

## CURRICULUM VITAE

### **KENNETH C. WELCH JR., PH.D.**

#### *Current:*

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#### *As of July 1<sup>st</sup>, 2009:*

University of Toronto, Scarborough  
Department of Biological Sciences  
1265 Military Trail  
Scarborough, Ontario, Canada M1C 1A4

### **EDUCATION**

UNIVERSITY OF CALIFORNIA, SANTA BARBARA.

Doctor of Philosophy in Ecological Physiology, June 2007.

Advisor: Dr. Raul Suarez.

Dissertation: Energetics and Fuel Use During Flight In Small North American Hummingbirds.

UNIVERSITY OF CALIFORNIA, SANTA BARBARA.

Master of Arts in Ecological Physiology, March 2005.

Advising committee: Drs. Raul Suarez, Stephen Rothstein, and James Childress.

TRINITY UNIVERSITY, San Antonio, Texas.

Bachelor of Science in Biology, *Cum Laude*, May 1998.

### **POST-DOCTORAL TRAINING**

UNIVERSITY OF CALIFORNIA, RIVERSIDE; 2007 - present

Advisor: Dr. Douglas Altshuler.

### **AWARDS AND FELLOWSHIPS**

2006	UC MEXUS, Dissertation Research Grant
2006	Dean's Fellowship from UCSB Graduate Division
2006	Olivia Long Converse Student Research Grant from UCSB Graduate Division
2006	Olivia Long Converse Fellowship from UCSB Graduate Division
2006	Scholander Award (finalist), American Physiological Society
2006	Travel Award, American Physiological Society
2006	Dorothy Skinner Award, Society for Integrative and Comparative Biology
2006	Outstanding Presentation Award, UCSB Ecol., Evol. and Marine Biol.
2005	Broida-Hirschfelder Fellowship from UCSB Faculty Women's Club
2005	Worster Fellowship for Undergraduate Research Mentors from UCSB
2004	Graduate Student Research Grant from Valentine Camp Natural Reserve
2003-2004	Mildred E. Mathias Graduate Student Research Grant from UCNRS
2003	Grant-In-Aid-of-Research, Society for Integrative and Comparative Biology
2003	UCSB Regents Fellowship
2003	National Science Foundation Graduate Research Fellowship (honor. mention)
2001-2002	UCSB Ecol., Evol. and Marine Biol. Departmental Fellowship
1994-1998	Trinity University President's Academic Scholarship

## PUBLICATIONS

- In press Suarez, R. K. and Welch Jr., K. C. Stoking the Fires of Life: Fueling the Highest Vertebrate Mass-Specific Metabolic Rates. In *Cardio-Respiratory Control in Vertebrates: Comparative and Evolutionary Aspects*, eds. M. L. Glass and S. C. Wood. Springer-Verlag.
- 2009 Suarez, R. K., Welch Jr., K. C., Hanna, S. K., and Herrera, L. G. Flight muscle enzymes and metabolic flux rates during hovering flight in the nectar bat, *Glossophaga soricina*: Further evidence of convergence with hummingbirds. *Comp. Biochem. Physiol. A: Mol. Integ. Physiol.* 153: 136-140.
- Welch Jr., K. C. and Altshuler, D. L. Fiber type homogeneity of the flight musculature in small birds. *Comp. Biochem. Physiol. B: Biochem. Mol. Biol.* 152: 324-331.
- 2008 Welch Jr., K. C. and Suarez, R. K. Altitude and temperature effects on the energetic cost of hover-feeding in migratory rufous hummingbirds, *Selasphorus rufus*. *Can. J. Zool.* 86(3):161-169.
- Welch Jr., K. C., Herrera M., L. G., and Suarez, R. K. Dietary sugar as a direct fuel for flight in the nectarivorous bat, *Glossophaga soricina*. *J. Exp. Biol.* 211(3):310-316.
- 2007 Welch Jr., K. C., Altshuler, D. L., and Suarez, R. K. Oxygen consumption rates in hovering hummingbirds reflect substrate-dependent differences in P/O ratios: Carbohydrate as a 'premium fuel'. *J. Exp. Biol.* 210(12):2146-2153.
- Welch Jr., K. C. and Suarez, R. K. Oxidation rate and turnover of ingested sugar in hovering Anna's (*Calypte anna*) and rufous hummingbirds (*Selasphorus rufus*). *J. Exp. Biol.* 210(12):2154-2162.
- 2006 Welch Jr., K. C., Bakken, B. K., Martínez de Rio, C., and Suarez, R. K. Hummingbirds fuel hovering flight with newly ingested sugar. *Physiol. Biochem. Zool.* 79(6):1082-1087.
- 2005 Darveau, C.-A., Hochachka, P. W., Welch Jr., K. C., Roubik, D. W., and Suarez, R. K. Allometric scaling of flight energetics in Panamanian orchid bees: a comparative phylogenetic approach. *J. Exp. Biol.* 208(18):3581-3591.
- Suarez, R. K., Darveau, C.-A., Welch Jr., K. C., O'Brien, D. M., Roubik, D. W., and Hochachka, P. W. Energy metabolism in orchid bee flight muscle: carbohydrate fuels all. *J. Exp. Biol.* 208(18):3573-3579.
- 2002 Ribble, D. O., Wurtz, A. E., McConnell, E. K., Buegge, J. J., and Welch, K. C. A comparison of *Peromyscus* home ranges using trapping and radiotelemetry data. *J. Mammol.* 83(1):260-266.
- 2000 Macias, M. P., Welch, K. C., Lee, N. A., and Lee, J. J. Identification of a new mouse eosinophil major basic protein gene, mMBP-2. *J. Leukocyte Biol.* 67:567-576.

## **TALKS AND POSTERS**

### *Invited talks*

- 2008 Symposium on Integrating the Mechanics and Energetics of Locomotion, Society for Experimental Biology Annual Meeting  
2007 University of California, Riverside, Department of Biology  
2007 Loma Linda University, Department of Earth and Biological Sciences  
2006 Mildred E. Mathias Symposium, Bodega Marine Laboratory  
2004 Mildred E. Mathias Symposium, Bodega Marine Laboratory  
2003 Valentine Eastern Sierra Reserve, Valentine Camp Outreach Program

### *Other Presentations*

- 2009 Society for Integrative and Comparative Biology Annual Meeting  
2008 Society for Integrative and Comparative Biology Annual Meeting  
7<sup>th</sup> International Congress of Comparative Physiology and Biochemistry  
2007 Society for Integrative and Comparative Biology Annual Meeting  
2006 American Physiological Society Meeting: Comparative Physiology: Integrating Diversity  
UC Santa Barbara Ecology, Evolution and Marine Biology Graduate Student Symposium  
Society for Comparative and Integrative Biology Annual Meeting  
2005 UC Santa Barbara Ecology, Evolution and Marine Biology Graduate Student Symposium  
Society for Comparative and Integrative Biology Annual Meeting

## **TEACHING EXPERIENCE**

- Guest Lecturer: Functional Anatomy: Vertebrates, UC Riverside, 2009.  
Guest Lecturer: Biomechanics, UC Riverside, 2009.  
Teaching Assistant: Integrative Physiology, UC Santa Barbara, 2001-2004, 2006, 2007.  
Teaching Assistant: Cellular Physiology, UC Santa Barbara, 2005, 2006.  
Teaching Assistant: Human Physiology, UC Santa Barbara, 2005.  
Lab. Instructor: Physiological Adaptations to the Environment, UC Santa Barbara, 2002-2004.  
Lab. Instructor: Introductory Biology Laboratory II, UC Santa Barbara, 2005.  
Lab. Instructor: Introductory Biology Laboratory III, UC Santa Barbara, 2002-2004, 2006.

## **MENTORSHIP OF UNDERGRADUATE RESEARCHERS**

Andrea Hochevar (2004), Andrea Wisniewski (2004-2005), William Talbot Bowen (2004-2006), Nicole Boyd (2006), Samantha Levinson (2006), Jazmin Manzanarez (2006; *high school student*), Charlotte Guebels (2006-2007), Brian Cho (2007-2008), Sirish Makan (2007-2008), Brian Lonquich (2008-present), James Holmes (2008-present), Andrew Lin (2008-present)

## **PROFESSIONAL SERVICE**

Ad hoc refereeing: Journal of Experimental Biology; Journal for Comparative Physiology - B

- 2006 Ecol., Evol. and Marine Biol. Grad. Student Symposium co-organizer (UC Santa Barbara)  
2004-2006 Seminar Series co-coordinator (Ecol., Evol. and Marine Biol. Dept., UC Santa Barbara)  
2002-2003 Faculty search committee (Ecol., Evol. and Marine Biol. Dept., UC Santa Barbara)

## **SCIENCE/POPULAR COMMUNICATION**

- 2009 Prum, A (WNET). "Hummingbirds." Nature (Season 28). Scheduled to air in Sept. 2009.  
2008 Phillips, K. Flying high on sugar. J. Exp. Biol. 211(3):i-  
2007 Blackburn, L. Carbohydrate: Top hummingbird fuel. J. Exp. Biol. 210(12):i-  
2006 Bryner, J. "The Secret to Hummingbirds' Amazing Energy." *LiveScience*, 09 October 2006.  
[http://www.livescience.com/animals/061009\\_flight\\_fuel.html](http://www.livescience.com/animals/061009_flight_fuel.html)

## REFERENCES

Douglas L. Altshuler, Ph.D.  
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Assistant Professor  
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