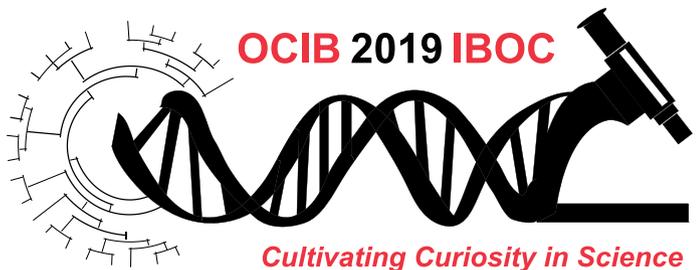


16th
ANNUAL

Ottawa-Carleton Institute of Biology
Graduate Student Symposium
Cultivating Curiosity in Science



Welcome to the 16th annual OCIB Symposium!

OCIB is a collaboration between the Biology Departments of both the University of Ottawa and Carleton University. Each spring, graduate students, undergraduate students, professors, and researchers from diverse fields across biology gather at the annual one-day OCIB Symposium to share their unique perspectives and research experiences.

This year's theme is “**Cultivating Curiosity in Science**”. This encompassing theme highlights fundamental research that revolutionizes our understanding of the field of biology while providing equal focus to cutting-edge studies that apply this understanding towards solving today's challenges. This year's theme gives us an opportunity to include speakers from diverse research areas.

Thank you all for joining us!

Sincerely,

Your 2019 OCIB Co-chairs,
Hannah Davis and Jordanna Bergman (Carleton University)
Andréanne Bouchard and Mary Ann Perron (University of Ottawa)

Schedule

7:00-8:30	Registration (Atrium)	
8:30-8:45	Opening Remarks (Theatre)	
8:45-9:45	Keynote (Theatre): DR. KATHLEEN WEATHERS	
9:45-10:00	Coffee Break (Atrium) / Poster Set-Up (Conference Room)	
	Animal Behaviour and Ecology (Theatre) Session Chair: SOFIA PERIN	Genetics and Physiology (Atrium) Session Chair: MATTHEW SPETKA
10:00-10:20	LI YUN	LIAM EATON
10:20-10:40	LAUREN EFFORD	MUSTAFA HAMID
10:40-11:00	KARL LOEFFLER-HENRY	AAKRITI GUPTA
11:00-11:20	CARL POSSÉMÉ	LORRIE BOISVERT
11:20-11:40	IAN DEWAN	HANANE HADJ-MOUSSA
11:45-12:30	Lunch / Poster Set-Up (Atrium / Conference Room)	
12:30-13:30	Poster session and sponsor exhibition (Conference room)	
13:30-14:15	3 Minute Thesis Competition (Theatre)	
14:15-14:30	Coffee Break (Atrium)	
	Agriculture and Microbiology (Theatre) Session Chair: VISHAL SAXENA	Human Health (Atrium) Session Chair: MATTHEW SPETKA
14:30-14:50	TIAH LEE	JOSHUA IVARE
14:50-15:10	AMANDA CARROLL	ZACHARY DWYER
15:10-15:30	THOMAS WITTE	ALEXIA KIRBY
15:30-15:50	BABUR JAHDID	TASNIA SHARIN
15:50-16:10	GHAZALEH NOURPARVAR	YEN TRAN
16:10-16:30	DANIEL BURNSIDE	KATIE NOAH
16:30-17:30	Networking Session at Ollie's	
17:30-18:30	Pub Talk: DR. DOMINIQUE ROCHE	
18:30-19:00	Awards and Closing Ceremony	

Keynote

Dr. Kathleen Weathers Cary Institute of Ecosystem Studies

weathersk@caryinstitute.org



Dr. Kathleen C. Weathers is the G. Evelyn Hutchinson Chair in Ecology and Senior Scientist at the Cary Institute of Ecosystem Studies in Millbrook, New York, USA. She received her master's degree from Yale University and Ph.D. from Rutgers University. Dr. Weathers will serve as the Ecological Society of America's (ESA) President in 2020-2021. She is co-chair Emerita (2010-2019) of the grassroots Global Lakes Ecological Observatory Network (GLEON; www.gleon.org), and an elected Fellow of the American Association for the Advancement of Science (AAAS) and the Ecological Society of America (ESA). Weathers investigates ecosystems around the world focusing on carbon, nitrogen, sulfur, and other elemental cycling. Much of her research is focused on air-land-water interactions and understanding how biology influences

geochemical cycles (e.g., how lake cyanobacteria affect nutrient cycles, trees influence nitrogen cycling, or how fog and ecosystems interact) at the spatial scale of landscapes and in the face of global environmental change. She is the author of more than 140 peer reviewed papers and books on ecosystem science and landscape heterogeneity. Dr. Weathers also works at the interface of science and citizen science focusing on lakes and watersheds. She and colleagues have co-developed, with citizen scientists, cyberinfrastructure, and an app for worldwide lake data collection (www.lakeobserver.org). She is volunteer research director for the Lake Sunapee Protective Association (an outreach and education organization: www.lspa.org) and chair of their scientific advisory committee.

Keynote

Dr. Kathleen Weathers

Cary Institute of Ecosystem Studies

Keynote Title: “Ecological Puzzles and a Passion for Lakes”

Freshwater ecosystems have long inspired human interest, passion, and investment. They are essential to our economic, environmental, and personal well being. Freshwater lakes around the globe, however, are degrading. Especially concerning are toxic cyanobacterial blooms which are on the rise worldwide. Until recently, we thought that cyanobacterial blooms were prevalent only in lakes with high nutrients. However, in the early 2000s in northern New England, USA, citizens began to notice cyanobacterial blooms in clear, nutrient-poor lakes—precisely the ecosystems where scientists would not have predicted they would occur. Over the past 15 years, our research, in collaboration with a global, grassroots network of scientists and citizen scientists, has begun to piece together the puzzle of what, when, where, why, and how of surprising cyanobacterial blooms happen in nutrient-poor, clear-water lakes. The research stemmed from local curiosity and has global implications; it is a story of a 21st century experiment involving scientists, citizens, cyanobacteria, sensors, and socioecological systems.

Pub Talk

Dr. Dominique Roche

Carleton University

 @dom_roche



Dom Roche is a postdoctoral researcher in the Fish Ecology and Conservation Physiology Lab at Carleton University and an active member of the open science community. He is an ambassador for the data repository Figshare and the Center for Open Science, and publishes regularly open science-related topics, namely on public data sharing. His work on open data has focused on increasing awareness and facilitating dialogue among scientists, journal editors and the public with respect to the importance of archiving primary research data while highlighting areas of current practice in need of improvement. Read a short profile piece on Dom by Figshare here:

<https://doi.org/10.6084/m9.figshare.6792365.v1>

Pub Talk Title: “In science we (used to) trust”

Science is the best tool we have to understand the natural world. Unfortunately, scientific journals, funding agencies and universities are increasingly emphasizing novelty and sensationalism over scientific rigour and reproducibility in the research they support. This focus has resulted in what some authors call ‘the natural selection of bad science’ and a reproducibility crisis that touches many prominent fields of research. Ecology and evolution are not immune to the problem of irreproducible results: studies have shown that ecologists and evolutionary biologists sometimes (unknowingly) engage in poor research practices, and that well known textbook examples fail the test of independent replication. Luckily, research practices and incentive structures are changing in academia. For example, the San Francisco Declaration on Research Assessment (DORA), which has over 1.3K signatory organisations, aims to improve how research outputs are evaluated by funding agencies and academic institutions. In this talk, I will discuss the underlying causes of irreproducible research and outline ongoing, exciting initiatives to promote collaboration, transparency and openness in science, including the Transparency and Openness Promotion (TOP) guidelines. It’s time we get curious about enabling a new research culture that benefits scientists *and* science!

Oral presentation titles

Animal Behaviour and Ecology (Theatre)

10:00

LI YUN

Adviser: Dr. Howard Rundle (University of Ottawa)

“The effect of mating environment on the evolution of male harm”

10:20

LAUREN EFFORD

Adviser: Dr. Tom Sherratt (Carleton University)

“Learning to make a binary food choice with *Gryllus assimilis*”

10:40

KARL LOEFFLER-HENRY

Adviser: Dr. Tom Sherratt (Carleton University)

“The evolution of flash displays and other hidden signals as an antipredation mechanism”

11:00

CARL POSSÉMIÉ

Adviser: Dr. Steven Cooke (Carleton University)

“The impacts of boat noise on a prey species: the bluegill sunfish *Lepomis macrochirus*”

11:20

IAN DEWAN

Adviser: Dr. Tom Sherratt (Carleton University)

“Run Away!: The adaptive advantage of being startled”

Oral presentation titles

Genetics and Physiology (Atrium)

10:00

LIAM EATON

Adviser: Dr. Matthew Pamerter (University of Ottawa)

“Reactive Oxygen Species and Nitric Oxide during Acute Hypoxia in Cortical Neurons of Naked Mole Rats”

10:20

MUSTAFA HAMID

Adviser: Dr. Marie-Andrée Akimenko (University of Ottawa)

“Complementary contributions of transcription factors during zebrafish pectoral fin development”

10:40

AAKRITI GUPTA

Adviser: Dr. Kenneth Storey (Carleton University)

“OCT4 triggers a NRF2-mediated antioxidant response in anoxia-tolerant frogs”

11:00

LORRIE BOISVERT

Adviser: Dr. Paul White (University of Ottawa)

“Tackling ToxTracker data: developing a data analysis pipeline to facilitate genotoxicity screening”

11:20

HANANE HADJ-MOUSSA

Adviser: Dr. Kenneth Storey (Carleton University)

“Genes of the undead: Hibernators and zombies display different gene expression profiles”

Oral presentation titles

Agriculture and Microbiology (Theatre)

14:30

TIAH LEE

Adviser: Dr. Cory Harris (University of Ottawa)

“Metabolomics comparison of vaporized cannabis flower and oils”

14:50

AMANDA CARROLL

Adviser: Dr. Alex Wong (Carleton University)

“Plasmid-Host Interactions in Antibiotic Resistant *E. coli*”

15:10

THOMAS WITTE

Adviser: Dr. Myron Smith (Carleton University)

“New molecules produced during vegetative incompatibility in the chestnut blight fungus”

15:30

BABUR JAHID

Adviser: Dr. Bahram Samanfar (Carleton University)

“Identification of differentially-expressed genes responsible for protein content in soybeans”

15:50

HAZALEH NOURPARVAR

Adviser: Dr. Myron Smith (Carleton University)

“Escape from het-6 incompatibility in *N. crassa*”

16:10

DANIEL BURNSIDE

Adviser: Dr. Ashkan Golshani (Carleton University)

“Designing synthetic binding proteins from random amino acid sequences”

Oral presentation titles

Human Health (Atrium)

14:30

JOSHUA IVARE

Adviser: Dr. Marie-Andrée Akimenko (University of Ottawa)

“Characterization of Zebrafish *lrrc56* Mutants to Model a Rare Human Genetic Disease”

14:50

ZACHARY DWYER

Adviser: Dr. Shawn Hayley (Carleton University)

“Leucine rich repeat kinase-2 (LRRK2) modulates microglial phenotype and neurodegeneration”

15:10

ALEXIA KIRBY

Adviser: Dr. Adam Shuhendler (University of Ottawa)

“Mapping aldehydes as bio-markers of disease using Positron Emission Tomography”

15:30

TASNIA SHARIN

Advisers: Drs. Laurie Chan, Jason O'Brien (University of Ottawa)

“Screening BPA Replacements: Cytotoxicity and mRNA Expression in Chicken Embryo Hepatocytes”

15:50

YEN TRAN

Adviser: Dr. Carole Yauk (Carleton University)

“*In silico* genotoxicity screening: so which compounds are DNA-damaging?”

16:10

KATIE NOAH

Adviser: Dr. Alex Wong (Carleton University)

“GWAS of *P. aeruginosa* in cystic fibrosis patients”

Posters

- 1 **Bugaldian, M.** “Validation of a questionnaire to assess feeding and gastrointestinal (GI) problems in rett syndrome”
- 2 **Xiong, K.** “The role of clade III TGA factors in BLADE-ON-PETIOLE-dependent regulation of plant development”
- 3 **Jarvis, W.** “How do genetic correlations constrain evolution?”
- 4 **Angell, C.** “Natural perfume: How do antler flies choose their mates?”
- 5 **Hua, K.** “Molecular changes during dopaminergic neuron regeneration in adult zebrafish”
- 6 **Keshinro, B.** “Structural analysis to deduce actinodin role during zebrafish fin development”
- 7 **Tran Nguyen, T.** “Assessment of migratory bird density and stopover habitat quality using autonomous technologies”
- 8 **Chopra, A.** “Protein quantification via UV-dependent reaction of 2,2,2-trichloroethanol with aromatic residues”
- 9 **Rondot, A.** “Mobilization of energy reserves during bumblebee queens overwintering period”
- 10 **Kalyn, M.** “Investigating locomotor defects in a neurotoxin-induced Parkinson’s Disease zebrafish model”
- 11 **Kadhom, R.** “Characterization of actinodin1 and actinodin2 loss-of-function zebrafish mutants”
- 12 **Merhi, R.** “Long-term metabolic consequences of chronic TCDD exposure during pregnancy”
- 13 **Melanson, R.** “Undergraduate science students’ research attitudes influence on future intentions for research usage”
- 14 **Huynh, K.** “Absence of plasticity in skeletal muscle mitochondrial functions following acute *in vivo* hypoxia”
- 15 **Gavel, M.** “Impact of neonicotinoid pesticides on amphibian immune systems and susceptibility to parasites”
- 16 **Torne, S.** “Developmental changes of microglia morphology in naked mole rats (*Heterocephalus glaber*)”
- 17 **Shifman, A.** “The mechanisms of ultra-high precision in an oscillatory neural circuit”
- 18 **Martinez, R.** “Applying omic techniques to unravel distinct pathways of PFOS toxicity in zebrafish eleutheroembryos”
- 19 **Tunnell, J.** “Nitrogenous waste handling and oxygen consumption in amphibious fish *Polypterus senegalus*”
- 20 **Mousavi, R.** “Screening of GABA-producing bacteria isolated from commercial starter cultures”
- 21 **Ananchenko, A.** “Identification of antigens for the development of a subunit vaccine against *A. baumannii*”
- 22 **Wang, T. H.** “Reactive nitrogen species production during reperfusion in the naked mole rat brain”
- 23 **Staykov, E.** “Validation of histone deacetylase inhibitors for the treatment of Type 1 Myotonic Dystrophy”
- 24 **Quigley, H.** “Got Joints? Role of 5’ *hoxa/d* genes in development and regeneration of joints in the zebrafish fins”

Posters

- 25 **Sadowski, M.** "A functional genomics approach for the identification of a candidate gene for the E8 maturity locus in soybean (*Glycine max*)"
- 26 **Rasran, M.** "Impacts of acquired traumatic brain injury (aTBI) on the auditory system"
- 27 **Mack, J.** "Revision, taxonomy and phylogeny of the Hyphomyceteous genus *Hormomyces*"
- 28 **Hajikarimlou, M.** "Lithium chloride toxicity is connected to regulation of gene expression in yeast"
- 29 **Singh, G.** "Mondo A: A key regulator of sugar-induced gene expression in frozen wood frogs *Rana sylvatica*"
- 30 **Takaloo, S.** "Identification and investigation of novel in translation associated genes in yeast"
- 31 **Jiang, T.** "Essential effect of neuropeptidergic signaling on interval timing of male *Drosophila*"
- 32 **Ekeh, O.** "The extent of unhealthy food and beverage sponsorship of children's sports clubs in Ottawa"
- 33 **Touma, K.** "Role of the somatotrophic axis in the metabolic phenotypes of dominant and subordinate fish"
- 34 **Hoyeck, M.** "A link between early-life exposure to environmental pollutants and diabetes risk"
- 35 **Wei, Y.** "Coevolution between gene features and translation machinery in bacteria"
- 36 **Peng, D.** "Distribution of secretoneurin in the brain and pituitary of the zebrafish"
- 37 **Sriranganathan, A.** "Detecting polyphosphorylation as a post-translational modification in mammalian candidate proteins"
- 38 **Fatima, F.** "SNP characterization of a diverse selection of wheat genomes using a high-density SNP array"
- 39 **Tirpan, A.** "Aerial and aquatic visual acuity testing in voluntary mangrove rivulus by optokinetic reflex testing"
- 40 **Fortier, J.** "Stormwater management facility characteristics impacting pollinator abundance and diversity"
- 41 **Reyes, M.** "Lethal and sublethal toxicity of a hindered phenol on early development of *Silurana tropicalis*"
- 42 **Erman, A.** "Biochemical adaptations to dehydration in the African clawed frog, *Xenopus laevis*, skeletal muscle"
- 43 **Nguyen, C.** "Exploring the contribution of heat shock proteins (HSPs) to the hypoxia tolerance of naked mole rats (*Heterocephalus glaber*)"
- 44 **Haji, R.** "Quality of life in patients with thoracic aortic aneurysm"
- 45 **Devereaux, M.** "Giant Zambian mole rats hypoxic and hypercapnic metabolic, ventilatory and thermoregulatory response"
- 46 **Alexeev, K.** "Reversibility of marrow fat accumulation in a rat model of knee flexion contractures."
- 47 **Mattrasingh, D.** "Spontaneous mutation rates and relative fitness of clinical *Escherichia coli* strains"
- 48 **Titkova, N.** "The role of the secretogranin II gene in breeding tubercle and tissue regeneration in male zebrafish"
- 49 **Kostyniuk, D.** "Pck-ing up steam: Widening the salmonid gluconeogenic gene duplication trail"
- 50 **Scholefield, D.** "Using regularized regression to assess behaviours important for student success"

Speed Round Presentations

3-Min Student Theses

Shravan Raghu
Mina Nasr-Sharif
Ryan Pusiak
Keegan Lutek
Kyle Tapp
Jessica Gaudet
Sue Zhang
Ryan Collins

3-Min Professor/Post-Doc Theses

Dr. Hemanta Adkhikary
Dr. Jenny Bruin
Dr. Marina Cvetkovska
Dr. Heather Kharouba

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