biology and Medicine* (2016-), *Physiology* (2012-)

Panel member of Norwegian Research Council (2007-12, 2008-09 (chair)), The Research Academy of Finland (2008-9 & 2015 & 2016), The Swedish Research Council (2014 -16). Ad hoc reviewer for The Norwegian Research Council, National Geographic Society's Committee for Research and Exploration, The Swedish Research Council, Natural Sciences and Engineering Research Council of Canada and National Science Foundation.

Supervision of graduate students

80 masters students, 13 PhD students and many many bachelor and project students

Dissemination and societal impact

Member of "Programrådet for Folkeuniversitetet", and contributor to many lecture series, including "Faunaens Fantastiske Fysiolog".

Member of the managing board (Bestyrelsen) of Randers Regnskov (2011-), the Scientific Advisory Board at Copenhagen ZOO (2015-20) and the International Biology Olympiad Task Committee for 2015.

Service in Learned Societies

Convenor of Respiration Group in The Society for Experimental Biology (2003 – 2006, Secretary for Animal section in The Society for Experimental Biology (2008-2010), Council member & chair of the comparative commission in *International Union of Physiological Sciences* (2009-21).

Research funding

Continous funding from the Danish Council for Independent Research since 2000 commencing with a Rømer stipend. Also funding from EU, NOVO, DANIDA and Carlsberg.

Publications

Editor or author of five books, including *Ontogeny and Phylogeny of the Heart* (Springer Verlag) and *50 Opdagelser – Højdepunkter i Naturvidenskaben* (Aarhus Universitetsforlag).

More than 200 peer-reviewed primary publications, more than 50 peer-reviewed reviews, book chapters and commentaries, almost 100 popular science papers.

Selected and representative publications

Wang, T., C.C.Y. Hung and D.J. Randall (2006). The comparative physiology of food deprivation: from feast to famine. *Annual Review of Physiology* **68**: 223-251.

Burggren, W.W., V.M. Christoffels, D.A. Crossley II, S. Enok, A.P. Farrell, M.S. Hedrick, J.W. Hicks, B. Jensen, A.F.M. Moorman, C.A. Mueller, N. Skovgaard, E.W. Taylor and **T. Wang** (2014). Comparative cardiovascular physiology: Future trends, opportunities and challenges. *Acta Physiologica* **210**, 257-276.

Jensen B., B.J.D. Boukens, **T. Wang**, A.F.M. Moorman, V.M. Christoffels (2014). Evolution of the sinus venosus from fish to human. *Journal of Cardiovascular Development and Disease* **1**, 14-18.

Jensen, B., A.F.M. Moorman, and **T. Wang** (2014). Structure and function of the hearts of lizards and snakes. *Biological Reviews* **89**, 302-336.

Damkjær, M., **T. Wang**, K.H. Østergaard, E. Brøndum, U. Baandrup, A. Hørlyck, J. M. Hasenkam, N. Marcussen, C. C. Danielsen, M. F. Bertelsen, C. Grøndahl, M. Pedersen, P. Agger, G. Candy, J. Chemnitz, C. Aalkjær & P. Bie (2015). The giraffe kidney tolerates high arterial blood pressure by high renal interstitial pressure and low glomerular filtration rate. *Acta Physiologica* **214**, 497-510.

Smerup, M., M. Damkjær, E. Brøndum, U.T. Baandrup, S.B. Kristiansen, H. Nygaard, C. Aalkjær, C. Sauer, R. Buchanan, M.F. Bertelsen, K. Østergaard, C. Grøndahl, G. Candy, J.M. Hasenkam, N.H. Secher, P. Bie and **T. Wang**, (2016). The thick left ventricular wall of the giraffe heart normalises wall tension, but limits stroke volume and cardiac output. *Journal of Experimental Biology* **219**, 457-463.

Joyce, W., M. Axelsson and **T. Wang** (2017). Autoregulation of cardiac output is overcome by adrenergic stimulation in the anaconda heart. *Journal of Experimental Biology* **220**, 336-340.

Malte, C.L., H. Malte, L.R. Reinholdt, A. Findsen, J.W. Hicks and **T. Wang** (2017). Right-to-left shunt has only small effects on CO₂ delivery to the gut during digestion, but compromises oxygen delivery. *Journal of Experimental Biology* **220**, 531-536.

Jensen, B., S. Vesterskov, B.J.D. Boukens, J.M. Nielsen, A.F.M. Moorman, V.M. Christoffels and **T. Wang** (2017). Morpho-functional characterization of the systemic venous pole of the reptile heart. *Scientific Reports* (in press).

Dudele, A., K. Hougaard, M. Kjølby, M. Hokland, G. Winther, B. Elfving, G. Wegener, A. Nielsen, A. Larsen, M. Nøhr, S. Pedersen, **T. Wang**, and S. Lund (2017). Chronic maternal inflammation or high fat feeding programs offspring obesity in a sex dependent manner. *International Journal of Obesity* doi:10.1038/ijo.2017.136.

Evolution of the four-chambered heart

How did the four-chambered heart in both mammals and birds evolve independently from a three-chambered heart in their common ancestors amongst early reptiles? From a teleological point of view, this parallel evolutionary transition is consistent with rise in metabolism associated with the evolution of endothermy – the ability to maintain high and stable body temperatures – in both mammals and birds. However, it is not given that birds and mammals would solve the functional challenge of elevating oxygen transport by evolving so similar cardiovascular structures. Therefore I am interested in elucidating whether there are evolutionary constraints in the ancestral reptilian heart and whether there were merely a few possible avenues to provide the high blood pressure and high heart rates to provide the extra oxygen transport to the body.

Academic Profile

I am interested in how animals function and how they have adapted to the environments where they live. Being trained as a biologist, I take an evolutionary approach to understand the evolution of physiological systems amongst vertebrates, and collaborate widely with medical physiologists and molecular biologists in my studies on heart function in various animals. I am professor of Zoophysiology at Aarhus University and believe in the importance of science dissemination.