

SARAH Z. DUNGAN, PhD, CPTC™

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EDUCATION

Ontario Graduate Certificate (2021 – 2022)

Seneca College, Canada. Technical Communication Program. GPA: 4.00
Coordinator: Amy Briggs

Ph. D. (2012 – 2018)

University of Toronto, Canada. Ecology and Evolutionary Biology.
Advisor: Belinda Chang

M. Sc. (2009 – 2011)

Trent University, Peterborough, Canada. Environmental and Life Sciences.
Advisors: Bradley White, John Wang

H. B. Sc. with High Distinction (2005 – 2009)

University of Toronto, Canada. Biology Specialist. GPA: 3.72

PUBLICATIONS IN PEER-REVIEWED JOURNALS

Dungan SZ, Chang BSW. 2021. Ancient whale rhodopsin reconstructs dim-light vision over a major evolutionary transition: Implications for ancestral diving behaviour. PNAS, (*submitted*).

Castiglione GM, Hauser FE, Liao BS, Lujan NK, Van Nynatten A, Morrow JM, Schott RK, Bhattacharyya N, **Dungan SZ**, Chang BSW. 2017. Evolution of non-spectral rhodopsin function at high altitudes. PNAS, 114(28): 7385-7390.

Morrow JM, Castiglione GM, **Dungan SZ**, Tang P, Bhattacharyya N, Hauser FE, Chang BSW. 2017. An experimental comparison of human and bovine rhodopsin provides insight into the molecular mechanisms of retinal disease. FEBS Letters, 591(12): 1720-1731.

Dungan SZ, Chang BSW. 2017. Epistatic interactions influence terrestrial–marine functional shifts in cetacean rhodopsin. Proceedings of the Royal Society B: Biological Sciences, 284(1850): 20162743.

van Hazel I*, **Dungan SZ***, Hauser FE, Morrow JM, Endler JA, Chang BSW. 2016. A comparative study of rhodopsin function in the great bowerbird (*Ptilonorhynchus nuchalis*): Spectral tuning and light-activated kinetics. Protein Science, 25(7): 1308-1318.

*Authors contributed equally

Dungan SZ, Kosyakov A, Chang BSW. 2016. Spectral tuning of killer whale (*Orcinus orca*) rhodopsin: Positive selection and adaptation in a cetacean visual pigment. Molecular Biology and Evolution, 33(2): 323-336.

Wang JY, Riehl KN, Klein MN, Javdan S, Hoffman JM, **Dungan SZ**, Dares LE, Araujo-Wang C. 2016. Chapter Four - Biology and conservation of the Taiwanese humpback dolphin, *Sousa chinensis taiwanensis*. In: Humpback Dolphins (*Sousa* spp.): Current Status and Conservation (TA Jefferson & BE Curry, eds) *Advances in Marine Biology Series*, 73: 91-117.

Dungan SZ, Wang JY, Araujo CC, Yang S-C, White BN. 2016 Social structure in a critically endangered Indo-Pacific humpback dolphin (*Sousa chinensis*) population. *Aquatic Conservation*, 26(3): 517-529.

Du J, **Dungan, SZ**, Sabouhanian A, Chang BSW. 2014. Selection on synonymous codons in mammalian rhodopsins: A possible role in optimizing translational processes. *BMC Evolutionary Biology*, 14: 96.

Slooten E, Wang JY, **Dungan SZ**, Forney KA, Hung SK, Jefferson TA, Riehl KN, Rojas-Bracho L, Ross PS, Wee A, Winkler R, Yang S-C, Chen A. 2013. Direct and indirect impacts of fisheries on the critically endangered humpback dolphin (*Sousa chinensis*) in the eastern Taiwan Strait. *Endangered Species Research*, 22: 99-114.

Dungan SZ, Hung SK, Wang JY, White BN. 2012. Two social communities in the Pearl River Estuary population of Indo-Pacific humpback dolphins, *Sousa chinensis*. *Canadian Journal of Zoology*. 90(8): 1031-1043.

Dungan SZ, Riehl KN, Wee A, Wang JY. 2011. A review of the impacts of anthropogenic activities on the critically endangered eastern Taiwan Strait Indo-Pacific humpback dolphins (*Sousa chinensis*). *Journal of Marine Animals and their Ecology*, 4(2): 3-9.

Ross PS, **Dungan SZ**, Hung SK, Jefferson TA, MacFarquhar C, Perrin WF, Riehl KN, Slooten E, Wang JY, White BN, Wursig B, Yang S-C, Reeves RR. 2010. Averting the baiji syndrome: Conserving habitat for critically endangered dolphins in the eastern Taiwan Strait. *Aquatic Conservation*, 20(6): 685-694.

OTHER PUBLICATIONS

Wang JY, **Dungan SZ**, Riehl KN. 2014. Family Delphinidae (Ocean Dolphins) In: Handbook of the Mammals of the World Vol. 4 Sea Mammals (DE Wilson & RA Mittermeier, eds). Lynx Edicions, Barcelona, Spain.

CONFERENCE PRESENTATIONS

Dungan SZ, Chang BSW. (POSTER). From retinal disease to dim-light vision: A natural rhodopsin variant sheds light on the biochemical mechanism of congenital stationary night-blindness. Vision Science Research Day, Toronto, Canada (25 May 2018).

Dungan SZ, Chang BSW. (POSTER). Reconstructing ancient whale rhodopsin: Dim-light vision over a major evolutionary transition. Evolution, Portland, Oregon (23 – 27 June 2017).

Dungan SZ, Morrow JM, Chang BSW. (POSTER). Human rhodopsin vs. the bovine model: Insights into the molecular mechanisms of retinal disease. Vision Science Research Day, Toronto, Canada (19 May 2017).

Dungan SZ, Chang BSW. (TALK). Reconstructing ancient whale rhodopsin: Dim-light vision over a major evolutionary transition. Canadian Society for Ecology and Evolution (CSEE), Victoria, British Columbia, Canada (07 – 11 May 2017).

Dungan SZ, Chang BSW. (TALK). Functional evolution in the cetacean dim-light visual pigment. Evolution, Austin, Texas (17 – 22 June 2016).

Dungan SZ, Chang BSW. (POSTER) The N55-D83 hydrogen bonding network of rhodopsin: molecular mechanisms of retinal disease and functional adaptation. Vision Science Research Day, Toronto, Canada (27 May 2016)

Dungan SZ, Chang BSW. (POSTER) Using ancestral sequence reconstruction methods to predict functional evolution in cetacean rhodopsin over a major evolutionary transition. Canadian Computational Biology Conference, Toronto, Canada (16 – 19 May 2016)

Dungan SZ, Chang BSW. (TALK) Molecular evolution in cetacean rhodopsin. 21st International Conference of the Society for Marine Mammalogy, San Francisco, California (13 – 18 December 2015).

Dungan SZ, Chang BSW. (POSTER) Spectral tuning of killer whale (*Orcinus orca*) rhodopsin: Positive selection and adaptation in a cetacean visual pigment. Annual Meeting for the Society of Molecular Biology and Evolution, San Juan, Puerto Rico (8 – 12 June 2014).

Dungan SZ, Chang BSW. (POSTER) Positive selection and convergence in cetacean rhodopsin. 20th International Conference of the Society for Marine Mammalogy, Dunedin, New Zealand (9 – 13 December 2013).

Dungan SZ, Wang JY, Yang S-C, White BN. (POSTER) Social structure in the eastern Taiwan Strait population of Indo-Pacific humpback dolphins, *Sousa chinensis*, at two association scales. 19th International Conference of the Society for Marine Mammalogy, Tampa, Florida (27 Nov – 2 Dec 2011).

Dungan SZ, Wang JY, Hung SK, Yang S-C, White BN. (POSTER) Social network analysis of Indo-Pacific humpback dolphin (*Sousa chinensis*) populations in Hong Kong and Taiwan. 12th International Conference of the American Cetacean Society, Monterey, California (12 – 14 November 2010).

SCHOLARSHIPS, CERTIFICATIONS, AND AWARDS

2021	Certified Professional Technical Communicator Foundation – Society for Technical Communication
2021	President’s Honour List – Seneca College
2017	Vision Science Research Fellowship – U. Toronto (\$8,000)
2016	Vision Science Research Fellowship – U. Toronto (\$24,692)
2016	Ontario Graduate Scholarship – U. Toronto (Declined)
2016	General Motors Women in Science Award – U. Toronto (\$3,800)
2015	Vision Science Research Fellowship – U. Toronto (\$27,829)
2015	Ontario Graduate Scholarship – U. Toronto (Declined)
2013, 2014	Faculty of Arts and Science PhD Fellowship – U. Toronto (\$5,000/year)
2012	Mary H. Beatty Admission Top-Up Scholarship – U. Toronto (\$5,000)
2012 – 2014	NSERC Post-graduate Scholarship (PGSD3) – U. Toronto, (\$21,000/year)
2010	BMO Green Leaders’ Fund – Trent University (\$5,000)
2010	Best Student Poster – American Cetacean Society (\$250)
2009	Ontario Graduate Scholarship - Trent University (\$10,000)
2008	Regent’s In-Course Scholarship – U. Toronto, Victoria College (\$1,000)
2008	NSERC Undergraduate Student Research Award – U. Toronto (\$4,500)
2007	Regent’s In-Course Scholarship - U. Toronto, Victoria College (\$1,000)
2006	Northrop Frye BIO150 Research Award – U. Toronto (\$1,500)
2006 – 2009	Faculty of Arts and Science Dean’s List – U. Toronto
2005	John Robins Admission Scholarship – U. Toronto, Victoria College (\$2,500)
2005	Advanced Placement National Scholar – Advanced Placement Program

COURSES TAUGHT

2017	CSB1020H Topics in Cell and Systems Biology (graduate): Coding Sequence Evolution and Selection Analyses, U. Toronto
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GENERAL TEACHING ASSISTANTSHIPS

2015 – 2016	EEB460H1F Molecular Evolution, U. Toronto
2013 – 2015	BIO220H1S From Genomes to Ecosystems in a Changing World, U. Toronto
2011	BIOL3850H Dolphin and Whale Biology and Conservation in Tropical Asia (field course), Trent University
2010, 2011	BIOL4150H Marine Mammals, Trent University
2010	BIOL2600H Evolution, Trent University
2009 – 2011	BIOL-FRSC2050H Introduction to Genetics, Trent University
2009	TA Training Certificate Program (completion of at least 8 hours of workshops on TA instructional strategies)

LECTURES AND SEMINARS

- 2015 Guest lecture. Molecular Evolution in Cetacean Rhodopsin.
For EEB460H1F Molecular Evolution, University of Toronto
- 2010, 2011, 2015 Guest lecture. An Overview of Marine Mammal Diving Physiology.
For: BIOL4150 Marine Mammals, Trent University
- 2011, 2015 Guest lecture. Marine Mammal Evolution and Systematics.
For: BIOL4150 Marine Mammals, Trent University
- 2011 – 2014 Guest lecture. Social Behaviour in Cetaceans.
For: BIOL4150 Marine Mammals, Trent University
- 2012 – 2014, 2018 Guest lecture. Cetacean Evolution and Diving Physiology.
For: BIOL4150 Marine Mammals, Trent University
- 2012 Guest lecture. The Origins and Evolution of Mammals.
For: BIOL4180 Mammalogy, Trent University
- 2010 Seminar. Social segregation in Hong Kong Indo-Pacific humpback dolphins. For: Biology Department Seminar Series, Trent University

PROFESSIONAL WORKSHOPS

Offshore Wind Farms, Acoustics and the Conservation of the Taiwanese White Dolphin Population (TWD, *Sousa chinensis taiwanensis*). Matsu Fish Conservation Union and Wild at Heart Legal Defense Association. National Taiwan University, Taipei, Taiwan (17 – 21 April 2017).

Fisheries interactions with critically endangered humpback dolphins in Taiwan. Matsu Fish Conservation Union and Wild at Heart Legal Defense Association. Academia Sinica, Taipei, Taiwan (25 April 2011).

Critical habitat delineation for critically endangered humpback dolphins in Taiwan: Chair: P. S. Ross. 18th Biennial Conference for the Society of Marine Mammalogy, Quebec City, Canada (10 October 2009).

PROFESSIONAL MEMBERSHIPS

Society for Technical Communication (STC)
Science Writers of Canada (SWC)
Society for Marine Mammalogy (SMM)
Canadian Society for Ecology and Evolution (CSEE)

REFERENCES

Amy Briggs, CPTC: Professor and mentor, Seneca College, amy.briggs@senecacollege.ca
Dr. Belinda Chang: PhD advisor, University of Toronto, belinda.chang@utoronto.ca
Dr. John Wang: MSc advisor, CetAsia Research and Conservation Group, cetasiajohn@gmail.com