

KENNETH C. WELCH JR., PH.D.

CURRICULUM VITAE

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

Office Phone: (416) 208-5100
Lab Phone: (416) 208-5147
Fax: (416) 287-7676
Web: <http://www.uts.utoronto.ca/~kwelch/>

ACADEMIC/RESEARCH POSITIONS

UNIVERSITY OF TORONTO SCARBOROUGH, DEPARTMENT OF BIOLOGICAL SCIENCES (PRIMARY APPOINTMENT)
Associate Professor of Comparative Vertebrate Physiology, July 2015-present
Associate Chair of Research and Graduate Affairs, July 2018-present

UNIVERSITY OF TORONTO SCARBOROUGH, DEPARTMENT OF BIOLOGICAL SCIENCES (PRIMARY APPOINTMENT)
Assistant Professor of Comparative Vertebrate Physiology, July 2009-2015

UNIVERSITY OF TORONTO, DEPARTMENT OF CELL & SYSTEMS BIOLOGY (CROSS APPOINTMENT)
Member of Graduate Program Faculty, July 2009-present

UNIVERSITY OF TORONTO, DEPARTMENT OF ECOLOGY & EVOLUTIONARY BIOLOGY (CROSS APPOINTMENT)
Member of Graduate Program Faculty, November 2009-present

UNIVERSITY OF CALIFORNIA, RIVERSIDE
Postdoctoral Researcher, July 2007-June 2009
Advisor: Dr. Douglas Altshuler

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

RESEARCH GRANTS, AWARDS, AND FELLOWSHIPS

(2009-present; as sole or lead PI, except where noted)

2018-2020	Environment and Climate Change Canada (CAN\$90,000)
2018-2019	UofT Learning and Education Advancement Fund (CAN\$11,801 - as co-PI)
2016-2019	Human Frontier Science Program Grant (US\$1,200,000)

RESEARCH GRANTS, AWARDS, AND FELLOWSHIPS, CONT.

(2009–present; as sole or lead PI, except where noted)

- 2016-2018 NSERC, Research Tools and Instruments (CAN\$150,000 +\$18,000 matching funds)
2015 UT Scarborough, Vice-principal of Research – Research Competitiveness Fund (CAN\$9,891)
- 2015-2020 NSERC, Discovery Grant (CAN\$140,000)
2014 Company of Biologists, Meeting and Symposium Grant (UK£2,000)
2014-2016 National Geographic Society, Research and Exploration Grant (US\$20,256 – as Co-PI)
2013-2014 UT Scarborough, Vice-principal of Research – Research Competitiveness Fund (CAN\$10,000)
- 2013-2014 NSERC, Research Tools and Instruments (CAN\$57,417 – as Co-PI)
2011-2014 NSERC, Early Career Research Supplement (CAN\$20,000)
2012-2013 Connaught New Researcher Award (CAN\$10,000)
2012-2013 NSERC, Research Tools and Instruments (CAN\$107,891 + \$277,000 UTSC matching funds)
2012-2014 National Geographic Society, Research and Exploration Grant (US\$26,466)
2012-2015 Canada Foundation for Innovation, Infrastructure Operating Fund (CAN\$42,000)
2010-2015 NSERC, Discovery Grant (CAN\$135,000)
2010-2012 Canadian Foundation for Innovation, Leadership Opportunities Fund (CAN\$140,000)
2010-2012 Ontario Ministry of Research and Innovation, Ontario Research Fund (CAN\$140,000)
2009-2011 University of Toronto, Startup Funds (CAN\$100,000)

PEER-REVIEWED PUBLICATIONS

(Welch lab students underlined)

- 2018 Myrka, A. M. and Welch Jr., K. C. Evidence of high transport and phosphorylation capacity for both glucose and fructose in the ruby-throated hummingbird (*Archilochus colubris*). *Comparative Biochemistry and Physiology, Part B*. 224:253-261.
- St-Cyr, S., Abuaiash, A., Welch Jr., K. C., and McGowan, P. O. Maternal predator odour exposure programs metabolic responses in adult offspring. *Scientific Reports*. 8:8077.
- Workman, R. E., Myrka, A. M., Tseng, E., Wong, G. W., Welch Jr., K. C., and Timp, W. Single molecule, full-length transcript sequencing provides insight into the extreme metabolism of ruby-throated hummingbird *Archilochus colubris*. *GigaScience*. 7(3):1-12.
- Groom, D. J. E., Toledo, M. C. B., Powers, D. R., Tobalske, B. W., and Welch Jr., K. C. Integrating morphology and kinematics in the scaling of hummingbird hovering metabolic rate and efficiency. *Proceedings of the Royal Society B*. 285(1873):20172011.
- Welch Jr., K. C., Myrka, A. M., Ali R. S., and Dick, M. F. The metabolic flexibility of hovering vertebrate nectarivores. *Physiology*. 33(2):127-137.
- 2017 Skandalis, D. A., Segre, P. S., Bahlman, J. W., Groom D. J. E., Welch Jr., K. C., Witt, C. C., McGuire, J. A., Dudley, R., Lentink, D., and Altshuler, D. L. The biomechanical origin of extreme wing allometry in hummingbirds. *Nature Communications*. 8(1):1047.

PEER-REVIEWED PUBLICATIONS, CONT.

- 2017 Suarez, R. K. and Welch Jr., K. C. Sugar metabolism in hummingbirds and nectar bats. *Nutrients*. 9(7):743-759.
- Groom, D., Toledo, M. C. B., Welch Jr., K. C. Wingbeat kinematics and energetics during weightlifting in hovering hummingbirds across an elevational gradient. *Journal of Comparative Physiology B*. 187(1):165-182.
- Otálora-Ardila, A., Herrera M., L. G., Flores-Martínez, J. J., and Welch Jr., K. C. The effect of short-term food restriction on the metabolic cost of the acute phase response in the fish-eating Myotis (*Myotis vivesi*). *Mammalian Biology*. 82(1):41-47.
- 2016 Velten, B. P., Welch Jr., K. C., and Ramenofsky, M. Altered expression of pectoral myosin heavy chain isoforms corresponds to migration status in white-crowned sparrow (*Zonotrichia leucophrys gambelii*). *Royal Society Open Science*. 3(11):160775.
- Otálora-Ardila, A., Herrera M., L. G., Flores-Martínez, J. J., and Welch Jr., K. C. Metabolic cost of the activation of immune response in the fish-eating Myotis (*Myotis vivesi*). *PLOS ONE*. 11(10):e0164938.
- Hou, L. and Welch Jr., K. C. Ruby-throated hummingbirds (*Archilochus colubris*) exhibit multiple strategies for fueling migration. *Animal Behaviour*. 121:87-99.
- Kolmann, M., Welch Jr., K. C., Summers, A., and Lovejoy, N. Always chew your food: freshwater stingrays use mastication to process tough insect prey. *Proceedings B*. 283(1838):20161392.
- Welch Jr., K. C., Péronnet, F., Hatch, K. A., Voigt, C. C., and McCue, M. D. The combined use of respirometry and stable isotope tracking in comparative studies of fuel use. *Annals of the New York Academy of Sciences*. 1365(1):15-32.
- McCue, M. D., Welch Jr., K. C. ¹³C-Breath testing animals: theory, applications, and future directions. *Journal of Comparative Physiology B*. 186(3):265-285.
- 2015 Welch Jr., K. C., Otálora-Ardila, A., Herrera M., L. G., and Flores-Martínez, J. J. The cost of digestion in the fish-eating Myotis (*Myotis vivesi*). *Journal of Experimental Biology*. 218(8):1180-1187.
- Hou, L., Verdirame, M., and Welch Jr., K. C. Automated tracking of wild hummingbird mass and energetics over multiple time scales using radio frequency identification (RFID) technology. *Journal of Avian Biology*. 46(1):1-8.
- 2014 Welch Jr., K. C. and Chen, C. C. W. Sugar flux in the flight muscles of hummingbirds and nectar bats: a review. *Journal of Comparative Physiology B*. 184(8):945-959.

PEER-REVIEWED PUBLICATIONS, CONT.

- 2014 Velten, B. P. and Welch Jr., K. C. Myosin heavy chain isoforms in the flight and leg muscles of hummingbirds and zebra finches. *American Journal of Physiology - Regulatory, Integrative and Comparative Physiology*. 306(11):R845-851.
- Chen, C. C. W and Welch Jr, K. C. Hummingbirds can fuel expensive hovering flight completely with either exogenous glucose or fructose. *Functional Ecology*. 28(3):589-600.
- 2013 Mahalingam, S. and Welch Jr., K. C. Neuromuscular control of hovering wingbeat kinematics in response to distinct flight challenges in the ruby-throated hummingbird (*Archilochus colubris*). *Journal of Experimental Biology*. 216(22): 4161-4171.
- Welch Jr., K. C., Allalou, A., Sehgal, P., Cheng, J., and Ashok, A. Glucose transporter expression in an avian nectarivore: the ruby-throated hummingbird (*Archilochus colubris*). *PLOS ONE*. 8(10): e77003.
- Reiser, P. J., Welch Jr., K. C., Suarez, R. K., and Altshuler, D. L. Very low force-generating ability and unusually high temperature-dependency in hummingbird flight muscle fibers. *Journal of Experimental Biology*. 216(12): 2247-2256.
- 2011 Labonte, J. P., Welch Jr., K. C., and Suarez, R. K. 2011. Digestive performance in neonatal Southern Pacific rattlesnakes (*Crotalus oreganus helleri*). *Canadian Journal of Zoology*. 89(8):705-713.
- Welch Jr., K. C. 2011. The power of feeder-mask respirometry as a method for examining hummingbird energetics. *Comparative Biochemistry and Physiology A: Molecular and Integrative Physiology*. 158(3):276-286.
- Suarez, R. K., Herrera M., L. G., and Welch Jr., K. C. 2011. The sugar oxidation cascade: Aerial refueling in hummingbirds and nectar bats. *Journal of Experimental Biology*. 214(2):172-178.
- 2010 Altshuler, D. L., Welch Jr., K. C., Cho, B. H., Welch, D. B., Lin, A. F., Dickson, W. B., and Dickinson, M. H. 2010. Neuromuscular control of wingbeat kinematics in Anna's hummingbirds (*Calypte anna*). *Journal of Experimental Biology*. 213(14):2507-2514.
- 2009 Suarez, R. K. and Welch Jr., K. C. 2009. Stoking the Brightest Fires of Life Among Vertebrates. In *Cardio-Respiratory Control in Vertebrates: Comparative and Evolutionary Aspects*, eds. M. L. Glass and S. C. Wood. Springer-Verlag. pp 381-394.
- 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. *Comparative Biochemistry and Physiology Part A: Molecular and Integrative Physiology*. 153(2): 136-140.

PEER-REVIEWED PUBLICATIONS, CONT.

- 2009 Welch Jr., K. C. and Altshuler, D. L. Fiber type homogeneity of the flight musculature in small birds. *Comparative Biochemistry and Physiology Part B: Biochemistry and Molecular Biology*. 152(4): 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*. *Canadian Journal of Zoology*. 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*. *Journal of Experimental Biology*. 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'. *Journal of Experimental Biology*. 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*). *Journal of Experimental Biology*. 210(12):2154-2162.
- 2006 Welch Jr., K. C., Bakken, B. H., Martínez de Rio, C., and Suarez, R. K. Hummingbirds fuel hovering flight with newly ingested sugar. *Physiological and Biochemical Zoology*. 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. *Journal of Experimental Biology*. 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. *Journal of Experimental Biology*. 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. *Journal of Mammalogy*. 83(1):260-266.
- 2000 Macias, M. P., Welch, K. C., Denzler, K. L., Larson, K. A., Lee, N. A., and Lee, J. J. Identification of a new mouse eosinophil major basic protein gene, mMBP-2. *Journal of Leukocyte Biology*. 67:567-576.

OTHER PUBLICATIONS

- 2012 Welch Jr., K. C. 2012. The energetic edge of existence. UTSC Commons Magazine.

ORAL AND POSTER PRESENTATIONS

(as presenter only)

Symposia Organized

2014 The combined use of respirometry and stable isotope tracking in comparative studies of fuel use and energetics, 3rd International Congress of Respiratory Science

Invited Symposia Presentations

2018 Managing Fuel Metabolism Under Limited Oxygen and Energy Supply Symposium, American Physiological Society Intersociety Meeting, Comparative Physiology: Complexity and Integration

2018 Companion Animal Science Symposium: Considerations for exotic or wild animals, 2018 American Society of Animal Science and Canadian Society of Animal Sciences International Meeting

2017 Peter W. Hochachka Memorial Symposium

2017 Journal of Experimental Biology 2017 Symposium: The Biology of Fat

2016 Toronto Next Generation Sequencing Symposium, Genomics Exchange Community

2014 The combined use of respirometry and stable isotope tracking in comparative studies of fuel use and energetics, 3rd International Congress of Respiratory Science

2010 The Challenge of Measuring Energy Expenditure: Current Field and Laboratory Methods, Society for Experimental Biology Annual Meeting

2008 Integrating the Mechanics and Energetics of Locomotion, Society for Experimental Biology Annual Meeting

Invited talks (since 2012)

2018 University of Ottawa, Department of Biology

2018 UofT Inter-departmental Division of Critical Care Medicine, Critical Care Physiology Rounds

2017 Brodie Club, University of Toronto

2016 Brock University, Department of Biological Sciences

2016 Sedona Hummingbird Festival, The Hummingbird Society

2015 Johns Hopkins University, Department of Physiology

2014 Arizona State University, School of Life Sciences

2014 81st Annual Meeting of the Pacific Coast Obstetrical and Gynecological Society

2014 Upper Credit Field Naturalist Club

2013 University of Toronto, Mississauga, Department of Biology

2013 York University, Department of Biology

2013 North Peel/Halton Naturalist Club

2013 McMaster University, Department of Biology

2012 University of Toronto, Ecology and Evolutionary Biology Seminar Series

2012 Queen's University, Department of Biology

Other Presentations

2005-2009,

2013-2018 Society for Integrative and Comparative Biology Annual Meeting

Other Presentations, cont.

2012	Society for Experimental Biology Annual Meeting
2009-2012, 2014, 2016-2018	Canadian Society of Zoologists Annual Meeting
2008	7 th International Congress of Comparative Physiology and Biochemistry
2006	American Physiological Society Meeting: Comparative Physiology: Integrating Diversity
2005-2006	UC Santa Barbara Ecology, Evolution and Marine Biology Graduate Student Symposium

MENTORSHIP OF POSTDOCTORAL RESEARCHERS

2017-present	Morag Dick	U. Toronto (Cell & Systems Biol.)	Advisor
2013-2015	Laura McKinnon ¹	U. Toronto (Ecol. & Evol. Biol.)	Advisor
2011	Jeremy Corfield	U. Lethbridge (under A. Iwaniuk)	Visiting scholar

¹ Recipient of an NSERC Banting Postdoctoral Fellowship, presently Asst. Prof. at Glendon College

MENTORSHIP OF GRADUATE STUDENT RESEARCHERS

PhD

2017-present	Natalia Sandoval Herrera	Ph.D. (U. Toronto – Ecol. & Evol. Biol.)	Thesis advisor
2013-2016	Derrick Groom ²	Ph.D. (U. Toronto – Cell & Systems Biol.)	Thesis advisor
2012-2016	Brandy Velten ³	Ph.D. (U. Toronto – Cell & Systems Biol.)	Thesis advisor

² Recipient of an NSERC PGSD Graduate Research Fellowship

³ Recipient of an Ontario Trillium International Graduate Research Fellowship

MSc

2018-present	Saad Muhammad	M.Sc. (U. Toronto – Cell & Systems Biol.)	Thesis advisor
2018-present	Simon English ⁴	M.Sc. (U. Toronto – Cell & Systems Biol.)	Thesis advisor
2017-present	Erich Eberts	M.Sc. (U. Toronto – Ecol. & Evol. Biol.)	Thesis advisor
2016-2018	Raafay Syed Ali	M.Sc. (U. Toronto – Cell & Systems Biol.)	Thesis co-advisor
2013-2015	Alexander Myrka	M.Sc. (U. Toronto – Cell & Systems Biol.)	Thesis advisor
2013-2015	Lily Hou	M.Sc. (U. Toronto – Ecol. & Evol. Biol.)	Thesis advisor
2011-2013	Derrick Groom ⁵	M.Sc. (U. Toronto – Cell & Systems Biol.)	Thesis advisor
2010-2012	Chris Chen ⁶	M.Sc. (U. Toronto – Cell & Systems Biol.)	Thesis advisor
2010-2012	Sajeni Mahalingam	M.Sc. (U. Toronto – Cell & Systems Biol.)	Thesis advisor

⁴ Recipient of an NSERC CGSM Graduate Research Fellowship

⁵ Recipient of an NSERC CGSM Graduate Research Fellowship; transferred to Ph.D. program

⁶ Recipient of the 2012 UTSC Graduate Student (M.Sc.) Research Award

THESIS COMMITTEE MEMBERSHIPS

2016-present	Stephanie Penk	Ph.D. (U. Toronto – Ecol. & Evol. Biol.)	Cmte. Member
2015-present	Terrence Chang	Ph.D. (U. Toronto – Ecol. & Evol. Biol.)	Cmte. Member
2014-present	Heather Mayberry	Ph.D. (U. Toronto – Ecol. & Evol. Biol.)	Cmte. member
2011-present	Sen Sivalingham	Ph.D. (U. Toronto – Ecol. & Evol. Biol.)	Cmte. member
2012-2016	Matthew Kolmann	Ph.D. (U. Toronto – Ecol. & Evol. Biol.)	Cmte. member
2017-present	Sabrina Barsky	M.Sc. (U. Toronto – Cell & Systems Biol.)	Cmte. Member
2015-2016	Raafay Syed Ali	M.Sc. (U. Toronto – Cell & Systems Biol.)	Cmte. member
2014-2015	Phoebe Edwards	M.Sc. (U. Toronto – Cell & Systems Biol.)	Cmte. member
2014-2015	Megan McPhee	M.Sc. (U. Toronto – Ecol. & Evol. Biol.)	Cmte. member
2010-2012	Dean Koucoulas	M.Sc. (U. Toronto – Cell & Systems Biol.)	Cmte. member
2010-2012	Saira Meese-Tamuri	M.Sc. (U. Toronto – Cell & Systems Biol.)	Cmte. member
2010-2012	Jennifer van Eindhoven	M.Sc. (U. Toronto – Cell & Systems Biol.)	Cmte. member
2009-2011	Sarah Jenkin	M.Sc. (U. Toronto – Cell & Systems Biol.)	Cmte. member

MENTORSHIP OF UNDERGRADUATE RESEARCHERS

Research Fellowship Students

2016	Mary Shehata	NSERC USRA	Supervisor
2014	Tobias Mankis	University of Toronto Excellence Award	Supervisor
2012	Amina Allalou	NSERC USRA	Supervisor

Volunteers, Work Study, and Honours Thesis Students

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 (2008-2009), Andrew Lin (2008-2009), Sajeni Mahalingam (2009-2010; 4th year honours thesis), Sana Maqsood (2010-2011), Dana Sivakumar (2010-2012), Prateek Sehgal (2010-2012; 4th year honours thesis), Michael Verdirame (2010-2011; 4th year honours thesis), Kelly Mo (2011-2012), Hiba Rashid (2011-2012), Amina Allalou (2010-2013; 4th year honours thesis), Nauman Malik 2010-2013; 4th year honours thesis), Wana Shaswary (2011-2013), Jason Cheng (2011-2013; 4th year honours thesis), Jodi Gatley (2012-2013; 4th year honours thesis), Amir Ghazavi (2012), Usama Malik (2012), Shahin Moallem (2012), Owais Khurshid (2013), Suppan Parikh (2013), Mahin Semmen (2013; 4th year honours thesis), Bishoy Lawendy (2014), Elizabeth Oguntuwase (2014), Winnie Lu (2014), Malcolm Salter (2014), Ji Zhang (2014-2015), Mary Shehata (2014-2016), Nadia Baryam (2014-2016), Sonal Prasad (2015), Sababa Anan (2015), Marina Fanous (2015), Kiran Sharma (2015), Mehrsa Ghobadi (2015), Madiha Quereshi (2015-2016), Mengchi Li (2015), Jawana Alawie (2015), Sinthuja Mahendran (2015), Asad Khan (2015), Ahmed El-Bombawy (2015), Martin Tarzian (2016), Hussein El-Kechen (2016), Jounghun Lee (2016), Ceren Yuksel (2016), Martin Tarzian (2016), Jason LoHog Tian (2016), Nisma Khan (2016), Ye Kim (2016), Toobah Shah (2016-present; 4th year honours thesis), Antonio Alcantara-Tangonan (2017-2018; 4th year honours thesis), Yazan Shamli Oghli (2018-present; 4th year honours thesis)

TEACHING EXPERIENCE

Graduate

Co-instructor: IV International Course on Comparative Physiology of Respiration, State University of São Paulo, Brazil, 2015

Co-instructor: Special Topics in Behaviour, UT Ecol. & Evol. Biol., 2013-present

Undergraduate (2009 - present)

Instructor: Animal Movement and Exercise, UT Scarborough, 2011-present

Instructor: Animal Physiology Laboratory, UT Scarborough, 2011-present

Coordinator: Directed Research in Biology, UT Scarborough, 2015-2016

Coordinator: Supervised Study in Biology, UT Scarborough, 2015-2016

Co-coordinator: Supervised Introductory Research, UT Scarborough, 2010-present

Guest Lecturer: Topics in Physiology, McMaster U, 2013

Guest Lecturer: Performance Enhancement, U Toronto, 2009-2012

Guest Lecturer: Functional Anatomy: Vertebrates, UC Riverside, 2009.

Guest Lecturer: Biomechanics, UC Riverside, 2009.

PROFESSIONAL SERVICE

(2009-present)

Editorial Activities Physiological and Biochemical Zoology (Board member; 2015-present)

Society Officerships Communications Officer, Canadian Society of Zoologists (2016-present)
Chair-Elect, Division of Comparative Biochemistry and Physiology, Society
for Integrative and Comparative Biology (2019-2020)

Ad hoc journal refereeing: Acta Zoologica, American Journal of Physiology R, Anais da Academia Brasileira de Ciências, Animal Behaviour, The Auk, Bioinspiration & Biomimetics, Comparative Biochemistry and Physiology B, Genes, Brain & Behaviour, Ibis, Integrative and Comparative Biology, International Journal of Zoology, Journal of Comparative Physiology B, Journal of Experimental Biology, Journal of Experimental Zoology A, Journal of Insect Physiology, Journal of Mammology, Nature Communications, Physiological and Biochemical Zoology, Physiology, Proceedings B, Public Library of Science (PLOS) ONE, Rapid Communications in Mass Spectrometry, Science, Sensors, Wilson Journal of Ornithology

Ad hoc grant reviewing: Natural Science and Engineering Research Council (NSERC) of Canada
National Geographic Society
National Science Center, Poland
Netherlands Organization for Scientific Research (NWO)
St. Mary's University Faculty Grant Program

2018-present Member, Research Advisory Board, (UT Scarborough)

2018-present Member, Executive Committee (UT Scarborough, Biol. Sci.)

PROFESSIONAL SERVICE, CONT.

(2009-present)

2018	Member, NSERC CGSM Internal Ranking Working Group (UT, Ecol. & Evol. Biol.)
2017	Member, Ratcliffe Tenure Review Committee, Research (UT Mississauga, Biol. Sci.)
2017	Member, Richards Interim Review Committee, Research (UT Scarborough, Biol. Sci.)
2016-present	Member, Toronto Pan Am Sports Centre Advisory Committee (UT Scarborough)
2014-present	Member, Scholarships Committee (UT Scarborough, Biol. Sci.)
2014	Member, Vivarium Renovations Planning Committee (UT Scarborough)
2012-2013	Member, Executive Committee (UT Scarborough, Biol. Sci.)
2010, 2014 -present	Member, Vivarium User Group (UT Scarborough)
2011-2014	Chair, Vivarium User Group (UT Scarborough)
2011-2013	Member, Progress Through the Ranks Committee (UT Scarborough, Biol. Sci.)
2012-2013	Member, Integrative Biology Faculty Search Committee (UT Mississauga, Biol. Sci.)
2012-2013	Member, Comparative Neurophysiology Faculty Search Committee (UT Scarborough, Biol. Sci.)
2010-2012	Biological Sciences Rep., Academic Committee (UT Scarborough)
2010-2011	Member, Physiology Teaching Task Force (UT Scarborough)
2009-present	Member, Vivarium Renovations Planning Committee (UT Scarborough)

SCIENCE/POPULAR COMMUNICATION

2018	Collyer, K. "Hummingbird efficiency." Discovery Daily Planet (television), March 21, 2018. https://www.discovery.ca/video/Hummingbird-Efficiency-vid1352956?vid=1319448
2018	Gorman, J. "The amazing metabolism of hummingbirds." New York Times: ScienceTake, March 20, 2018. https://www.nytimes.com/2018/03/20/science/hummingbirds-fructose-metabolism.html
2018	Gorman, J. and Whitworth, C. "How hummingbirds cheat death." New York Times: ScienceTake, March 20, 2018. https://www.nytimes.com/video/science/100000005789167/how-hummingbirds-cheat-death.html
2018	Campbell, D. and Romero, J. "When it comes to fuel efficiency, size matters for hummingbirds." University of Toronto Scarborough YouTube Channel, March 5, 2018. https://youtu.be/6dBqqd_f8Q *The above news stories were disseminated by dozens of additional news outlets.
2016	Commentary on the gray jay becoming Canada's "National Bird". CP24, November 18, 2016.
2016	"Discoveries: packing on the pounds." Daily Planet, Discovery Channel Canada, October 14, 2016.
2016	Yong, E. Stingrays chew? Who knew? National Geographic News, September 13, 2016. http://news.nationalgeographic.com/2016/09/amazon-stingray-chew-food-predator-prey/
2016	Choi, C. Q. The stingray chews its food. LiveScience, September 14, 2016. http://www.livescience.com/56089-stingray-chews-its-food.html

SCIENCE/POPULAR COMMUNICATION, CONT.

- 2016 Boddy, J. Stingrays chew their food-just like mammals. *Science*, September 13, 2016.
<http://www.sciencemag.org/news/2016/09/video-stingrays-chew-their-food-just-mammals>
The above news stories were disseminated by dozens of additional news outlets.
- 2016 Banks, K. On the edge of extreme. *Canadian Wildlife Magazine*. January/February 2016.
- 2015 Simcoe, L. 5 lessons for the Toronto Blue Jays from actual blue jays. *Metro News*, Toronto, Ontario. October 12, 2015.
- 2015 Knight, K. Fish-eating myotis pay metabolic cost of protein diet. *J. Exp. Biol.* 218(8):1115.
- 2015 BBC Earth: "Hummingbird's sweet survival trick"
<http://www.bbc.com/earth/story/20150211-hummingbirds-sap-survival-trick>
- 2014 Hadhazy, A. "Hungry Hummingbirds." *Scholastic DynaMath*. 32:8.
- 2013 Campbell, D. "Hummingbirds run just fine on fructose." *Futurity.org* (top story – Dec. 4).
<http://www.futurity.org/fructose/>
Highlighted by the following news organizations: e! Science News, News-Medical.net, Phys.org, Red Orbit, Science Daily, Science World Report, Softpedia
- 2013 Romero, J. Feature video on Functional Ecology website/YouTube channel.
<http://www.functionalecology.org/view/0/summaries.html#chenwelch>
- 2012 "Estudo sobre o aquecimento global analisa comportamento de aves (Study on global warming analyzes the behavior of birds)." *Reportagem Vanguarda TV*, São Paulo, Brazil. Air date/online publishing date: October 10, 2012.
- 2012 "Microchipping hummingbirds." *National Geographic Weekend Radio*. Episode 1211. Air Date: March 11, 2012.
- 2011 (*ad hoc consulting*) "Live Like a Hummingbird" *Live Like An Animal* (Season 1). *National Geographic Television*. Air Date: 2012.
- 2010 "Hummingbirds: Magic in the Air." *Nature* (Season 28). *WNET (PBS)*. Air Date: 2010.
- 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

REFERENCES

Douglas L. Altshuler, Ph.D.
(Postdoctoral advisor)
Associate Professor
University of British Columbia
Department of Zoology
#4200-6270 University Blvd.
Vancouver, BC, Canada, V6T 1Z4
(604) 827-5361
doug@zoology.ubc.ca

Raul K. Suarez, Ph.D.
(Doctoral advisor)
Professor emeritus
University of California, Santa Barbara
Department of Ecology, Evolution, and Marine
Biology
Santa Barbara, CA, USA, 93106-9610
(805) 893-7563
suarez@lifesci.ucsb.edu

L. Gerardo Herrera M., Ph.D.
Professor
Universidad Nacional Autónoma de México
Estación de Biología Chamela
Instituto de Biología
Apartado Postal 21
San Patricio, Jalisco, México, 48980
gherrera@ib.unam.mx