

2016 CCUBC Graduate Student Research Prize
Sandra Fehsenfeld
University of Manitoba, Winnipeg, MB

This year's CCUBC Graduate Student Research Prize has been awarded to Dr. Sandra Fehsenfeld for research completed during her tenure at the University of Manitoba under the supervision of Dr. Dirk Weihrauch. During her PhD thesis, Sandra's research focussed on linking acid-base balance to nitrogen regulation in the decapod crustacean, *Carcinus maenas*. Specifically, she identified a new candidate gene, the potassium/sodium hyperpolarization-activated cyclic nucleotide-gated channel (CmHCN) to be involved in both processes. With its high level of conservation compared to the human HCN2 (69% sequence identity and 83% overall conserved domains), this gene provides important insight into convergent evolution of essential physiological functions and hence is of broad interest to the field of comparative physiology. Using an integrative approach of molecular and physiological methods including real-time PCR, gill perfusions and electrochemical techniques, the featured study provides the first characterization of this ancestral potential K^+/NH_4^+ channel as a key player in acid-base and ammonia regulation in an invertebrate. Her ground-breaking findings strongly resemble processes observed in the mammalian kidney, thus verifying the invertebrate (crustacean) system to be a valuable model for the study of branchial as well as renal epithelial transport processes.



Sandra defended her PhD thesis in November 2015, and started working as a post-doctoral research fellow with Dr. Chris Wood in the Zoology Department at the University of British Columbia in January 2016. She continues to work in the field of comparative physiology and specifically acid-base and ammonia regulation, but with a slightly shifted focus – from crab to goldfish and from gill to kidney.