

TODD E. GILLIS**CURRENT ADDRESS**

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EDUCATION

Ph.D. Department of Biological Sciences, Simon Fraser University.
Thesis Title: Functional characterization of salmonid cardiac troponin C.
Thesis Advisor: Dr. Glen F. Tibbits.
Year granted: 2003

M.Sc. Department of Zoology, University of Guelph.
Thesis Title: Influence of sub-zero temperatures on the mitochondrial membrane composition of marine bivalve molluscs.
Thesis Advisor: Dr. James S. Ballantyne.
Year granted: 1996

B.Sc. Honors (Marine Biology). University of Guelph.
Year granted: 1994

ACADEMIC POSITIONS

Visiting Professor, Sept 2013-July 2014
Department of Zoology, University of British Columbia

Associate Professor with tenure, July 2011-present
Department of Integrative Biology, University of Guelph

Assistant Professor, July 2005-2011
Department of Integrative Biology, University of Guelph

Senior Research Fellow, 2004-2005
Department of Bioengineering, School of Medicine, University of Washington.
Research focus: Effects of PKA phosphorylation on cardiac contractility.

NSERC Post Doctoral Fellow, 2002-2004
Department of Bioengineering, School of Medicine, University of Washington.
Research focus: Influence of thin regulation on cardiac function.
Supervisor: Dr. Mike Regnier

Visiting NSF Scientist, 2001
McMurdo Research Station, Antarctica.
Research focus: Physiological adaptations to extreme low temperatures.

HONORS AND AWARDS

- **Discovery Accelerator Supplement**, Natural Sciences and Engineering Research Council of Canada, 2017-2019
- **Scholander Award for Research Excellence by a Young Investigator**. American Physiological Society, 2003
- **Simon Fraser University Dean of Graduate Studies Convocation Medal in the Faculty of Science**. 2003
- **William S. Hoar Award for Best Student Paper**. Canadian Society of Zoologists. 2003

FELLOWSHIPS

- **NSERC Post-Doctoral Fellowship**, (\$84,000) 2002-2004
- **US Polar Programs (NSF) Biology Training Course in Antarctica**, (~\$30,000) 2001
- **Garfield Weston Graduate Fellowship in Marine Sciences**, (\$40,000) 2000 - 2001
- **Heart and Stroke Foundation of Canada Doctoral Fellowship**, (\$80,000) 1998 - 2001
- **Simon Fraser University Graduate Fellowship**, 1998 - 2000 (declined)

PRESS ARTICLES REGARDING RESEARCH FROM THE GILLIS LAB

- 2017 - **Canadian Press** article published in multiple websites and newspapers including [Globe and Mail](#), [CTV](#), [CBC](#): entitled: "[Bitumen spill would harm swimming performance of migrating B.C. salmon: study](#)"
- 2017 - **CBC Radio Interview** and article entitled "[Fish heart science may hold key to preventing heart failure](#)"
- 2017 - **Guelph Mercury** article entitled: "[Growing fish hearts could yield positive results for humans, U of Guelph study finds](#)"
- 2017 - **National Geographic** article entitled "[7 Reasons Hagfish Are Amazing \(#6: They Can Live in Dead Bodies\)](#)"
- 2016 - **Outside JEB** article published in the **Journal of Experimental Biology** entitled: "[Salmon versus dilbit: it's a matter of the heart](#)"

RESEARCH SUPPORT*In Review*

- **Effects of embryonic hypoxia on juvenile cardiac function** (1,092,000/2 yr)
National Science Foundation (USA)
Co-applicants: Dane Crossley (PI, North Texas), Turk Rhen (North Dakota), Michael Hendrick (CSU, East Bay)

RESEARCH SUPPORT*Funded*

total = \$4,344,000

- 2017-2020, **Effects of diluted bitumen exposure on physiological and morphological endpoints relevant to parr-smolt transition in Atlantic salmon (*Salmo salar*)** (\$225,000)
National Contaminants Advisory Group, Fisheries and Oceans Canada,
Co-applicants: T.E. Gillis (PI), S.L. Alderman (Guelph), C.J. Kennedy (SFU), A.P. Farrell (UBC)

2017-2020, Discovery Accelerator Supplement (\$120,000)

Natural Sciences and Engineering Research Council (NSERC), Canada

2017-2022, Mechanisms of change, cellular responses of the fish heart to physiological stress (\$200,000)

Natural Sciences and Engineering Research Council (NSERC), Canada

Operating funds for the Gillis Lab.

2017, Zebrafish Advanced Life Support System (\$149,000)

NSERC Research Tools and Instruments (RTI) program grant

Co-applicants Terry Van Ray (PI), Glen Van der Kraak, Todd Gillis, Nick Bernier and John Dawson

2016, High Throughput Digital PCR Facility (\$170,000)

NSERC RTI program and the Advanced Analysis Center at the University of Guelph

Co-applicants: Todd Gillis (PI), and four others.

Purchased equipment: Bio-Rad digital droplet PCR system and Cryolys tissue homogenizer

2015, Validating the use of cardiac troponin I as a plasma biomarker of animal health in aquaculture species (\$25,000)

Gryphon LAAIR Program funded by the Ontario Ministry of Agriculture and Food,

2015, The development of plasma biomarkers to detect cardiac stress for aquaculture and native salmonid populations (\$25,000)

NSERC Engage program

2014-2017, Effects of diluted bitumen exposure during early life stages on the aerobic capacity and cardiac fitness of Pacific sockeye salmon (\$432,500)

Fisheries and Oceans Canada National Contaminants Advisory Group

Co-Applicants: Todd Gillis (PI), Sarah Alderman (Guelph), Tony Farrell (UBC), Chris Kennedy (SFU),

2013, Respirometry and environmental control in micro-aquatic systems, (\$81,292)

NSERC Research tools and infrastructure (RTI) grant

Co-Applicants: Patricia Wright (PI), Nick Bernier and Glen Van der Kraak. Respirometry equipment, and gas control systems for small aquatic animals

2012-2017, Adaptive strategies of the vertebrate heart (\$200,000)

NSERC Discovery Grant,

RESEARCH SUPPORT continued*Funded***2012, BioRad-ChemiDoc MP System, (\$83,000)**

NSERC RTI grant,

Co-Applicants: Todd Gillis (PI), Doug Fudge, Nick Bernier, and four others.*Equipment purchased,* Bio-Rad ChemiDoc MP, Delta2D DIGE analysis software, three iMacs, BioRad proteomics equipment including turboblot, TC-25 cell counter and multiple protein gel systems.**2011, Graduate Student Support Award, (\$30,000)**

College of Biological Sciences, University of Guelph,

2010, Automated Fluorescence Spectrometer for Life Science Research, (\$88,676)

NSERC RTI,

Co-Applicants: Rod Merrill (PI), Stephan Graether.**2008, The Biomechanics of Skin Blistering Diseases: A Cellular and Biophysical Approach, (\$97,000)**

CIHR, Catalyst Grant Program,

Co-applicant: Douglas Fudge.**2008, Manufacture of high performance renewable fibres from hagfish slime thread proteins, (\$147,000)**

Advanced Food and Materials Network STAR program,

Co-applicants: Douglas Fudge (PI), Loon Tak (Food Sciences, Guelph), Laurent Kreplack (Physics, Dalhousie University)**2007, Protein expression facility, (\$65,608)**

NSERC RTI,

Equipment purchased: Amersham AKTA FPLC, New Brunswick large platform shaker, chromatography refrigerator, and chromatography columns/material**2007, Refrigerated Ultracentrifuge, (\$125,521)**

NSERC RTI,

Co-applicants: Glen VanderKraak (PI) Jim Ballantyne; Douglas Fudge, Joe Akerman, Nick Bernier, Gord McDonald, Pat Wright**2007, Chiller Upgrade, Hagen Aqualab, University of Guelph, (\$120,701)**

NSERC RTI

Co-applicants: Jim Ballantyne (PI), Douglas Fudge, Nick Bernier**2006-2011, Regulation of cardiac contractility in teleost fishes, (\$160,000),**

NSERC Discovery Grant

RESEARCH SUPPORT continued***Funded*****2006, Biomaterials Testing Station, (\$52,804)**NSERC RTI, *Co-applicant*: Douglas Fudge (PI)*Equipment purchased*: Zeiss microscope and an Instron benchtop Universal Testing Machine**2006, Tissue, Cell and Protein Dynamics Laboratory, (\$630,798)**

Canadian Foundation for Innovation, Leader Opportunity Fund,

Co-applicant: Douglas Fudge*Equipment purchased*: Perkin Elmer LS 55 Luminescence Spectrometer, Applied Photophysics SX20 Stopped Flow Spectrofluorometer, Custom muscle mechanics system from Aurora Scientific, Ettan Gel Electrophoresis System, Ettan IPGphor III Isoelectric Focusing System, MTS NanoBionix Testing System, Zeiss AxioImager Z1 Epifluorescent Microscope, and Laminar flow biological safety cabinet.**2005, Start-up funds, (\$100,000)****University of Guelph****2005-2008, Cooperative Thin Filament Activation, (\$1,392,000)**

US National Heart Lung and Blood Institute,

Co-applicants: Mike Regnier (PI), Don Martyn, Samantha Harris**SUPERVISORY EXPERIENCE*****Post-Doctoral Fellows***

Dr. Sarah Alderman

Project: **Effects of diluted bitumen exposure during early life stages on heart development and aerobic capacity of Pacific sockeye salmon****2014-**

Dr. Laura Dindia

Project: **The development of plasma biomarkers to detect cardiac stress for aquaculture and native salmonid populations**

2015-2016 (currently on parental leave)

Dr. Jordan Klaiman

Project: **Proteomic studies of high altitude adaptation in the Bar headed goose heart**
2014*Awarded PhD Scholarship from NSERC and Post-Doctoral Fellowship from Heart and Stroke Foundation of Canada****Current position***: Scientist, Benaroya Research institute, Seattle WA.

Dr. Atsuko Negishi

Project: **Developing methods to produce high performance renewable fibres from hagfish slime thread proteins**2008-2011 *Co-supervisor*: Dr. Doug Fudge***Current position***: Research Associate, University of Guelph

SUPERVISORY EXPERIENCE

Graduate Students

- Mr. Sean Avey, MSc Candidate, 2017-
Thesis title. The effect of plasma viscosity on TGF- β 1 production and collagen deposition in the trout heart
- Ms. Yuwen Ding, MSc Candidate, 2017-
Thesis title. The effect of stretch on collagen deposition by cultured trout cardiac myocytes
Awarded Ontario Graduate Scholarship
- Ms. Calli Freedman, MSc Candidate, 2016-
Thesis title. The role of corticotropin-releasing factor in protecting the heart during hypoxia exposure
Awarded NSERC Graduate Scholarship
- Ms. Lauren Gattrell, MSc Candidate, 2015-2017
Thesis title. Metabolic function of the hagfish heart during long-term anoxia exposure
- Ms. Sarah Shorno, PhD Candidate, 2014-
Thesis title. The dynamics of hagfish slime thread production and assembly in the gland thread cell (GTC)
Awarded Ontario Graduate Scholarship
- Ms. Elizabeth Johnston, PhD Candidate, 2012-
Thesis title. Regulation of collagen deposition by trout cardiac fibroblasts
Awarded Ontario Graduate Scholarship
- Ms. Elizabeth Sears, MSc, 2011-2014
Thesis title. Evolution of cardiac troponin function in vertebrates
Awarded Ontario Graduate Scholarship
Current position: Researcher, Canadian Museum of Nature
- Dr. Jordan Klaiman, PhD, 2007- 2013
Thesis title: The effects of thermal acclimation on the functional properties of the trout myocardium
Awarded PhD Scholarship from NSERC and Post-Doctoral Fellowship from Heart and Stroke Foundation of Canada
Current position: Scientist, Benaroya Research institute, Seattle WA
- Ms. Nicole Pinto, MSc, 2010-2012
Thesis title. Production of a bio-polymer from recombinant vimentin
Awarded Institutional PhD Scholarship
Co-supervisor: Dr. Doug Fudge
Current position: PhD Student, Western University
- Ms. Silvana Miller, MSc, 2008-2010
Awarded Ontario Graduate Scholarship
Thesis title: Effect of hypoxia exposure on the development of the cardio-respiratory system in rainbow trout
Current position: Research Associate, Humber College
- Ms. Kelly Kirkpatrick, MSc, 2006-2009
Thesis Title: Cloning and functional characterization of trout cardiac troponin I
Current position: Lab Instructor, Bishop Straughn High School Toronto

SUPERVISORY EXPERIENCE

Undergraduate Thesis Students Supervised

** = thesis published in peer reviewed journal

Ms. Allegra Pearce, **Cardiac function in the anoxic hagfish.** 2017-2018

Ms. Sophie Ding, **Differences in contractile function of diaphragm myofilaments from deer mice adapted to high altitude.** 2016-2017

Current Position: MSc Student, Guelph.

Ms. Sierra Sutcliffe, **Quantifying change in actin gene expression in the zebrafish heart during development.** 2016-2017

Current Position: Undergraduate Student, Guelph.

Mr. Sean Avey, **Characterizing the impact of green fluorescent protein expression in the zebrafish heart on cardiac development and aerobic function. 2015-2016

Current Position: MSc Student, Guelph.

Mr. Craig Jurkiewicz, **Influence of exercise training and hypoxia exposure on cardiac morphology and aerobic fitness in trout.** 2015-2016

Current Position: Veterinary Technician

Ms. Laura Shaw, **Characterizing the influence of exercise and hypoxia exposure on neuroplasticity in the trout brain** 2015-2016

Current Position: Research Technician, University of Guelph

Mr. David Bakker, **Influence of cold acclimation on the metabolism of swimming zebrafish.** 2014-2015

Ms. Ariana Bonder, **Role of TGF- β in the regulation of trout cardiac fibroblasts** 2014-2015

Current Position: Researcher, Ministry of the Environment

Mr. Abiran Sritharan, **Influence of cold acclimation on the aerobic fitness of zebrafish.** 2013-2014

Current Position: Research Technician, Guelph.

Ms. Amy Johnston, **Influence of cold acclimation on the histology and connective tissue content of the zebrafish heart. 2013

Current Position: PhD Student University of Alberta

Ms. Melanie Barry, **Influence of cold acclimation on the expression and phosphorylation of SERCA and phospholamban in the hearts of the burbot and crucean carp** 2012-2013.

Current position: Graduate program in aquaculture, Sir Sanford Fleming

Ms. Elizabeth Johnston, **Influence of hypoxia exposure during embryonic development on the aerobic capacity of trout fry. 2011-2012

Current Position: PhD Student, University of Guelph

Ms. Elizabeth Sears, **Influence of chronic hypoxia exposure on the expression of the cardiac contractile proteins during ontogeny of the rainbow trout.** 2011-2012

Current Position: Research Canadian Museum of Nature

Ms. Courtney Deck, **Influence of Cold Acclimation on TnI expression in the cardiac, slow skeletal, and fast skeletal muscle of the rainbow trout. 2011-2012

Current position: PhD Student, U Ottawa.

Ms. Nicole Pinto, **Cloning of cardiac troponin T from the trout.** 2010-2011

Current position: PhD Student, Western University

SUPERVISORY EXPERIENCE***Undergraduate Thesis Students Supervised***

** = thesis published in peer reviewed journal

Mr. Andrew Robertson, **Role of PKA phosphorylation in the regulation of cardiac troponin function 2009-2010

Was awarded an NSERC graduate scholarship

Current position: Medical Doctor, Toronto

Ms. Emily Van de Laar, **Application of DIGE to studying contractile protein phosphorylation.**

Current position: Veterinarian

Ms. Silvana Miller, **Influence of chronic hypoxia exposure on the metabolic rate of salmonid embryos during development. 2007-2008

Completed MSc University of Guelph

Ms. Caley Nadon, **Changes in the expression of troponin I mRNA during development.** 2007-2008

Current position: Dentist, Toronto

Ms. Brechan McGooey, **Changes in heart rate of rainbow trout embryos during hypoxia exposure.** 2006-2007

Current position: High school science teacher, Toronto

Ms. Heather Freamo, **Ca²⁺ sensitivity of actin myosin activity in the trout heart.** 2005

Completed MSc, University of Guelph

SUPERVISORY EXPERIENCE***Research Technicians***

Ms. Laura Shaw, University of Guelph, 2016

Mr. Alex Noble, University of Guelph, 2015-2016

Ms. Nicole Pinto, University of Guelph, 2013-2014

Dr. Ruby Sawhney, University of Guelph, 2005-2007

Ms. Collette Norby-Slycorte, University of Washington, 2003-2005

Graduate Student Supervisory Committees

Mr. Michael Alcorn, Integrative Biology (MSc)

Thesis Topic: **Leptin and the regulation of the hypothalamic-pituitary-interrenal stress axis in rainbow trout**

2017-

Mr. Sheridan Baker, Integrative Biology (PhD)

Thesis Topic: **The role of prostaglandins in zebrafish ovulation**

2017-

Ms. Love Sandhu, Molecular and Cellular Biology

Thesis Topic: **Characterizing how Human actin mutations affect actin myosin ATPase**

2017-

Ms. Kelsey Halliwushka Integrative Biology (MSc)

Thesis topic: **Influence of SSRI's on cardiac function and reproduction in daphnia.**

Graduate Student Supervisory Committees

- Mr. Haidun Liu, Molecular and Cellular Biology (MSc)
*Thesis topic: **Characterizing the function of cardiac actin mutants using the *in vitro* motility assay***
2015-2017
- Ms. Kelly Leveque, Integrative Biology (MSc)
*Thesis topic: **Interacting effects of temperature and CO₂ on fitness of rainbow trout.***
2014-2016
- Mr. Andy Turko, Integrative Biology (PhD)
*Thesis topic: **Physiological adaptations of the mangrove killifish to aerial exposure.***
2013-
- Mr. Andrew Foster, Human Health and Nutritional Sciences (PhD)
*Thesis title: **Diaphragm dysfunction in mouse models of end stage heart failure***
2012-
- Ms. Maria Anillo Molecular and Cellular Biology (MSc)
*Thesis title: **Characterizing the function of cardiac actin mutants using the *in vitro* motility assay***
2012-2014
- Ms. Marissa Dahari, Molecular and Cellular Biology (MSc)
*Thesis Title: **Influence of actin mutations on protein-protein interaction within the cardiac myofilament***
2010-2012
- Mr. David Irwin, Integrative Biology (MSc)
*Thesis Title: **The Regulation and roles of locally-produced insulin-like growth factors on ovarian function in zebrafish (*Danio Rerio*)***
2009-2011
- Ms. Melissa Chow, Molecular and Cellular Biology (MSc)
*Thesis title: **Molecular stability of cardiac actin mutants***
2008 - 2010
- Mr. Noah Shapiro, Integrative Biology, Guelph (MSc)
*Thesis title: **Changes in fatty acid composition in cellular membranes of estivating lungfish*** 2008 - 2010
- Mr. Ryan Demers, Molecular and Cellular Biology (MSc)
*Thesis title: **Characterization of the human cardiac actin variant M305L.***
2007 - 2009
- Ms. Fenghua Yang, Biomedical Sciences, OVC (PhD)
*Thesis title: **Role of cap-Z in the development of cardiac dysfunction***
2007 - 2012
- Ms. Anna Loncar, Molecular and Cellular Biology, Guelph (MSc)
*Thesis title: **Self assembly of actin and the influence of specific mutations***
2007 - 2009
- Ms. Christiana Simpson, Integrative Biology, Guelph (MSc)
*Thesis title: **Characterization of the expression and regulation of retinoic acid isoforms in various stages of zebrafish ovarian follicles***
2006 - 2008

Graduate Student Supervisory Committees continued

Ms. Ursula Polack, Molecular and Cellular Biology, Guelph (MSc)

Thesis title: Understanding the role of protein phosphorylation in starch synthesis

2006 – 2008

PEER REVIEWED PUBLICATIONS***In Preparation***

**Undergraduate thesis research *Graduate student, [§]Post Doctoral Fellow

- 5) Gatrell, L.A., Pyle, W.G., and Gillis T.E. **Powering a zombie heart: metabolic fuel utilization in the excised hagfish heart during anoxia exposure.** *Am J Physiol in prep*
- 4) **Ding Y, Scott G.R., Gillis T.E. **Role of the myofilament in the adaptation of the deer mouse diaphragm to high altitude.** *Am J Physiol in prep*
- 3) [§]Alderman SL, *Lin F., Farrell AP, Kennedy CJ, and Gillis TE. **Effects of embryonic exposure to diluted bitumen on sockeye development, growth, and future swimming performance.** *Aquat Tox in prep.*
- 2) Gillis TE, [§]Dindia L, [§]Alderman SL. **Validation of a plasma biomarker for cardiac stress in rainbow trout (*Oncorhynchus mykiss*).** *Comp Biochem Physiol in prep*
- 1) **Shaw L, [§]Alderman SL, Laberge, F, Gillis TE. **The effects of exercise on neuroplasticity in rainbow trout (*Oncorhynchus mykiss*).** *Physiol Biochem Zool in prep.*

In Review

*Graduate student,

- 1) *Schorno, S., Gillis, T. E. and Fudge, D.S. **Emptying and Refilling of Slime Glands in Atlantic (*Myxine glutinosa*) and Pacific (*Eptatretus stoutii*) Hagfishes.** *In second review at The Journal of Experimental Biology.* submission #: JEXBIO/2017/172254

Published

**Undergraduate thesis research, *Graduate student, [§]Post Doctoral Fellow

- 41) **Avey, S.R., *Ojehomon, M., Dawson, J.F. and Gillis, T.E. **The effects of enhanced green fluorescent protein and human cardiac actin expression on cardiac function and aerobic performance in Zebrafish (*Danio rerio*).** *Journal of Fish Biology.* Jan;92(1):177-189. (2018) doi: 10.1111/jfb.13507.
- 40) [§]Dindia LA, [§]Alderman SL, Gillis TE. **Data for iTRAQ-based quantification of the cardiac proteome of rainbow trout (*Oncorhynchus mykiss*) at rest and with exercise training.** *Data in Brief.* 2017 May 10;13:32-36. doi: 10.1016/j.dib.2017.05.016.
- 39) *Johnston E.F., and Gillis, T.E. **Transforming growth factor beta-1 (TGF- β 1) stimulates collagen deposition into the extracellular matrix of cultured rainbow trout cardiac fibroblasts.** *Journal of Experimental Biology.* 2017 doi: 10.1242/jeb.160093.
- 38) *Foster, A.J., *Arkell, A.M., *Platt, M.J., *Huber, J.S., [§]Romanova, N., Wright, D.C., Gillis, T.E., Murrant, C.L., Brunt, K.R. and Simpson, J.A.C. **Central-acting therapeutics alleviate Eif2 α -mediated respiratory weakness caused by heart failure-induced ventilatory overdrive.** *Science Translational Medicine*, 2017 DOI:[10.1126/scitranslmed.aag1303](https://doi.org/10.1126/scitranslmed.aag1303)
- 37) [§]Alderman SL, [§]Dindia LA, Kennedy CJ, Farrell AP, and Gillis TE. **Proteomic analysis of sockeye salmon serum reveals biomarkers of diluted bitumen exposure and impaired swimming performance.** *Comparative Biochemistry and Physiology D Genomics and Proteomics* (2017) <http://doi.org/10.1016/j.cbd.2017.04.003>

Published Peer Reviewed Papers continued

**Undergraduate thesis research, *Graduate student, [§]Post Doctoral Fellow

- 36) [§]Dindia, L., [§]Alderman, S.L., and Gillis, T.E. **Novel insights into cardiac remodeling revealed by proteomic analysis of the trout heart during exercise training.** *Journal of Proteomics.* (2017) <http://doi.org/10.1016/j.jprot.2017.03.023>
- 35) *Keen, A., *Klaiman J.M., Shiels, H.A and Gillis, T.E. **Temperature induced cardiac remodeling in ectotherms.** INVITED REVIEW. *Journal of Experimental Biology.* (2016) 220:147-160 PMID:27852752
- 34) *Sears, E.J. and Gillis, T.E., **A functional comparison of cardiac troponin C from representatives of three vertebrate taxa: linking phylogeny and protein function** *Journal of Comparative Biochemistry and Physiology (B)*, (2016), <http://doi.org/10.1016/j.cbpb.2016.07.004>
- 33) [§]Alderman, S.L., *Lin, F., Farrell, A.P., Kennedy, C. and Gillis, T.E. **Effects of diluted bitumen exposure on juvenile sockeye salmon: from cells to performance** *Environmental Toxicology and Chemistry.* (2016) doi: 10.1002/etc.3533.
- 32) Gillis, T.E., *Klaiman, J.M., *Foster A, *Platt MJ, *Huber JS, *Corso MY, and Simpson J.A.C. **Dissecting the role of the myofilament in diaphragm dysfunction during the development of heart failure in mice.** *American Journal of Physiology, Heart and Respiratory Physiology*, 310, H572-H586 (2016)
- 31) Gillis, T.E., *Regan, M.D., *Cox, G.K., *Hartner, T.S., *Brauner, C.J., Richards, J.G., Farrell A.P. **Characterizing the influence of anoxia exposure on the isolated hagfish heart.** *Journal of Experimental Biology.* 218: 3754-3761 (2015)
- 30) Klaiman, J.M., Pyle, W.G. and Gillis, T.E. **Cold acclimation increases cardiac myofilament function and ventricular pressure generation in trout.** *Journal of Experimental Biology* 217, 4132-4140 (2014)
- 29) **Johnson, A., Turko, A.J., Klaiman, J.M., Johnston, E.F. and Gillis T. E. **Cold acclimation alters the connective tissue content of the zebrafish (*Danio rerio*) heart.** *Journal of Experimental Biology* 217, 1868-1875 (2014)
- 28) *Pinto, N., *Yang, F.C, [§]Negishi A., Rheinstadter, M., Gillis, T.E.,[#] and Fudge, D.S.[#] **Self-assembly enhances the strength of fibres made from vimentin intermediate filament proteins.**[#]co-senior authors. *Biomacromolecules* 10: 574-581 (2014)
- 27) **Johnston, E.F., [§]Alderman, S.L., and Gillis, T.E. **Chronic hypoxia exposure of trout embryos alters swimming performance and cardiac gene expression in larvae.** *Physiological and Biochemical Zoology* 86(5):567-75 (2013)
- 26) *Smith, G.S.T., *Samborska, B., *Hawley, S. P., *Klaiman, J. M., Gillis, T. E., Jones, N., Boggs, J. M., and Harauz G., **Nuclear-localized 21.5-kDa myelin basic protein promotes oligodendrocyte proliferation and neurite outgrowth in co-culture unlike the plasma membrane-associated 18.5-kDa isoform.** *Journal of Neural Biology* 91:349-62. (2013)
- 25) [§]Negishi A., *Armstrong, C., Kreplak, L., Rheinstadter, M., Lim, L, Gillis, T.E. and Fudge D.S. **The production of fibers and films from solubilized hagfish slime thread proteins.** *Biomacromolecules*, 13:3475-82 (2012)
- 24) [§]Alderman, SL, *Klaiman JM, **Deck, CA, and Gillis, T.E. **Effect of cold acclimation on troponin I isoform expression in striated muscle of rainbow trout.** *American Journal of Physiology*, 303, R168-176. (2012)
- 23) *Klaiman, J, *Fenna, A, Shiels, H.A. Macri, J. & Gillis, T.E. **Cardiac remodeling in fish: strategies to maintain heart function during temperature change.** *PLoS One.* (2011)

Published Peer Reviewed Papers continued

**Undergraduate thesis research, *Graduate student, ^SPost-Doctoral Fellow

- 22) *Miller, S.C., Gillis, T.E.[#], and Wright, P.A.[#]. **The ontogeny of regulatory control of the rainbow trout (*Oncorhynchus mykiss*) heart and how this is influenced by chronic hypoxia exposure.** *Journal of Experimental Biology*. 214, 2065-2072 (2011).[#]co-senior authors
- 21) *Kirkpatrick, K.P., **Robertson, A.S., Klaiman, J., & Gillis, T.E. **The influence of trout cardiac troponin I and PKA phosphorylation on the Ca²⁺ affinity of the cardiac troponin complex.** *Journal of Experimental Biology*. 214, 1981-1988 (2011)
- 20) Gillis, T.E., & Klaiman, J., **The influence of PKA phosphorylation on the Ca²⁺ activation of force generation by trout cardiac muscle.** *Journal of Experimental Biology*. 214, 1989-1996 (2011)
- 19) Shaffer, J.F, and Gillis, T.E. **Evolution of the regulatory control of vertebrate striated muscle: The roles of troponin I and myosin binding protein-C.** *Physiological Genomics*. 42:406-19 (2010)
- 18) **Miller S.C., **Reeb S.E., Wright P.A., and T.E. Gillis. **The influence of dissolved oxygen and water flow rate on growth and metabolic rate of rainbow trout embryos.** *Canadian Journal of Fisheries and Aquatic Sciences*. 85:2170-77 (2008)
- 17) Liang, B., Chung, F., Qu, Y., Gillis, T.E., Tikunova, S.B., Davis, J.P. and G.F. Tibbits. **The Familial Hypertrophic Cardiomyopathy related cardiac troponin C mutation, L29Q affects Ca²⁺ binding and myofilament contractility.** *Physiological Genomics*. 33:257-66. (2008)
- 16) Gillis, TE, Marshall C.R, and G. F. Tibbits. **Functional and evolutionary relationships of troponin C.** *Physiological Genomics*. 19:16-27. (2007)
- 15) Gillis TE, Martyn DA, Rivera AJ, Regnier M. **Investigation of thin filament near-neighbor regulatory unit interactions during force development in skinned cardiac and skeletal muscle.** *Journal of Physiology*. 580:561-76. (2007).
- 14) *Kreutziger KL, Gillis TE, Davis JP, Tikunova SB, and Regnier M. **Influence of enhanced troponin C Ca²⁺ binding affinity on cooperative thin filament activation in skeletal muscle.** *Journal of Physiology*. 583:337-50. (2007)
- 13) *Moreno-Gonzalez A, Gillis T.E., Rivera AJ, Chase PB, Martyn DA, Regnier M. **Thin-filament regulation of force redevelopment kinetics in rabbit skeletal muscle fibres.** *Journal of Physiology*. 579:313-26. (2007)
- 12) Gillis, T.E., Liang, B., *Chung, F., & Tibbits, G.F. **Increasing mammalian cardiomyocyte contractility with residues identified in trout troponin C.** *Physiological Genomics*. 22: 1-7. (2005)
- 11) *Blumenschein, T.M.A., Gillis, T.E., Tibbits, G.F. & Sykes, B.D. **Effect of temperature on the structure of trout cardiac troponin C.** *Biochemistry*. 43:4955-4963. (2004)
- 10) Gillis, T.E., Blumenschein, T.M.A., Sykes, B.D. & Tibbits, G.F. **The effect of temperature and the F27W mutation on the Ca²⁺-activated structural transition of trout cardiac troponin C.** *Biochemistry*. 42:6418-6426. (2003)
- 9) Gillis, T.E., Moyes, C.D., & Tibbits, G.F. **Sequence mutations in teleost cardiac troponin C that are permissive of high site II Ca²⁺ affinity.** *American Journal of Physiology: Cell Physiology*. 284, C1176-1184. (2003)

Published Peer Reviewed Papers continued

- 8) Gillis, T.E., & Tibbits, G.F. **Beating the cold: The functional evolution of troponin C in teleost fish.** (Invited Review). *Comparative Biochemistry and Physiology Part A: Molecular and Integrative Physiology* 132, 763-772. (2002)
- 7) Gillis, T.E., Marshall, C.R., Xue, X.H., Borgford, T.J., & Tibbits, G.F. **Ca²⁺ binding to cardiac troponin C: effects of temperature and pH on mammalian and salmonid isoforms.** *American Journal of Physiology: Regulatory, Integrative, and Comparative Physiology.* 279, R1707-R1715. (2000)
- 6) Gillis, T.E., & Ballantyne, J.S. **Mitochondrial membrane composition of two Arctic marine bivalves mollusks, *Serripes groenlandicus* and *Mya truncata*.** *Lipids.* 34, 53-57. (1999)
- 5) Gillis, T.E., & Ballantyne, J.S. **Influences of sub-zero thermal acclimation on mitochondrial membrane composition of temperate marine bivalve mollusks.** *Lipids.* 34, 59-66. (1999)
- 4) Stuart, J.S., Gillis, T.E., & Ballantyne, J.S. **Compositional correlates of metabolic depression in mitochondrial membrane of an estivating snail, *Cepaea nemoralis*.** *American Journal of Physiology: Regulatory, Integrative, and Comparative Physiology.* 275, R1977-R1982. (1998)
- 3) Stuart, J.S., Gillis, T.E., & Ballantyne, J.S. **Remodeling of phospholipid fatty acids in mitochondrial membranes of an estivating snail.** *Lipids.* 33, 787-793. (1998)
- 2) Gillis, T.E., & Ballantyne, J.S. **Effects of starvation on plasma free amino acids and glucose concentrations in Lake Sturgeon, *Acipenser fulvescens*.** *Journal of Fish Biology.* 49, 1306-1316. (1996)
- 1) Leblanc, P.J., Gillis, T.E., Gerrits, M.F., & Ballantyne, J.S. **Metabolic organization of liver and somatic muscle of landlocked sea lamprey, *Petromyzon marinus*, during spawning migration.** *Canadian Journal of Zoology.* 73, 916-923 (1995)

Books

- 2) [**The cardiovascular system: Morphology, Control and Function.**](#)
Volume 36A in *Fish Physiology* book series. 7 Chapters, 456 pages
Co-Editors: Gamperl, A.K., Gillis, T.E. Farrell, A.P., and Brauner C.J.,
To be published Fall 2017 by Elsevier
- 1) [**The cardiovascular system: Development plasticity and physiological responses.**](#)
Volume 36B in *Fish Physiology* book series. 7 Chapters, 516 pages
Co-Editors: Gamperl, A.K., Gillis, T.E. Farrell, A.P., and Brauner C.J.,
Series Editors: Farrell, A.P., Brauner C.J.,
To be published Fall 2017 by Elsevier

Book Chapters

- 3) Johnston, E.F., and Gillis T.E., **Cardiac Preconditioning, Remodelling and Regeneration.** In: *The cardiovascular system: Design, Control and Function.* Volume 36A in Fish Physiology book series. Co-Editors: Gamperl, A.K., and Gillis, T.E. Series Editors: Farrell, A.P., Brauner C.J.,
- 2) Gillis, T.E. **Evolution of the regulatory control of the vertebrate heart; the role of the contractile proteins.** Book chapter in *Ontogeny and Phylogeny of the vertebrate heart.* Springer. Tobias Wang Editor, 2012.
- 1) Gillis, T.E. **Cardiac Excitation–Contraction Coupling: Calcium and the Contractile Element.** *Encyclopedia of Fish Physiology*, Elsevier. Tony Farrell Editor, 2011.

INVITED RESEARCH SEMINARS AND PLATFORM PRESENTATIONS

- 2017 –Fisheries and Oceans Canada meeting on Oil and Gas Research,** Ottawa, Canada. *Physiological effects & biomarkers of diluted bitumen exposure in early life stage salmon*
- 2017 - Annual Meeting of the Society of Experimental Biology,** Gothenburg, Sweden
Cardiac remodeling in teleost fish
- 2017- Department of Veterinary Biomedicine, The University of Saskatchewan.**
Mechanisms of change: responses of the heart and diaphragm to physiological and pathological stressors.
- 2017 - Experimental Biology,** Chicago, Il. *Cardiac remodeling in teleost fish in response to physiological stressors*
- 2015 - Annual Meeting of the Society of Experimental Biology,** Prague, CZ. *Characterizing the metabolic capacity of the anoxic hagfish heart.*
- 2015 - McMaster University,** Department of Biology, *Phenotypic plasticity of the teleost heart: Changing form and function in response to thermal acclimation*
- 2014 - American Physiological Society Meeting in Comparative Animal Physiology,** San Diego, CA. *Characterizing the metabolic capacity of the anoxic hagfish heart*
- 2014 - University of North Texas,** Department of Biology, *Getting hot and going fast: the evolution of regulatory control in the vertebrate heart*
- 2014 - University of California, Irvine,** Department of Ecology and Evolutionary Biology, *Getting hot and going fast: the evolution of regulatory control in the vertebrate heart*
- 2014 - University of British Columbia,** Department of Zoology, *Getting hot and going fast: the evolution of regulatory control in the vertebrate heart*
- 2013 - International Union of Physiological Sciences,** Birmingham, UK. *Gaining control, the role of the contractile element in the evolution of cardiac function*
- 2013 - Annual Meeting Society of Experimental Biology,** Valencia, Spain, *Phenotypic plasticity of the teleost heart; Changing form and function in response to thermal acclimation.*
- 2012 - McMaster University,** Department of Biology, *Strategies for staying in control, cardiac remodeling and the evolution of contractile function*
- 2012 - University of Western Ontario,** Department of Biology, *Strategies for staying in control, cardiac remodeling and the evolution of contractile function*
- 2011 - University of Waterloo,** Department of Biology, 2011 *Evolution of the regulatory control of the vertebrate heart:*

INVITED RESEARCH SEMINARS AND PLATFORM PRESENTATIONS

- 2010 - Annual Meeting of the Society of Experimental Biology**, Prague, CZ. Evolution of the regulatory control of the vertebrate heart: the role of the contractile proteins.
- 2009 - University of Vermont**, Department of Physiology and Biophysics, The role of the contractile proteins in regulating muscle contraction at low temperatures
- 2008 - University of Washington**, School of Medicine, Muscle Group, Evolution of the regulatory control of the cardiac myofilament
- 2007 - University of Guelph**, Molecular and Cellular Biology, Regulation of cardiac contractile function
- 2006 - Brock University**, Department of Biology, Evolution of contractile function, the role of the troponin complex.
- 2006 - McMaster University**, Department of Biology, Evolution of contractile function, the role of the troponin complex.
- 2006 - University of Guelph**, Centre for Food and Soft Materials Science, Functional studies of recombinant contractile proteins
- 2004 - University of Guelph**, Department of Zoology, Maintaining cardiac function in the cold, the role of troponin C
- 2004 - University of Western Ontario**, Department of Biology, Maintaining cardiac function in the cold, the role of troponin C
- 2004 - University of Leeds**, School of Biomedical Sciences, Maintaining cardiac function in the cold, the role of troponin C
- 2004 - University of Washington**, Department of Pathology, Increasing the Ca²⁺ sensitivity of the vertebrate heart
- 2004 - University of British Columbia**, Department of Zoology, Increasing the Ca²⁺ sensitivity of the vertebrate heart
- 2003 - University of Washington**, Department of Bioengineering, The role of troponin C in regulating cardiac contraction
- 2001 - Annual Meeting of the Society of Experimental Biology**, Canterbury UK, 2001, The influence of low temperature on the Ca²⁺ affinity of trout cardiac troponin C

Published Meeting Abstracts

- 73) Alderman SL, Lin F, Dindia LA, Kennedy CJ, Farrell AP, and Gillis TE. 2017. **Physiological effects and biomarkers of diluted bitumen exposure in early life stage sockeye salmon.** Society for Experimental Biology, Gothenburg, Sweden.
- 72) Gillis TE, Dindia LA, Alderman SL. July 2017. **New insights into exercise induced cardiac remodeling in trout revealed by proteomic analysis.** Society for Experimental Biology, Gothenburg, Sweden.
- 71) Alderman SL, *Avey S, Lin F, Kennedy CJ, Farrell AP, Gillis TE. 2017. **Early life stage exposure to diluted bitumen impacts future brain morphology in sockeye salmon.** AMOP Technical Seminar on Environmental Contamination and Response, Banff, AB.
- 70) Alderman SL, Dindia LA, Lin F, Farrell AP, Kennedy CJ, Gillis TE. 2017. **Effects of diluted bitumen exposure on juvenile salmon: cardiotoxicity and biomarker discovery.** AMOP Technical Seminar on Environmental Contamination and Response, Banff, AB.
- 69) Alderman SL, Dindia LA, Kennedy CJ, Farrell AP, and Gillis TE. 2016. **Identifying serum biomarkers of diluted bitumen exposure in sockeye salmon.** Canadian Ecotoxicology Workshop, Edmonton, ON.

Published Meeting Abstracts continued

- 68) Alderman SL, Lin F, Kennedy CJ, Farrell AP, and Gillis TE. 2016. **Early-life exposure to diluted bitumen has lasting effects on brain morphology in sockeye salmon.** Canadian Ecotoxicology Workshop, Edmonton, ON.
- 67) Alderman, S.L., Farrell, A.P., Kennedy, C.J., and Gillis, T.E. **From cells to performance: effects of diluted bitumen on the cardiovascular system of juvenile sockeye salmon.** Canadian Society of Zoologists (CSZ), Annual Meeting, London, Ont, 2016
- 66) Dindia, L, Alderman, S.L., and Gillis, T.E. **Rainbow trout (*Oncorhynchus mykiss*) cardiac proteome remodeling in response to exercise.** CSZ Annual Meeting, London, Ont, 2016
- 65) Johnston E.F., and Gillis, T.E. **MicroRNA-induced inhibition of extracellular collagen in rainbow trout cardiac fibroblasts.** CSZ Annual Meeting, London, Ont, 2016
- 64) Dindia, L, Alderman, S.L., Farrell, A.P., Kennedy, C.J., and Gillis, T.E. **Identification of plasma biomarkers for bitumen exposure in sockeye salmon (*Oncorhynchus nerka*).** CSZ Annual Meeting, London, Ont, 2016
- 63) Shaw, L., Jurkiewicz, C., Alderman, S.L., Laberge, F., and Gillis, T.E. **The effects of hypoxia and exercise on relative brain size in juvenile rainbow trout (*Oncorhynchus mykiss*).** CSZ Annual Meeting, London, Ont, 2016
- 62) Gatrell, L., Weinrauch, A., and Gillis, T.E. **What fuels the hagfish heart during anoxia exposure?** CSZ Annual Meeting, London, Ont, 2016
- 61) Johnston E.F., Dindia, L and Gillis, T.E. **The role of testosterone in regulating cold-induced cardiac hypertrophy in rainbow trout.** CSZ Annual Meeting, London, Ont, 2016
- 60) Alderman, S.L., Dindia, L, Lin, E., Kennedy, C.J., Farrell, A.P., and Gillis T.E. **Effects of diluted bitumen exposure on the cardiovascular system of juvenile sockeye salmon – from cells to performance.** Canadian Ecotoxicology Workshop, Saskatoon Saskatchewan 2015
- 59) Johnston E.F., Gillis, T.E. **The role of transforming growth factor-beta 1 in connective tissue remodeling during cold acclimation in cultured rainbow trout cardiac fibroblast.** Annual Meeting of the Society of Experimental Biology, 2015 Prague CZ
- 58) Sears, E., and Gillis, T.E. **Comparing cardiac troponin C from three vertebrates: Insight into the evolution of cardiac contractile function.** Canadian Society of Zoologists, Annual Meeting, Montreal, 2014
- 57) Gillis, T.E., Plat, M., Arkell, A., Foster, A., Simpson J. **Remodeling of the diaphragm in mice during the development of heart failure.** International Union of Physiological Sciences Meeting. Birmingham UK, 2013
- 56) Johnston, E.F., Alderman, S.L., and Gillis, T.E. **Chronic hypoxia exposure of trout embryos alters swimming performance and cardiac gene expression in larvae.** Canadian Society of Zoologists, Annual Meeting, University of Guelph, 2013
- 55) Sears E., and Gillis, T.E. **Characterization of cardiac contractile proteins of the African clawed frog (*Xenopus laevis*): Investigating the evolution of cardiac contractile function.** Canadian Society of Zoologists, Annual Meeting, University of Guelph, 2013
- 54) Klaiman, J.M., Pyle, W.G., and Gillis, T.E. **The effect of thermal acclimation on the functional properties of the isolated trout heart.** Canadian Society of Zoologists, Annual Meeting, University of Guelph, 2013

Published Meeting Abstracts continued

- 53) Pinto, N., Negishi, A, Fudge D.S., Gillis T.E., Kreplak, L. Rheinstadter, M., Yang F., **Physical characterization of fibres produced from recombinant vimentin.** Canadian Society of Zoologists, Annual Meeting, University of Guelph, 2013
- 52) Negishi, A, Kreplak, L. Rheinstadter, M., Armstrong, C., Gillis T.E., Fudge D.S., **Renewable material from hagfish slime thread proteins.** Canadian Society of Zoologists, Annual Meeting, University of Guelph, 2013
- 51) Klaiman, J.M., Pyle, W.G., and Gillis, T.E. **Functional and morphological changes in the trout heart during thermal acclimation.** Experimental Biology, Boston MA USA, 2013.
- 50) Klaiman, J.M., and Gillis, T.E. **Functional and morphological changes in the trout heart during thermal acclimation.** Society for Integrative and Comparative Biology Annual Meeting. San Francisco CA, USA, 2013.
- 49) Klaiman, J.M. and Gillis, T.E. **The effect of thermal acclimation on isometric force generation and cross-bridge kinetics in trout cardiac trabeculae.** Society of Experimental Biology annual meeting Salzburg, Austria, 2012
- 48) Johnston E. and Gillis, T.E. **The influence of hypoxia exposure during embryonic development on aerobic capacity of rainbow trout fry.** Canadian Society of Zoologists, Annual Meeting, Mount Allison University, Sackville, NB. 2012
- 47) Alderman, S.L., Klaiman, J.M., Deck, C.A., and Gillis T.E. **Effect of cold acclimation on troponin I isoform expression in striated muscle of rainbow trout** Canadian Society of Zoologists, Annual Meeting, Mount Allison University, Sackville, NB. 2012
- 46) Gillis T.E. **The evolution of the regulatory control of the vertebrate heart; the role of protein phosphorylation.** Canadian Society of Zoologists Annual Meeting, University of Ottawa, On, 2011.
- 45) Klaiman, J.M., and Gillis, T.E., **Characterizing functional changes in the myocardium of the trout heart during thermal acclimation.** Canadian Society of Zoologists Annual Meeting, University of Ottawa, 2011.
- 44) Gillis T.E. **The effects of temperature acclimation on the cardiac actin-myosin ATPase and cardiac proteome of rainbow trout.** International Congress on the Biology of Fishes, 2010, Barcelona Spain.
- 43) Gillis T.E., **The role of PKA in regulating the function of the trout heart.** International Congress on the Biology of Fishes, 2010, Barcelona Spain.
- 42) Gillis T.E., **The effects of temperature acclimation on the cardiac actin-myosin ATPase and cardiac proteome of Rainbow trout.** Society of Experimental Biology, 2010 Annual Meeting, Prague, CZ
- 41) Gillis T.E., **Evolution of the regulatory control of the vertebrate heart: the role of the contractile proteins.** Society of Experimental Biology, 2010 Annual Meeting, Prague, CZ
- 40) Klaiman, J, Fenna, A, Shiels, H.A. and Gillis T.E. **The effects of temperature acclimation on the cardiac actin-myosin ATPase and cardiac proteome of Rainbow trout.** Canadian Society of Zoologists Annual Meeting, University of British Columbia, BC, 2010.
- 39) Gillis T.E., Robertson A, Klaiman, J.M., **The role of PKA in regulating contractile function in the rainbow trout heart.** Canadian Society of Zoologists Annual Meeting, University of British Columbia, BC, 2010.

Published Meeting Abstracts continued

- 38) Miller, S.C., Wright, P.A., and Gillis, T.E. **Chronic hypoxia alters cardiac regulation in rainbow trout (*Oncorhynchus mykiss*) during early life stages.** Canadian Society of Zoologists Annual Meeting, University of British Columbia, BC, 2010.
- 37) Robertson, A and Gillis T.E. **Phosphorylation and Ca²⁺ affinity of cardiac troponin in rainbow trout.** Comparative Physiology and Biochemistry Workshop, Keen Ont
- 36) Hanner, R, Gillis, T., Bentzen, P., Symington, A, and Legault T. **Bio-pedagogy and Barcoding: the Canadian National Market Survey.** 3rd International Barcode of Life Conference in Mexico City, 2009
- 35) Negishi A, Gilyan A, Kreplak L, Lim L-T, Gillis TE, and Fudge DS. (2009). **Renewable materials from intermediate filament proteins.** Advanced Foods and Materials Network Annual Scientific Conference, Guelph.
- 34) Korte, F.S., Regnier M. and Gillis T.E. **Influence of acidic pH on the rate of force development in cardiac muscle.** Annual Biophysical Society Meeting, Boston, MA Biophysical Journal: Supplement, 2009
- 33) Negishi A, Gilyan A, Kreplak L Lim L-T, Gillis T.E. and Fudge DS (2009). **Exploring the potential of intermediate filament protein-based materials.** Polymerix 2009, Rennes, France.
- 32) Kirkpatrick, K.P and Gillis, T.E **Identification and characterization of cardiac troponin I from the trout heart,** Annual Biophysical Society Meeting, Boston, MA Biophysical Journal: Supplement, 2009
- 31) Miller, S.C., Wright, P.A., and Gillis, T.E. **Oxygen Concentration in the Water Boundary Layer Next to Rainbow Trout (*Oncorhynchus mykiss*) Embryos is Influenced by Hypoxia Exposure Time, Metabolic Rate, and Water Flow.** Canadian Society of Zoologists Annual Meeting, University of Toronto Scarborough, On, 2009.
- 30) Kirkpatrick, K.P., Robertson, A., Klaiman, J.M. Polack, U, Gillis, T.E. **Cloning and Characterization of Trout Cardiac Troponin.** Canadian Society of Zoologists Annual Meeting, University of Toronto Scarborough, On, 2009
- 29) Klaiman J. and Gillis, T.E. **The Effect of Temperature Acclimation on the Activity and Ca²⁺ Sensitivity of Trout Cardiac Actin-Myosin ATPase.** Canadian Society of Zoologists Annual Meeting, University of Toronto Scarborough On, 2009.
- 28) Miller, S.C., Wright, P.A., and Gillis, T.E. **Ontogeny of the hypoxia response in rainbow trout (*Oncorhynchus mykiss*) embryos.** Comparative Physiology Workshop, Rice Lake On, 2009
- 27) Robertson A, Kirkpatrick, K.P., Robertson, A., Klaiman, J.M. Polack, U., Gillis, T.E. **Cloning and characterization of trout cardiac troponin I.** Comparative Physiology Workshop, Rice Lake On, 2009
- 26) Klaiman J. and Gillis, T.E. **Characterizing the cardiac proteome of rainbow trout during cold acclimation,** Canadian Society of Zoologists Annual Meeting, Halifax, NS, 2008.
- 25) Kirkpatrick, K.P and Gillis, T.E. **Identification and functional characterization of the troponin complex in trout heart** Canadian Society of Zoologists Annual Meeting, Halifax, NS, 2008
- 24) Gillis, T.E. and C. R., Marshall. **Functional and evolutionary relationships of troponin C in striated muscle.** International Congress of Comparative Physiology and Biochemistry, Salvador, Brazil, 2007

Published Meeting Abstracts continued

- 23) Lulham, T. and Gillis, T.E. **Characterizing changes in protein expression in the trout heart using 2-D DIGE.** International Congress of Comparative Physiology and Biochemistry, Salvador, Brazil, 2007
- 22) Kirkpatrick, K.P and Gillis, T.E. **Cloning and sequence comparison of troponin I and troponin T from the trout heart.** International Congress of Comparative Physiology and Biochemistry, Salvador, Brazil, 2007
- 21) Kirkpatrick, K.P. and Gillis, T.E. **Cloning and sequence comparison of troponin I and troponin T from the trout heart.** Canadian Society of Zoologists Annual Meeting, Montreal, QC, 2007
- 20) Kreutziger, K, Gillis, T.E., Flint, G. et al. **Effects of EMD 57033 on cardiac contractile mechanics and kinetics,** February 2006, Annual Biophysical Society Meeting, Salt Lake City, Utah *Biophysical Journal: Supplement*, 2006
- 19) Gillis, T.E., Martyn, D.A., Regnier, M. **Altering the kinetics of cardiac activation through manipulating the interactions between cardiac troponin C and cardiac troponin I,** April 2005. San Diego, CA. *FASEB Journal*. Supplement (2005).
- 18) Gillis, T.E., Kreutziger, K.L., Clemmens, E.W., Rivera, A.J., Tikunova, S.B., Davis, J.P., Regnier, M. **Cardiac vs skeletal muscle: Differences in thin filament regulation of force development.** February 2005. Long Beach, CA. *Biophysical Journal: Supplement* (2005)
- 17) Gillis, T.E., Liang, B., Chung, F., & Tibbits, G.F. **Increasing mammalian cardiac myocyte contractility with residues identified in trout cardiac troponin C.** February 2005. Long Beach, CA. *Biophysical Journal: Supplement* (2005).
- 16) Kreutziger, K.L., Gillis, T.E., Tikunova, S., Regnier, M. **Effects of TnC with increased Ca²⁺ affinity on cooperative activation and force kinetics in skeletal muscle.** February 2004. Baltimore, MD. *Biophysical Journal: Supplement* (2004).
- 15) Gillis, T.E., & Tibbits, G.F. **Sequence manipulations of cardiac troponin C that increase Ca²⁺ affinity.** Annual Biophysical Society Meeting. March, 2003. San Antonio, TX. *Biophysical Journal: Supplement* (2003).
- 14) Blumenschein, T.M.A., Gillis, T.E., Tibbits, G.F. & Sykes, B.D. **Effects of temperature on protein structure: Trout troponin C.** Annual Biophysical Society Meeting. March, 2003. San Antonio, TX. *Biophysical Journal: Supplement* (2003).
- 13) Blumenschein, T.M.A., Gillis, T.E., Tibbits, G.F. & Sykes, B.D. **Structure of trout cardiac troponin C at 30 and 7 °C.** International Conference on Magnetic Resonance in Biological Systems. August, 2002. Toronto, ON. Published in conference proceedings.
- 12) Gillis, T.E., Moyes, C.D., & Tibbits, G.F. **Sequence manipulations of cardiac troponin C that allow cardiac function at low temperatures in teleost fishes.** The American Physiological Society Sponsored Meeting: The Power of Comparative Physiology Evolution, Integration and Application. August, 2002. San Diego, CA.
- 11) Gillis, T.E., & Tibbits, G.F. **Salmonid and icefish cardiac troponin C: A study in molecular evolution.** International Congress on the Biology of Fish Vancouver, BC. July, 2002. Published in conference proceedings.
- 10) Gillis, T.E., & Tibbits, G.F. **A fishy tale of molecular adaptation; the story of trout and icefish cardiac troponin C.** Canadian Society of Zoologists Annual Meeting. Leathbridge, AB. May, 2002. Published in conference proceedings

Published Meeting Abstracts continued

- 9) Gillis, T.E., Blumenschein, T.M.A., Sykes, B.D., & Tibbits, G.F. **Site I binds Ca²⁺ in trout cardiac troponin C.** Annual Biophysical Society Meeting. March, 2002. San Francisco, CA. *Biophysical Journal*. 82 (1): 1886 (2002)
- 8) Blumenschein, T.M.A., Gillis, T.E., Tibbits, G.F., & Sykes, B.D. **Effect of temperature on trout cardiac troponin C structure.** Annual Biophysical Society Meeting. March, 2002. San Francisco, CA. *Biophysical Journal*. 82 (1): 1887 (2002)
- 7) Gillis, T.E., & Tibbits, G.F. **Beating the cold, the functional evolution of troponin C in teleost fish.** Society of Experimental Biology Annual Meeting. April, 2001. Canterbury, England. Published in conference proceedings.
- 6) Gillis, T.E., and Tibbits, G.F. **A molecular investigation of thermal adaptation in the salmonid heart, the role of troponin C.** Canadian Society of Zoologists Annual Meeting. May, 2000. St. Andrews, NB. Published in conference proceedings.
- 5) Gillis, T.E., Marshall, C.R., Xue, X.H., Borgford, T.J., Tibbits, G.F. **Temperature and pH effects on Ca²⁺ affinity in mammalian and salmonid cardiac troponin C.** Annual Biophysical Society Meeting. April, 2000. New Orleans, LA. *Biophysical Journal*. 78 (1): 2161 (2000)
- 4) Gillis, T.E., Marshall, C.R., Xue, X.H., Borgford, T.J., Tibbits, G.F. **Temperature and pH effects on Ca²⁺ affinity in mammalian and salmonid cardiac troponin C.** International Conference of Comparative Biochemistry and Physiology. August, 1999. Calgary, AB. Published in conference proceedings.
- 3) Gillis, T.E., Stuart, J.S., and Ballantyne, J.S. **Estivation in the terrestrial snail, *Cepaea nemoralis*, induces compositional changes in mitochondrial membranes.** Canadian Society of Zoologists Annual Meeting. May, 1997. London, ON
- 2) Gillis, T.E., and Ballantyne, J.S. **The influences of sub-zero temperatures on mitochondrial membrane composition in marine bivalve mollusks.** Experimental Biology. April, 1997. New Orleans, LA. *FASEB Journal*. 11 (3): 161 (1997).
- 1) Gillis, T.E., & Ballantyne, J.S. **Thermal adaptation of mitochondrial membranes in Arctic marine bivalves.** Canadian Society of Zoologists Annual Meeting. May, 1996. St Johns, NF. Published in conference proceedings.

COURSES TAUGHT***Undergraduate***

- **Undergraduate Thesis in Integrative Biology**, (400 level), 2014-2015 (30 students)
- **Adaptational Physiology**, (400 level) 2017, (80 students)
- **Comparative Animal Physiology I**, (300 level), 2014, 2015, 2016, 2017 (~230 students/offering). *Course taken by Pre-veterinary and BSc students*
- **Developmental Animal Biology**, (300 level), 2006, 2007, 2008, 2009, 2013, 2016, 2018 (~200 students/offering). *Required course for Pre-veterinary and BSc students*
- **Marine Biology and Oceanography Field Course**. (400 level), 2009, 2010, 2011, 2012 (20 students/offering)
- **Lab Studies in Ichthyology**. (400 level), 2008, 2009, 2010, 2011 (~50 students/offering)
- **Lab Studies in Herpetology**. (300 level), 2008 (~50 students/offering)
- **Integrative Vertebrate Biology**. (300 level), 2008, 2009, 2010, 2011 (~100 students/offering)

COURSES TAUGHT

Graduate

- **Advances in Comparative Animal Physiology**, 2015
- **Graduate Biophysics**, University of Guelph, 2010
- **Current Topics in Cardiovascular Research**, University of Guelph, 2009, 2010,
- **Cardiac Physiology**, University of Washington, School of Medicine. 2004.

COURSE DESIGN AND CURRICULUM DEVELOPMENT

- **Comparative Animal Physiology I and Comparative Animal Physiology 2**, 300 level, Course redevelopment 2014
- **Lab studies in Comparative Animal Physiology I and Comparative Animal Physiology 2**, 300 level, Course creation 2014
- **Capstone course in Marine and Fresh Water Biology**, 400 level. Course creation 2013
- **Animal Developmental Biology**, 300 level. Lab redevelopment, 2010
- **Integrative Vertebrate Biology**, 400 level. Course creation, 2008
- **Lab Studies in Ichthyology**, 400 level. Course creation, 2008
- **Lab Studies in Ornithology**, 400 level. Course creation, 2008
- **Lab Studies in Mammology**, 400 level. Course creation, 2008
- **Lab Studies in Herpetology**, 400 level. Course creation, 2008

PUBLICATIONS FROM TEACHING

Papers published in “Studies by Undergraduate Researches at Guelph”.

This work was completed on the Marine Field Course taught by T.E. Gillis

- 6) Melanie Barry **The effect of abiotic and biotic factors on the size distribution and abundance of the blue mussel (*Mytilus edulis*) in tide pools on a rocky intertidal shore** SURG Vol. 6, No.2, Winter 2013, 78-83.
- 5) Kaitlyn Wagner **The effects of an autotomy event on the protein concentration of intact arms and respiration rate of *Asterias vulgaris*** SURG Vol. 6, No.2, Winter 2013, 84-87.
- 4) Shannon Ferraro **Effects of salinity on the fertilization success and early larval development of the sand dollar *Echinarachnius parma*** SURG Vol.6, No.2, Winter 2013, 88-92.
- 3) Olivia Knight. **Acute toxicity of silver nitrate to *in vitro* fertilization of the sand dollar, *Echinarachnius parma*.** SURG Vol. 4, No.2, Winter 2011, 71-74
- 2) Jess Johansson. **An epibiont mediated increase in the susceptibility of *Mytilus edulis* to predation by *Nucella lapillus*.** SURG Vol. 4, No. 1, Fall 2010, 65-71
- 1) Katie Bell. **Effects of aerial exposure on size of the common barnacle (*Semibalanus balanoides*), an inhabitant of the intertidal zone in St. Andrews, New Brunswick.** SURG. Vol. 3, No. 2, Winter 2010, 52-58

PROFESSIONAL ACTIVITIES***International Positions and Commitments***

Editorial Board Member, *Comparative Biochemistry and Physiology - Part B: Biochemistry & Molecular Biology* 2013-

Symposium Organizer,

-“*Consequences of physiological stressors on the development and function of the cardiovascular system*” 2017, **Experimental Biology**, Chicago, Illinois, USA

-“*Emerging models for studying the cardiovascular system*”. 2015

Society of Experimental Biology Annual Meeting Prague, Czech Republic

-“*Remodeling of physiological systems in response to environmental change*”. 2013

Society of Experimental Biology Annual Meeting, Valencia, Spain

-“*Structural modulators of muscle contraction affecting animal locomotion and behavior*”. 2012 **Society of Experimental Biology Annual Meeting** Salzburg, Austria

-“*Keeping pace in a changing environment, the limits of regulatory control*” 2010

International Congress on the Biology of Fish, Barcelona Spain

- “*Adaptational capacity of striated muscle*” 2007

International Congress of Comparative Physiology and Biochemistry. Salvador, Brazil

Guest Editor of special issue (Volume 44, 2014) of *Journal of Thermal Biology* based on symposium organized at the 2013 Society of Experimental Biology Annual Meeting.

Chair of the International Relations Committee on the Physiological Genomics Steering Committee of the American Physiological Society. **Elected position** 2011-2014

Grant Reviewer for National Science Foundation (US) and NSERC, 2005-

Manuscript reviewer for: Nature Climate Change, Journal of Physiology, Journal of Molecular and Cellular Cardiology, Archives of Biochemistry and Biophysics, Journal of Experimental Biology, PloS One, Journal of Fish Biology, Genomics, Lipids, Comparative Physiology and Biochemistry B. Journal of Experimental Zoology, Journal of Comparative Physiology -B.

National Positions and Commitments

Invited Member of Expert Panel that provided advice regarding standard toxicity methods to evaluate biological effects of heavy oil on aquatic ecosystems for National Contaminants Advisory Group, Fisheries and Ocean (Canada). Ottawa, February 2017.

This work resulted in a [published research report](#).

External Examiner – MSc Thesis – Ms. Sarita Pellowe, Memorial University, 2016

Chair of Local Organizing Committee for the 2013 Annual meeting of the Canadian Society of Zoologists held at the University of Guelph. 433 delegates attended the meeting. 2012-2013

Chair of an Ontario Graduate Scholarship Award Panel in general biology. 2010

Member of Users Committee for the Huntsman Marine Science Center, St. Andrews, NB. 2009-2012

Conference co-organizer, 19th Annual Comparative Physiology Workshop. Rice Lake Ontario. ~100 participants. 2009

Councilor - Canadian Society of Zoologist. **Elected position** on council representing member interests. 2007- 2010

University Positions and Commitments

Faculty Lead of Institutional Quality Assurance Process (IQAP) committee for the Department of Integrative Biology. Tasked with authoring a report, mandated by the Province, that critically evaluates all Undergraduate and Graduate Programs offered by the Department. 2017

Chair of the College of Biological Sciences Undergraduate Awards Committee 2016-2018

Elected Member University of Guelph Senate 2016-2019

Member of the strategic planning committee for the College of Biological Sciences, University of Guelph 2016

Member of Graduate Studies and Awards committee, Integrative Biology, 2015-2016

Member of search committee for Departmental Chair, Integrative Biology, 2015

Chair of Physiology curriculum subcommittee 2014 - 2015

Member of Tenure and Promotion committee 2014 - 2015

Member of Undergraduate Curriculum Committee 2011-2012

Chair of Seminar Committee, Department of Integrative Biology. 2007-2012

Founding Member of the Center of Cardiovascular Research at Guelph.

<http://www.uoguelph.ca/CardiovascularResearch/index.html>

Member of Chairs Advisory Committee, Integrative Biology 2010 - 2016

Member of Graduate Teaching Assistantship assignment committee. 2010 - 2012

Reviewer of animal utilization protocols for academic/methodological merit for the Animal Care Committee. 2009-

Co-organizer of the Comparative Physiology Series in the Department of Integrative Biology 2009 - 2013

Co-creator, with Dr. Doug Fudge, of the Comparative Physiology website at the University of Guelph. <http://www.comparativephys.ca/>

Member of hiring committee for a faculty position in Functional Genomics in the Department of Integrative Biology. 2007

GRADUATE STUDENT DEFENSES AND PHD QUALIFYING EXAMS

Student	Exam and Role	Year	Supervisor/Department
Elias Taylor	MSc - examiner	2017	
Lauren Gatrell	MSc – committee member	2017	Gillis (IB)
Teagan Williams	PhD - examiner	2017	Bernier (IB)
Kathy Jacyniak	PhD Qualifying exam – external examiner	2017	Vickaryous, Ontario Veterinary College
Quentin Heffell	MSc- examiner	2016	Wright (IB)
Shannon Ferraro	MSc- examiner	2015	Fudge (IB)
Nicholas Edmunds	MSc - Chair	2015	McCann
Zackary Harris	MSc- Chair	2015	Husband/McAdam
Elizabeth Johnston	PhD Candidacy Exam -	2015	Gillis
Elizabeth Sears	MSc- committee member	2014	Gillis
Jordan Klaiman	PhD- committee member	2014	Gillis
Adrienne McLean	MSc -Chair	2014	McLaughlin
Lauren Jarvis	MSc - Chair	2014	McCann
Marcia Chaisson	PhD – Exam committee Chair	2013	Ferguson/ Integrative

CURRICULUM VITAE

Todd E. Gillis, PhD

			Biology (IB)
Ashley Miller	PhD -Departmental Examiner	2013	Heyland/ IB
Peter McKay	MSc- Exam Committee Chair	2012	Griswold/IB
Marissa Darhi	MSc – Exam committee member	2012	Dawson/Molecular and Cellular Biology (MCB)
Steve Cho	MSc – Departmental examiner	2012	Bernier/IB
Fenghua Yang	PhD – Exam committee member	2012	Pyle/Biomedical Science (Biomed)
Mellisa Robillard	PhD – Exam committee Chair	2012	McLaughlin/IB
Dave Irwin	MSc – Exam committee member	2011	Van Der Kraak/IB
Julie Vanden Byllaardt	MSc – Exam committee Chair	2011	Ackerman/IB
Tegan Williams	PhD qualifying exam - Examiner	2011	Bernier/IB
Silvanna Miller	MSc – Exam committee member	2010	Gillis/Wright
Noah Shapiro	MSc – Exam committee member	2010	Ballantyne/IB
Laura Bedouin	PhD – Exam committee Chair	2010	Nudds/IB
Ashley Miller	PhD Qualifying Exam - Departmental examiner	2010	Heyland/IB
Maureen Mundia	MSc – Exam committee member	2010	Dawson/MCB
Jordan Klaiman	PhD Qualifying Exam – exam	2009	Gillis/IB
Noel Quin	PhD – Exam committee Chair	2009	Ackerman/IB
Kelly Kirkpatrick	MSc – Exam committee member	2009	Gillis/IB
Ryan Demers	MSc – Exam committee member	2009	Dawson/MCB
Anna Loncar	MSc – Exam committee member	2009	Dawson/MCB
Ursula Polack	MSc – Exam committee member	2009	Emes/Tetlow/MCB
Christina Simpson	MSc – Exam committee member	2008	Van Der Kraak/IB
Feng Hua Yang	PhD Qualifying Exam - committee member	2008	Pyle/ Biomed
Sarah Pinto	MSc – Exam committee Chair	2008	MacDougall
Eugene Wong	MSc – Exam committee Chair	2008	Hanner/Gregory
See Ling Liew	MSc – External Examiner	2008	Kirby/Biomed
Curtis McKague,	MSc – Exam committee Chair	2007	Fryxell/IB
Gustavo Enrique	MSc – External Examiner	2007	Pyle/Biomed
Natasha Frick	PhD – Departmental Examiner	2007	Ballantyne/IB
Collette Ward	MSc – Exam committee Chair	2007	McCann/IB
Jeremy Rouse	MSc – Exam committee Chair	2006	Brooks/IB
Cosima Ciuhandu	MSc – Departmental Examiner	2006	Wright-Stevens/IB
Pam Wesley	MSc – Exam committee Chair	2006	Brooks/IB
Barry Madison	PhD - Departmental Examiner	2006	Bernier /IB
Angela Eykelbosh	MSc - Departmental Examiner	2005	Vanderkraak/IB

MEMBERSHIP IN PROFESSIONAL ASSOCIATIONS

- Society of Experimental Biology
- American Physiological Society
- Biophysical Society
- Canadian Society of Zoologists

DELAYS

Parental leave January 1-June 1, 2010

CURRENT COLLABORATIONS

Dr. S.L. Alderman	Guelph	Influence of bitumen exposure on development and cardiac function in sockeye salmon
Dr. N.J. Bernier	Guelph	Role of CRF in protecting the trout heart from hypoxia exposure
Dr. Dane Crossely	North Texas	Proteomic studies of hypoxia induced cardiac hypertrophy in alligators.
Dr. A.P. Farrell,	UBC	Regulatory pathways of cardiac function and the influence of bitumen exposure on cardiac function in sockeye salmon
Dr. Chris Kennedy	Simon Fraser University	Characterizing the influence of bitumen exposure on cardiac develop and function in early life stages of sockeye salmon
Dr. W.G. Pyle	Guelph	Role of protein phosphorylation in regulating cardiac function
Dr. Jeff Richards	UBC	Regulatory control of the hagfish heart during anoxia exposure
Dr. G.R. Scott	McMaster	Functional studies of diaphragm muscle for high altitude deer mice
Dr. H.A. Shiels	Manchester	Cardiac hypertrophy in trout
Dr. J. Simpson	Guelph	Changes in the functional properties of the mouse diaphragm during heart failure
Dr. M. Vornanen	University of Eastern Finland	Influence of cold acclimation on the expression and phosphorylation of SERCA and phospholamban in the hearts of the burbot and crucean carp

REFERENCES

Dr. A.P. Farrell

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Dr. G.F. Tibbits,

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Department Chair and Professor
Department of Biomedical Physiology and Kinesiology
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Burnaby BC
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