CURRICULUM VITAE

Cory Bishop
Assistant Professor
Department of Biology
St. Francis-Xavier University
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Citizenship: Canadian

EDUCATION

Ph.D. Molecular Biology and Biochemistry, Simon Fraser University, Burnaby, B.C. 1997-2003

-Bruce P. Brandhorst, thesis advisor.

B.Sc. (Honours) Biology, Carleton University, Ottawa, Ont. 1990-1996

-William R. Bates thesis advisor

APPOINTMENTS

Position	Advisor	Location	Period
Assistant Professor	N/A	St. Francis-Xavier University	Dec, 2009-
Instructor	N/A	BMSC	May 2- 23, 2011
Instructor	N/A	BMSC	July 6-24, 2009
Asst. Professor-Limited Term	N/A	Dalhousie University	Sept 2008-Apr 2009
Postdoctoral fellow	Brian Hall	Dalhousie University	Mar 2007- Oct 2009
Postdoctoral fellow	Leonid Moroz	Friday Harbor Labs, WA	May-June 2007
NSERC PDF	Micheal Hadfield	Kewalo Marine Labs, HI	Nov 2004-2006

GRANTS

AWARDS (9)	PERIOD	VALUE
CFI Leaders Opportunity Fund (PI)	2010	389,000
Start Up Grant (STFX) (PI)	2010	20,000
NSERC Discovery Grant (PI)	2010-2014	160,000
PR-AC Grant **AND** matching funds from NSERC Collaborative Research & Development grant (Co-PI)	2011-2014	300,000
NSERC Research Tools and Instruments (PI)	2012	149,313
EDEN travel grant (Co-PI)	2013	3,000
CFI-LOF Operating Funds (PI)	2013	46,000
Dept. Fisheries and Oceans, ACRDP program (Co-PI)	2013-2015	162,559
Total Awarded as PI		**$744,313**
Total Awarded as Co-PI		**$482,559**

TOTAL Awarded		**$1,229,872**

-Total career income for competitive research and salary support: **$1,392,559 CDN.**

TEACHING EXPERIENCE

1. *Assistant Professor* (St. FX): Developmental Biology (BIOL 335), Evolutionary Developmental Biology (411), Marine Biology (312), Bioinformatics (452), Introductory Cell Biology (BIOL 111).

2. Evolution and Development of Marine Animals. A 3-week field and lab course offered at Bamfield Marine Sciences Center July 6-24, 2009 and May 2-20, 2011. Co-taught it with Dr. Chris Cameron, Université de Montreal).
   Course website: http://www.bms.bc.ca/university/courses2009/evo_devo.htm

3. *Assistant Professor:* Dalhousie Integrated Science Program (DISP). DISP is designed to integrate the first year science curriculum and requires significant interaction among faculty. I taught the biology component, a survey course similar to a first year biology course, with a focus on methods and critical thinking.

TRAINEES (14)

Post-doctoral fellows

1. Dr. Amanda Pustam (Sept, 2011-June 2014; Co-supervised as part of Centre for Biofouling Research, StFX).
2. Dr. Daniel Small (May 2014-present).

Masters Students

3. Katelyn MacNeil: M.Sc. (Jan, 2012-July, 2014)
4. Yuan Lin: M.Sc. (Sept, 2011-June 2014)
5. Stephanie Sorowka: M.Sc. candidate (Sept, 2012-2014; co-supervised with Dr. Edwin DeMont; currently on leave of absence)
6. Greg McCullagh: M.Sc. (Sept, 2010-2012; Co-supervised with Dr. Russell Wyeth)
7. Kieran Murphy: M.Sc. student (Sept, 2013-present; Co-supervised with Dr. Russell Wyeth)

Honours/Directed Studies/Undergraduate Research Assistants

8. Annie Livingstone: Honours student (Sept. 2011-April 2012)
9. Grant Fitzpatrick: Directed studies student at Bamfield Marine Sciences Centre, (June, 2011)
10. Connor McGuire: Honours Student (May, 2012-April 2013)
11. Grace Phillips: Honours Student (May, 2012-April 2013; Co-supervised with Russell Wyeth)
12. Kathleen Grosicki: Honours Student (May, 2013-April 2014; Co-supervised with Russell Wyeth)
13. Scott Bennett: UG research assistant (May 1, 2014-July 31st, 2014)
14. Steven Rodenhizer: UG research assistant (January 1,-May 31st, 2014)

SCHOLARLY CONTRIBUTIONS
(*HQP under my direct supervision in italics)*

Peer reviewed articles (23):

Small D, Bennett S and **CD Bishop**. 2014. The roles of oxygen and ammonia in the symbiotic relationship between the salamander *Ambystoma maculatum* and the green alga *Oophila amblystomatis* during embryonic development (in press Symbiosis Oct 30th).

A. Heyland, J. Hodin and **CD Bishop**. 2014. Manipulation of metamorphic development in purple sea urchins (*Strongylocentrotus purpuratus*) by morpholino microinjection into late stage larvae (accepted in revised form; PLoS One, Nov 1).

Greg McCullagh, **CD Bishop** and Russell Wyeth. 2014. Sensory control of navigation in the sea slug *Tritonia diomedea*. (accepted in revised form to Journal of Experimental Biology Oct 6th).

W. Biggers and **CD Bishop**. 2014. Nitric oxide is not a negative regulator of metamorphic induction in the abalone *Haliotis asinina*: NO means YES. Frontiers of Marine Science (invited commentary, in press).

E. Kim *Yuan Lin*, R. Kerney, L. Blumenberg, **CD Bishop**. 2014. Phylogenetic systematics of algal symbionts associated with four North American amphibian egg masses. PLoS One (DOI: 10.1371/journal.pone.0108915).

CD Bishop and AG. Miller. 2014. Dynamics of the growth, life history transformation and photosynthetic capacity of *Oophila amblystomatis* (CHLOROPHYCEAE), a green algal symiont associated with embryos of the northeastern yellow spotted salamander *Ambystoma maculatum* (AMPHIBIA). Symbiosis. DOI 10.1007/s13199-014-0287-x

Pustam, A. Smith, C., Deering, C., *Grosicki, K*,. Leng T-Y., Lin, S,. Yang, J., Pink. D, Gill, T., Graham, L., Derksen, D., **Bishop, C.D**., DeMont, E.M., Wyeth, R.C., and Smith-Palmer. T. 2014. Interactions of protamine with the marine bacterium, *Pseudoalteromonas sp* NCIMB 2021. Letters in Applied Microbiology 58: 225-230.

Bishop CD, *MacNeil KEA*, Patel, D, Taylor, VJ, and Burke, RD. 2013. Neural Development in *Eucidaris tribuloides* and the Evolutionary History of the Echinoid Larval Nervous System. Developmental Biology. 377: 236-244.

Romero MR, Phuong M, **Bishop CD** and Krug PJ. 2013. Nitric oxide signaling differentially affects habitat choice by two larval morphs of the sea slug *Alderia willowi:* mechanistic insight into evolutionary transitions in dispersal strategies. Journal of Experimental Biology. 216: 1114-1125.

Cameron CB and **Bishop CD**. 2012. Biomineral ultrastructure, elemental constitution and genomic analysis of biomineralization related proteins in hemichordates. Proceedings of the Royal Society B 279: 1740 3041-3048.

Ryan Kerney, Eunsoo Kim, Roger P Hangarter, Aaron A Heiss, **Cory D Bishop**, Brian K Hall. 2011. Intracellular invasion of green algae in a salamander host. Proceedings of the National Academy

of Sciences USA 108: 6497-6502.

Bishop CD, Bates, WR and Hall, BK. 2010. Heat shock protein 90 expression in two migratory cell types of ascidian embryos and larvae: test cells deposit HSP90 on the larval tunic. International Journal of Developmental Biology 54: 1337 - 1346

Bishop CD and Hall BK. 2009. Sniffing out new data and hypotheses on the form, function and evolution of the echinopluteus post-oral vibratile lobe. Biol. Bull. 216: 307-321.

Bishop CD, Pires A, Boudko DY, Moroz LL and Hadfield MG. 2008. Analysis of NO-cGMP signaling during metamorphosis of the nudibranch *Phestilla sibogae* Bergh (Gastropoda: Opisthobranchia). Evolution & Development. 10: 288-299.

Bishop CD and Burke RD. 2007. Ontogeny of the holothurian larval nervous system: evolution of larval forms. Development Genes & Evolution 217: 585-592.

Bishop CD and Brandhorst BP. 2007. Development of nitric oxide synthase-defined neurons in the sea urchin larval ciliary band and evidence for a chemosensory function during metamorphosis. Developmental Dynamics. 236:1535-1546.

Bishop CD, Huggett MJ, Heyland AH, Hodin JH, Brandhorst BP. 2006. Interspecific variation in metamorphic competence in marine invertebrates: the significance for comparative investigations of regulatory systems. Integrative Comparative Biology: 662-682.

Bishop CD , D. F. Erezyilmaz, T. Flatt, C. D. Georgiou, M. G. Hadfield, A. Heyland, J. Hodin, M. W. Jacobs, S. A. Maslakova, A. Pires, A. M. Reitzel, S. Santagata, K. Tanaka, and J. H. Youson. 2006. What is metamorphosis? Integrative Comparative Biology: 1-5.

Bishop CD and Brandhorst BP. 2003. On NO signaling, metamorphosis and the origin of biphasic life cycles. Evolution & Development. 5: 542-550.

Bishop CD, Bates WR and Brandhorst BP. 2002. HSP90 function is required for morphogenesis in ascidian and echinoid embryos. Development Genes and Evolution 212: 70-80.

Bishop CD and Brandhorst BP. 2001. NO/cGMP signaling and HSP90 activity represses metamorphosis in the sea urchin *Lytechinus pictus*. Biological Bulletin 201: 394-404.

Bishop CD, Bates WR and Brandhorst BP. 2001. Regulation of metamorphosis in ascidians involves NO/cGMP signaling and HSP90. Journal of Experimental Zoology 289: 374-384.

Bates WR and **Bishop CD**. 1996. Localization of constitutive heat shock proteins in developing ascidians. Development Growth and Differentiation. 38: 307-314.

Peer reviewed book chapters (1)

Bishop CD, Galway ME and Garbary DJ. 2011. Architecture and design among plants and animals: convergent and divergent developmental mechanisms. In: *Origins and Design in Nature*. Seckbach J. (Ed.) Springer, NY.

Non-peer reviewed articles (2):

Galway M, Garbary D, **CD Bishop** (2012) Plant development at St. Francis Xavier University. The Canadian Botanical Association Bulletin, 45(1): 8-9

Hodin J, **Bishop CD**, Sharpe F, and Valas R. 2009. A creative celebration of evolution. Nature 461(8): 733. (Included as part of a series of "Darwin 200" articles, celebrating Darwin's birth.)

INVITED SEMINARS

St. Francis-Xavier, February, (2009, 2012, 2014)
Mount St. Vincent, February, (2009)
University of New Brunswick (Fredericton), (2010)
Dalhousie University, March, (2010)
University of Guelph (Winter, 2015)

OTHER SCHOLARLY ACTIVITIES

1. **Member** of the 2008-09 Seminar committee for the Department of Biology at Dalhousie University.
2. **Member** of the local organizing committee for the 2008 Annual Meeting of the Canadian Society of Zoologists.
3. **Peer reviewer for 19 journals**: Biological Bulletin, Developmental Dynamics, Evolution and Development, Integrative and Comparative Biology, Frontiers in Zoology, Genetics Research International, Invertebrate Biology, Invertebrate Reproduction and Development, Journal of Comparative Biochemistry and Physiology, Journal of Experimental Biology, Journal of Experimental Zoology, Journal of Experimental Marine Biology and Ecology, Marine Biology, Marine Ecology Progress Series, Marine Technology Society Journal, Pacific Science and Marine Genomics.
4. **Reviews Editor**, Frontiers in Marine Science, Molecular Biology and Ecology Division.

COLLABORATORS (11) (**active**/former):

William Bates (University of British Columbia): Ascidian developmental biology.
Robert Burke (University of Victoria): Evolution of sea urchin larval nervous systems.
Christopher Cameron (Universite de Montreal): Deuterostome biominerals
Roger Croll (Dalhousie University): Sea urchin larval neuroanatomy.
Andreas Heyland (University of Guelph): Morpholino injection of sea urchin juvenile rudiments
Jason Hodin (Hopkins Marine Labs, Stanford University): **Morpholino injection of sea urchin juvenile rudiments**
Eunsoo Kim (American Museum of Natural History): Phylogeography of *Oophila amblystomatis* a green algal symbiont of *Ambystoma maculatum*.
Ryan Kerney (Gettysburg College, PA) Phylogeography of *Oophila amblystomatis* a green algal symbiont of *Ambystoma maculatum*.

Patrick Krug (California State University L.A.): NO/cGMP function during metamorphosis of the sea slug *Alderia modesta*
Tony Miller (StFX Biology; Senior Research Professor): Photosynthetic physiology of *Oophila amblystomatis,* a green algal symbiont in amphibian egg masses.
Anthony Pires (Dickinson College, PA): NO/cGMP signalling in *Phestilla sibogae*.

CERTIFICATIONS AND PROFESSIONAL DEVELOPMENT

Open water diver, PADI
Applied Computational Genomics Course (August, 11, 2010, sponsored by Genome Canada)