

Curriculum vitae

Jan Alexander Mennigen

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EDUCATION AND EMPLOYMENT HISTORY

- **2016-current**
University of Ottawa, Canada
Assistant Professor in Comparative Physiology
The Mennigen lab investigates developmental and transgenerational
- **2014-2016**
University of Texas at Austin, United States
Postdoctoral Fellow
Project: Developmental and transgenerational effects of PCBs on metabolic and reproductive phenotype in the SD rat.
Advisors: Dr. Andrea Gore
- **2011-2013**
Institut National de la Recherche Agronomique (INRA), France
Marie Curie Postdoctoral Fellow
Project: Nutritional regulation and metabolic function of hepatic microRNAs in rainbow trout.
Advisor: Dr. Sandrine Skiba-Cassy
- **2006-2011**
University of Ottawa, Canada
PhD in Biology
PhD Thesis: Serotonin in the neuroendocrine brain of the goldfish, Carassius auratus: Pathways and potential disruption by SSRI pharmaceuticals.
Supervisors: Dr. Vance Trudeau and Dr. Thomas Moon
- **2005-2006**
Universität Stuttgart, Germany
Diploma in Biology (German MSc equivalent)
MSc Thesis: Fluoxetine disrupts the reproductive axis of female goldfish, Carassius auratus.
Supervisor: Dr. Franziska Wollnik
- **2004-2005**
Student exchange at the University of Ottawa, Canada
Supervisor: Dr. Vance Trudeau

- **2000-2004**

Universität Stuttgart, Germany

Prediploma in Biology (German BSc equivalent)

Honours thesis: Development and optimization of an ELISA-based detection assay for TNF α designer cytokines in mouse cancer models.

Supervisor: Dr. Klaus Pfizenmaier

RESEARCH

A. BRIEF RESEARCH NARRATIVE

The Mennigen lab is interested in elucidating molecular (epigenetic) mechanisms which underlie the complex and diverse metabolic and reproductive phenotypes in the large class of teleost fish. A special focus lies on developmental, life-cycle and intra- as well as transgenerational effects. In addition to this comparative and integrative approach ranging from molecular to organismal and population level, our group is also particularly interested in the effects of contaminants on these mechanisms and their metabolic and reproductive physiological consequences. As such, our research not only elucidates novel epigenetic molecular mechanisms in fish comparative physiology at the basic science level, but also has potential for application in fields such as aquaculture, ecotoxicology and human disease.

B. PEER-REVIEWED PUBLICATIONS (33)

supervised and co-supervised students underlined

(33) Altmieme Z, Jubouri M, Touma K, Coté G, Fonseca M, Julian T, **Mennigen JA**. A reproductive role for the nonapeptides vasotocin and isotocin in male zebrafish (*Danio rerio*). *Comparative Biochemistry and Physiology, Part B*, in press.

(32) Wu Y, Deng M, Huang J, Jin Y, Yang H, **Mennigen JA**, Liu Y, Cao Q, Tu W. 2019. Acute exposure to environmentally relevant concentrations of Chinese PFOS alternative F-53B inhibits the antioxidant function of zebrafish larvae. *Chemosphere*. 235:945-951. doi: 10.1016/j.chemosphere.2019.07.016

(31) Kostyniuk DJ, Marandel L, Jubouri M, Dias K, Panserat S, Zhang D, de Souza RF, Martyniuk CJ, **Mennigen JA**. 2019. Profiling the rainbow trout hepatic miRNAome under diet-induced hyperglycemia, submitted to *Physiological Genomics*. doi: 10.1152/physiolgenomics.00032.2019.

(30) Kostyniuk DJ, Zhang D, Martyniuk CJ, Gilmour KM, **Mennigen JA**. 2019. Social status regulates the hepatic miRNAome in rainbow trout: Implications for posttranscriptional regulation of metabolic pathways *PLoS One*. 14(6):e0217978. doi: 10.1371/journal.pone.0217978.

(29) Marandel L, Kostyniuk DJ, Best C, Forbes JLI, Liu J, Panserat S, **Mennigen JA**. 2019. Pck-ing up steam: Widening the salmonid gluconeogenic gene duplication trail. *Gene*. 698:129-140. doi: 10.1016/j.gene.2019.02.079.

(28) Martinez R, Vera-Chang MN, Haddad M, Zon J, Navarro-Martin L, Trudeau VL, **Mennigen JA**. 2019. Developmental fluoxetine exposure in zebrafish reduces offspring basal cortisol concentration via life stage-dependent maternal transmission. *PLoS One*. 14(2):e0212577. doi: 10.1371/journal.pone.0212577.

- (27) Forbes JLI, Kostyniuk DJ, **Mennigen JA**, Weber JM. 2019. Unexpected effect of insulin on glucose disposal explains glucose intolerance of rainbow trout. *American Journal of Physiology Regulatory and Integrative Comparative Physiology*. 316(4):R387-R394. doi: 10.1152/ajpregu.00344.2018.
- (26) Kostyniuk DJ, Culbert BM, **Mennigen JA**, Gilmour KM, 2018. Social status affects lipid metabolism in rainbow trout, *Oncorhynchus mykiss*. *American Journal of Physiology Regulatory and Integrative Comparative Physiology*. 315:241-255. doi:10.1152/ajpregu.00402.2017.
- (25) Best C, Ikert H, Kostyniuk DJ, Navarro-Martin L, Craig PM, **Mennigen JA**, 2018. Epigenetics in teleost fish: from molecular mechanisms to physiological phenotypes. *Journal of Comparative Biochemistry and Physiology, Part B: Molecular and Integrative Physiology* 1096-4959:30012-5. doi:10.1016/j.cbpb.2018.01.006.
- (24) **Mennigen JA**, Thompson L, Bell M, Gore AC. 2018. Transgenerational effects of polychlorinated biphenyls: 1. Development and physiology across 3 generations of rats, *BMC Environmental Health* 17:18. doi:10.1186/s12940-018-0362-5.
- (23) **Mennigen JA**, Volkoff H, Chang JP, Trudeau VL. 2017. The nonapeptide isotocin in goldfish: Evidence for serotonergic regulation and functional roles in the control of food intake and pituitary hormone release. *General and Comparative Endocrinology* 155:99-104. doi: 10.1016/j.ygcen.2017.09.008.
- (22) **Mennigen JA**, Zamora JM, Chang JP, Trudeau VL. 2017. Endocrine disrupting effects of waterborne fluoxetine exposure on the reproductive axis of female goldfish, *Carassius auratus*. *Journal of Comparative Biochemistry and Physiology Part C Toxicology, Pharmacology and Endocrinology*, 254:38-49. doi: 10.1016/j.cbpc.2017.08.003.
- (21) **Mennigen JA**, Zhang D. 2016. Microtrout: A comprehensive, genome-wide miRNA target prediction framework for rainbow trout, *Oncorhynchus mykiss*. *Journal of Comparative Biochemistry and Physiology Part D Genomics Proteomics*, 20:19-26. doi:10.1016/j.cbd.2016.07.002.
- (20) **Mennigen JA**. 2016. Micromanaging metabolism: A role for microRNAs in energy metabolism in teleost fish. *Journal of Comparative Biochemistry and Physiology, Part A: Molecular and Integrative Physiology*, 1096-4959:160-8. doi: 10.1016/j.cbpa.2015.09.001.
- (19) Geurden I, **Mennigen JA**, Plagnes-Juan E, Veron V, Cerezo T, Mazurais D, Zambonino-Infante J, Gatesoupe J, Skiba-Cassy S, Panserat S. 2014. High or low dietary carbohydrate:protein ratios during first-feeding affect glucose metabolism and intestinal microbiota in juvenile rainbow trout. *Journal of Experimental Biology*, 217:3396-406. doi: 10.1242/jeb.106062.
- (18) **Mennigen JA**, Martyniuk CJ, Seiliez I, Panserat, S. Skiba-Cassy, S. 2014. Metabolic consequences of miRNA-122 inhibition in rainbow trout (*Oncorhynchus mykiss*). *BMC Genomics*, 15:70. doi: 10.1186/1471-2164-15-70.
- (17) **Mennigen JA**, Martyniuk CJ, Seiliez I, Panserat S, Skiba-Cassy S. 2013. Metabolic effects of miRNA-122 inhibition in rainbow trout (*Oncorhynchus mykiss*) in vivo. *Journal of Comparative Biochemistry and Physiology, Part B: Molecular and Integrative Physiology*, 169:16-24. doi: 10.1016/j.cbpb.2013.12.002.

- (16) Dai W, Panserat S, **Mennigen JA**, Terrier F, Dias K, Seiliez I, Skiba-Cassy S. 2013. Postprandial regulation of hepatic glucokinase and lipogenesis requires the activation of TORC1 signaling in rainbow trout (*Oncorhynchus mykiss*). *Journal of Experimental Biology*, 216:4483-92. doi: 10.1242/jeb.091157.
- (15) Lado WE, Zhang D, **Mennigen JA**, Zamora JM, Popesku JT, Lewis JE, Trudeau VL. 2013. Rapid modulation of gene expression profiles in the forebrain of male goldfish following exposure to waterborne sex pheromones. *General and Comparative Endocrinology*, 192:204-13. doi:10.1016/j.ygcen.2013.06.015.
- (14) **Mennigen JA**, Skiba S, Panserat S. 2012. Ontogenesis of expression of metabolic genes and microRNAs in of rainbow trout alevins during the transition from endogenous to exogenous feeding. *Journal of Experimental Biology*, 216:1597-1608. doi:10.1242/jeb.082248.
- (13) Zhang D, Xi Y, Coccimiglio M, **Mennigen JA**, Jonz M, Ekker M, Trudeau VL. 2012. Morpholino knockdown of a novel short trans-membrane protein 1 (*Stmap1*) blocks mitochondrial respiratory activity in zebrafish. *Physiological Genomics*, 44:1133-1140. doi:10.1152/physiolgenomics.00079.2012.
- (12) **Mennigen JA**, Panserat S, Larquier M, Plagnes-Juan E, Medale F, Seiliez I Skiba-Cassy S. 2012. Postprandial regulation of hepatic microRNAs predicted to target the insulin pathway in rainbow trout. *PLoS One*, 7:e38604. doi: 10.1371/journal.pone.0038604.
- (11) **Mennigen JA**, Stroud P, Zamora JM, Moon TW and Trudeau VL. 2011. Pharmaceuticals as neuroendocrine disruptors. Lessons learned from fish on Prozac. *Journal of Toxicology and Environmental Health, Part B: Critical Reviews*, 14:387-412. doi:10.1080/10937404.2011.578559.
- (10) Popesku JT, **Mennigen JA**, Chang JP, Trudeau VL. 2011. Dopamine D1 receptor blockage potentiates AMPA-stimulated luteinising hormone release in the goldfish. *Journal of Neuroendocrinology* 23:302-309. doi:10.1111/j.1365-2826.2011.02114.x.
- (9) Prindiville JS, **Mennigen JA**, Zamora JM, Moon TW, Weber JM. 2010. The fibrate drug gemfibrozil disrupts lipoprotein metabolism of rainbow trout. *Journal of Toxicology and Applied Pharmacology*, 251:201-208. doi:10.1016/j.taap.2010.12.013.
- (8) **Mennigen JA**, Lado WE, Zamora JM, Chang JP, Moon T, Trudeau VL. 2010. Waterborne fluoxetine disrupts the reproductive axis in sexually mature male goldfish, *Carassius auratus*. *Aquatic Toxicology*, 100:354-364. doi:10.1016/j.aquatox.2010.08.016.
- (7) Oakes KD, Coors A Escher B, Fenner K, Garric J, Gust M, Knacker T, Kuster A, Kussatz C, Metcalfe CD, Monteiro S, Moon T, **Mennigen JA**, Parrott J, Pery AR, Ramil M, Tarazona JV, Sanchez-Arguello, Ternes TA, Trudeau VL, Boucard T, Van der Kraak GJ, Servos M. 2010. An Environmental Risk Assessment for the serotonin Re-uptake inhibitor Fluoxetine – A case study utilizing the European Risk assessment framework. *Integrated Environmental Assessment and Management*, 6:524-539. doi:10.1002/ieam.77.
- (6) Zhao E, Grey C, Zhang D, **Mennigen JA**, Basak A, Chang JP, Trudeau VL. 2010. Secretoneurin (SN) is a paracrine factor from lactotrophs stimulating gonadotropin release in the goldfish pituitary. *American Journal of Physiology - Regulatory, Integrative and Comparative Physiology*, 299:1290-1297. doi:10.1152/ajpregu.00407.2010.

(5) Zhang D, Xiong H, **Mennigen JA**, Popesku JT, Marlatt VL, Martyniuk CJ, Crump K, Cossins AW, Xia X, Trudeau VL. 2010. Defining global neuroendocrine gene expression patterns associated with reproductive seasonality in fish. PLoS One, 4:e5816. doi:10.1016/j.aquatox.2010.07.022.

(4) **Mennigen JA**, Sassine J, Trudeau VL, Moon TW. 2010. Effects of waterborne fluoxetine on food intake, weight and energy metabolism parameters in goldfish, *Carassius auratus*. Aquatic Toxicology, 100:128-137. doi: 10.1371/journal.pone.0005816.

(3) **Mennigen JA**, Harris EA, Chang JP, Trudeau VL, Moon TW. 2009. The effect of fluoxetine on food intake and weight gain in female goldfish. Regulatory Peptides, 155:99-104. doi:10.1016/j.regpep.2009.01.001.

(2) **Mennigen JA**, Martyniuk CJ, Crump K, Xiong H, Zhao E, Popesku JT, Anisman H, Cossins AR, Xia X, and Trudeau VL. 2008. The effect of fluoxetine on the reproductive axis of female goldfish, *Carassius auratus*. Physiological Genomics, 35:273-282. doi:10.1152/physiolgenomics.90263.2008.

(1) Popesku JT, Martyniuk CJ, **Mennigen JA**, Xiong H, Zhang D, Xia X, Cossins AR and Trudeau VL. 2008. The goldfish (*Carassius auratus*) as a model for neuroendocrine signalling. Journal of Molecular Endocrinology, 293:43-56. doi: 10.1016/j.mce.2008.06.017.

C. SUBMITTED PUBLICATIONS (2)

supervised and co-supervised students underlined

(2) Forbes JLI, Kostyniuk DJ, **Mennigen JA**, Weber JM. How glucagon affects carbohydrate metabolism in rainbow trout: Regulation of in vivo glucose kinetics and gene expression Journal of Experimental Biology, *under review*

(1) Tu W, Martínez R, Navarro-Martin L, Kostyniuk DJ, Hum C, Deng M, Yuanxiang J, Chan LHM, **Mennigen JA**. Acute exposure to PFOS, F-53B and OBS reveals metabolic disruption at the organismal and molecular level in zebrafish larvae. Environmental Science and Technology, *under revision*

D. PUBLICATIONS IN PREPARATION (3)

supervised and co-supervised students underlined

(3) Martinez R, Eng T, Navarro Martin L, **Mennigen J**. Metabolic effects of developmental BPA exposure in zebrafish across multiple levels of biological organization. In preparation for submission to Chemosphere.

(2) Kostyniuk DJ, **Mennigen JA**. Meta-analysis of hepatic miRNA regulation in rainbow trout in response to environmental challenges: Implications for the regulation of intermediary metabolism. In preparation for submission to Journal of Comparative Biochemistry and Physiology Part D Genomics Proteomics.

(1) Marandel L, Hu H, Liu J, **Mennigen JA**, Bobe J, Corraze G, Burel C, Panserat S. Consequences on Gametogenesis and Reproduction Performances of a High Carbohydrate Nutrition During the Whole Reproductive Cycle of Male and Female Trout. In preparation for submission to the Journal of Experimental Biology.

E. SELECTED INVITED CONFERENCE PAPERS AND SEMINARS (28)

supervised and co-supervised students underlined, asterisk () indicates oral presentation*

- (28) **Mennigen JA***. Endocrine disruption in teleost fish – from molecular mechanisms to physiological phenotypes. September 10th, Instituto Tecnológico de Chascomús (CONICET-UNSAM), Provincia de Buenos Aires, Argentina.
- (27) **Mennigen JA***. Endocrine disruption in teleost fish – from molecular mechanisms to physiological phenotypes. INTA - Instituto de Recursos Biológicos, August 28th, 2019, Hurlingham, Provincia de Buenos Aires, Argentina,
- (26) **Mennigen JA***. The role of nonapeptides in male zebrafish reproduction. The 10th International Congress of Comparative Physiology and Biochemistry, August 5th-9th, Shaw Centre, Ottawa, ON, Canada.
- (25) Martinez R, Eng T, Allaire-Leung M, Navarro-Martin L, **Mennigen JA***. Acute and long-term metabolic effects of developmental BPA and EE2 exposure in zebrafish. 46th Annual Canadian Ecotoxicity Workshop (CEW), Oct 6th-9th, Quebec City, Quebec, Canada.
- (24) **Mennigen JA***, Allaire-Leung, M, Trahan A, Hum C, Tu W. Acute and long-term metabolic consequences of embryonic zebrafish exposure to aquatic contaminants. 5th biennial North American Society for Comparative Endocrinology, May 24-28th, University of Florida, Gainesville, Florida, USA.
- (23) **Mennigen JA***, Panserat S, Marandel L. 2017. Diet-induced hyperglycemia alters the hepatic microRNA profile in rainbow trout, *Oncorhynchus mykiss*. Canadian Society of Zoologists, Hochachka Satellite Symposium, University of Manitoba, May 13th-14th, Winnipeg, Manitoba, Canada.
- (22) **Mennigen JA***, Kostyniuk DJ, Jubouri M, Gilmour K, Martyniuk CJ, Zhang D, Panserat S, Marandel, L. 2018. MicroRNAs as posttranscriptional regulators of hepatic energy metabolism in rainbow trout, *O. mykiss*. The 13th International Congress on the Biology of Fish (ICBF). University of Calgary, July 15th –19th, Calgary, AB, Canada.
- (21) **Mennigen JA***. MicroRNAs: Small molecules with large potential in teleost aquaculture. 2017. Milieux et Ressources Aquatiques Seminar Series, University of Pau et Pays d'Adour. September 28th, Bayonne, AQ, France.
- (20) **Mennigen JA***, Thompson L, Gore AC. 2017. PCB exposure on the reproductive axis in the rat. 44th Canadian Ecotoxicology Workshop Delta Hotel, October 1st-4th, Guelph, ON, Canada.
- (19) **Mennigen JA***. The regulation of teleost energy metabolism: Novel molecular mechanisms and disruption by aquatic contaminants. 2017. Workshop on Fish Nutrition and Endocrinology. Institute of Hydrobiology (IHB) of Chinese Academy of Sciences, August 25th, Wuhan, HB, China.
- (18) **Mennigen JA**, Panserat S, Marandel L. 2017. Hepatic miRNA profile in 'glucose-intolerant' rainbow trout and predicted consequences for the integration of endocrine signals. 18th International Congress of Comparative Endocrinology. June 4th-9th, Lake Louise, AB, Canada.

(17) **Mennigen JA***. 2017. Novel molecular mechanisms underlying metabolic phenotypes in teleost fish. 3 Minute Thesis (Professors). 14th Annual Ottawa-Carleton Institute of Biology symposium. Carleton University, April 27th -28th, Ottawa, ON, Canada.

(16) **Mennigen JA***. 2016. The pharmaceutical fluoxetine as endocrine disruptor in teleost fish. 43rd Canadian Ecotoxicology workshop. Shaw Conference Centre Edmonton, September 25th-28th, AB, Canada.

(15) **Mennigen JA***. 2015. Endocrine regulation of microRNAs in teleost fish. Invited presidential symposium presentation at the presidential symposium at the 3rd Annual meeting of the North American Society for Comparative Endocrinology (NASCE) presidential symposium. June 21st-25th, Ottawa, ON, Canada.

(14) **Mennigen JA**, Thompson LM, Gore AC. 2015. Transgenerational effects of prenatal PCB exposure on gene expression in the AVPV of rats. The 97th Annual Meeting of the Endocrine society. March 5th-8th, San Diego, CA, United States.

(13) **Mennigen JA***. Developmental and trans-generational effects of endocrine disrupting chemicals. 2015. Baylor University, February 25th, Waco, TX, United States.

(12) **Mennigen JA***. The endocrine regulation of metabolism and its disruption by EDCs in vertebrates. 2015. University of Ottawa, January 21st, Ottawa, ON, Canada.

(11) Skiba S, **Mennigen JA***. 2013. Regulation and function of microRNA-122 in rainbow trout (*Oncorhynchus mykiss*). INRA Departmental meeting Physiologie animale et systèmes d'élevage (Phase). October 4th-5th, Paris, France.

(10) **Mennigen JA***. The SSRI fluoxetine, a (neuro)endocrine disrupting chemical? 2009. Physiology Seminar Series, University of Ottawa, February 11th, Ottawa, ON, Canada.

(9) **Mennigen JA***. Disruption of the serotonergic regulation of the endocrine brain of female goldfish through the SSRI pharmaceutical fluoxetine. 2008. Canadian Wildlife Service Seminar Series National Wildlife Research Centre (NWRC), National Wildlife Research Centre, Raven Road, Carleton University, December 10th, Ottawa, Ontario, Canada.

(8) **Mennigen JA***. Prozac in the environment: Update from Canada. 2006. ERAPharm Workshop, Viamede Resort, October 3rd, Peterborough, ON, Canada.

(7) **Mennigen JA***, Panserat S, Larquier M, Plagnes-Juan E, Medale F, Seilliez I, Skiba-Cassy S. 2012. Postprandial regulation of hepatic microRNAs predicted to target the insulin pathway in rainbow trout. 15th International Symposium on Fish Nutrition and Feeding (IFNF), June 4th -7th, Molde, Norway.

(6) **Mennigen JA***, Sassine J, Lado WE, Zamora JM, Moon TW and Trudeau VL. 2010. The effects of waterborne fluoxetine on the physiology of reproduction and feeding in goldfish: A mechanistic evaluation. 7th International Congress of Neuroendocrinology (ICN), Faculté de Droit, Université de Rouen, July 11th-15th, Rouen, France.

(5) **Mennigen JA***, Sassine J, Lado WE, Zamora JM, Moon TW, Trudeau VL. 2010. The effects of waterborne fluoxetine on the physiology of reproduction and feeding in goldfish: A mechanistic evaluation. Pharmaceuticals in the Environment workshop. Environmental Science Research Initiative, Atrium New Science Complex, University of Guelph, February 27th, Guelph, ON, Canada.

(4) **Mennigen JA***, Lado WE, Zamora JM, Chang JP, Trudeau VL. 2009. Sublethal effects of fluoxetine on the male reproductive axis in goldfish, *Carassius auratus*, 30th Annual meeting of the Society of Environmental Toxicology and Chemistry North America (SETAC), Hilton Riverside, November 19th -23rd, New Orleans, LA, USA.

(3) **Mennigen JA***, Moon TW, Trudeau VL. 2009. Sublethal effects of fluoxetine in reproduction and feeding in goldfish, *Carassius auratus*: Environmental implications. 14th Annual General Meeting and Conference of the Laurentian Society of Environmental Toxicology and Chemistry (SETAC), June 19th, Ottawa, ON, Canada.

(2) **Mennigen JA***, Zhao E, Zhang D, Moon TW, Trudeau VL. 2009. The effect of isotocin on the reproductive axis of the female goldfish, *Carassius auratus*. 48th. Annual meeting of the Canadian Society of Zoology (CSZ). May 15th, Scarborough, ON, Canada.

(1) **Mennigen JA***, Harris E, Moon T and Trudeau VL. 2008. The effects of fluoxetine on food intake and growth in female goldfish, *Carassius auratus*. 47th Annual meeting of the Canadian Society of Zoologists (CSZ). Mount St. Vincent University, May 19th-23rd, Halifax, NS, Canada.

F. RESEARCH GRANTS (12)

(12) Collaborator on Dr. Pagé-Larrivière's and Dr. Jason O'Brian's Climate Change and Environment, Canadian Wildlife Service grant to Evaluating cumulative effects of nanoplastics and contaminants: Chronic toxicity and point of departure using transcriptomic dose-response modeling, 2019.

in kind contribution

(11) University of Ottawa early researcher visiting researcher grant to host Dr. Seilliez, 2018.

CAD 2,500

(10) Agreen Skills+ FP7 Marie Curie grant (2018) to host Dr. Lucie Marandel, 2018.

CAD 20,000

(9) MITACS Globalink grant for MSc student Dan Kostyniuk to conduct research at INRA France, 2018.

CAD 7,000

(8) Co-applicant on Dr. Trudeau's and Dr. Brodeur's MinCyt uOttawa Argentina partnership progra'Amphibian endocrine disruption in agricultural ecosystems: understanding basic neuroendocrine control of reproduction in the field to evaluate effects and develop relevant biomarkers, 2018.

CAD 22,200

(7) NSERC-Discovery grant: MicroRNAs as determinants of metabolic phenotypes in teleost fish, funding period from 2017-2022.

CAD 130,000

(6) Co-applicant on Dr. Harris' NSERC RTI grant: QTRAP facility for trace metabolite detection and identification, 2017.

CAD 150,000

(5) University of Ottawa grant Epigenetic determinants of metabolic phenotypes in teleost fish, 2017.

CAD 96,917

(4) Ontario Ministry of Economic Development and Innovation grant 'Epigenetic determinants of metabolic phenotypes in teleost fish', 2017.

CAD 219,576

(3) Canada Foundation for Innovation Grant Epigenetic determinants of metabolic phenotypes in teleost fish awarded in 2017.

CAD 219,576

(2) University of Ottawa, Faculty of Science Start-up grant 2017-2019.

CAD 200,000

(1) European Union Marie Curie IEF Post-Doctoral fellowship, 2011-2013.

CAD 294,000

G. IMPACT

- Citation indices:

Citations: **1196** h-index: **16** i10-index: **21**

(Google Scholar, September 2019)

STUDENT RESEARCH SUPERVISION AND TEACHING

A. GRADUATE STUDENTS (7)

- Becky Clark, PhD Candidate: (2019-current): Effects of nanoplastics and BDE-47 on zebrafish metabolism across developmental and transgenerational timescales.
- Bailey Bédard, PhD Candidate (2019-current): Impact of feeding behaviour on bat methylmercury concentrations.
- Reem Alharti, PhD candidate: Developmental, inter- and transgenerational effects of estrogenic and antiandrogenic EDCs on the metabolic phenotype in zebrafish (2017-2018, return to Saudi Arabia as result of Diplomatic crisis)
- Mais Jubouri, MSc candidate (co-supervised with J.M Weber): Role of mTOR pathway in carburant selection in exercising rainbow trout, *O. mykiss*. (2018-current)
- Rubén Martínez López (co-hosted with Dr. Trudeau): Visiting PhD student from Dr. Benjami Piña's lab at the Spanish National Research Council Environmental Assessment and Water Research Centre in Barcelona, Spain (summer 2017, summer 2018, summer 2019)
- Dan Kostyniuk, MSc candidate: the nutritional regulation and metabolic function of hepatic microRNAs in rainbow trout, *Oncorhynchus mykiss*. (2017-current)
- Zeinab Altmieme, MSc candidate: The role of nonapeptides in reproductive behaviour in male cyprinid fish (2017-2019)

B. UNDERGRADUATE 4th YEAR HONOURS STUDENTS (17)

- Julianne Magnan: The role of nonapeptides isotocin and vasotocin on adult zebrafish feed intake and energy balance (2019-2020).
- Jordan Corcoran: Metabolic phenotypization of *mettl3*^{-/-} zebrafish (2019-2020)
- Tyler Eng: Metabolic consequences of nanoplastic and flame-retardant exposure in developing and adult zebrafish (2019-2020).
- Christine Hum: Metabolic consequences of developmental PFAS exposure in zebrafish (2018-2019).
- Melissa Allaire Leung: Role of estrogenic compounds on developmental trajectories of Metabolic phenotypes in zebrafish, *D. rerio* (2018-2019).
- Kenan Touma: Effects of social status on the somatotrophic axis in juvenile rainbow trout (2018-2019).
- Alexandria Trahan: Role of antiandrogenic compounds on developmental trajectories of metabolic phenotypes in zebrafish, *D. rerio* (2018-2019).
- Adina Gotzmann: Nutritional and endocrine transcriptional regulation of key metabolic genes in liver and muscle of the North Pacific spiny dogfish, *Squalus suckleyi* (2017-2018).
- Rida Haider: The nonapeptide isotocin as mediator of reproductive endpoints in response to pheromone signalling in male goldfish, *Carassius auratus* (2017-2018).
- Mais Jubouri: Characterization of miRNA expression of candidate miRNAs in rainbow trout hepatocytes in response to glucose and insulin (2017-2018).
- Majd Haddad (co-supervised with Dr. Trudeau): miRNAs as mechanisms of paternal and maternal inheritance of stress response in zebrafish exposed to the pharmaceutical fluoxetine (2017-2018).
- Jessica Zon (co-supervised with V. Trudeau): miRNAs as mechanisms of paternal and maternal inheritance of stress response in zebrafish exposed to the pharmaceutical fluoxetine (2017-2018).
- Dan Kostyniuk (co-supervised with Dr. Gilmour): Effect of social status on lipid metabolism in rainbow trout, *Oncorhynchus mykiss* (2016-2017)
- Jake Zamora (Co-supervised with Dr. Trudeau): Effect of acute stimulation of the immune system on neuroendocrine control of reproduction in goldfish, *Carassius auratus* (2010-2011).
- Jamie Holden (Co-supervised with Dr. Moon): Effects of fluoxetine on the development of components of the stress axis in zebrafish, *Danio rerio*. (2009-2010).
- Agnes Crnic (Co-supervised with Dr. Trudeau): Modulation of the recently discovered reproductive peptides GnIH and kisspeptin by the serotonergic system in goldfish, *Carassius auratus* (2009-2010).
- Ed Harris (Co-supervised with Dr. Moon): The effects of fluoxetine on food-intake in goldfish, *Carassius auratus* (2007-2008).

C. UNDERGRADUATE RESEARCH PROGRAM STUDENTS (UROP, ECOCAN, NSERC) AND VOLUNTEERS (19)

- Salma El-Jaouhari (Volunteer, University of Ottawa, 2019)
- Abbas Mouawie (Volunteer, University of Ottawa, 2019)
- Hanna Hutchinson (Volunteer, University of Ottawa, 2019)
- Nazanin Aliabadi (Volunteer, University of Ottawa, 2019)
- Tyler Eng (ECO Canada Co-Op student, University of Ottawa, 2019)
- Franck Vu (Volunteer, University of Ottawa, 2018)
- Nha-Thi Luu (Volunteer, University of Ottawa, 2018)
- Kenan Touma (Volunteer, University of Ottawa, 2018)
- Jon Tea (Volunteer, University of Ottawa, 2018)

- Manuela Fonseca (UROP student, University of Ottawa, 2017)
- Georges Coté (Volunteer, University of Ottawa, 2017)
- Tess Julian (Volunteer, University of Ottawa, 2017)
- Bihac Mazingh (Volunteer, University of Ottawa, 2016)
- Victoria Peters (Volunteer, University of Ottawa, 2016)
- Jake Zamora (NSERC summer student, University of Ottawa, 2009 co-supervised with Dr. Trudeau)
- Franz Puyol (Volunteer, University of Texas, 2015)
- Mercedes Munselle (Volunteer, University of Texas, 2015)
- Syed Zafar (Volunteer, University of Texas, 2015)
- Christopher Prochasson: Baccalauréat professionnel, Institut National de la Recherche Agronomique

D. VISTING SCHOLARS (4)

- Dr. Lucie Marandel, France (2018/2019). Project funded by Agreen Skills+ Marie-Curie FP7 to investigate microRNA promotor methylation in rainbow trout under normoglycemic and hyperglycemic conditions.
- Dr. Julie Brodeur, Argentina (2018, co-hosted with Dr. Trudeau). Project funded by a MinCyt Canada-Argentina grant. Molecular approaches to probe pesticide exposure in aquatic species in La Pampa, Argentina.
- Dr. Iban Seilliez, France (2018). Project funded by a University of Ottawa Young researcher grant. Markers of fish autophagy in rainbow trout exposed to endocrine disrupting chemicals.
- Dr. Wenqui Tu, China (2018, co-hosted with Dr. Laurie Chan). Developmental toxicity of F-53 and PFOS in zebrafish, *D. rerio*.

TEACHING

A. LECTURER/INSTRUCTOR UNIVERSITY OF OTTAWA, ON, CANADA (2016-2019)

- BIO2110: Environmental Physiology (120 students, 20 lectures, 3 credits):
organisms respond to various natural or anthropogenic physical environmental parameters such as temperature, water, pH, electromagnetic radiation including UV, gases, pressure and heavy metals. Primary and secondary stress responses and homeostasis will be considered throughout. ow representative individual healthy. This course is intended primarily for students enrolled in the Environmental Science program.
- BIO2510: Physiologie environnementale (33 étudiants, 20 séances, 3 crédits):
Ce cours examine comment un organisme isolé et en santé réagit aux paramètres physico-environnementaux naturels et anthropogéniques tels la température, l'eau, le pH, les radiations électromagnétiques incluant les rayons ultraviolets, les gaz, la pression et les métaux lourds. Les réponses primaires et secondaires aux divers stress ainsi que l'homéostasie seront examinées. Ce cours est destiné principalement aux étudiants inscrits dans le programme des Sciences Environnementales.
- BIO4920B: 4th year seminar - Physiology Section, 30 students, 15 lectures, 3 credits):
Through lectures, seminars, and/or group discussions, students learn how to critically evaluate the quality of the science in research publications.

- BIO4920B: 4th year seminar – Cellular and Molecular Section, 15 students, 15 lectures, 3 credits): Through lectures, seminars, and/or group discussions, students learn how to critically evaluate the quality of the science in research publications.
- BIO4146: Ecotoxicology (60 students, 20 lectures, 3 credits): Explores the challenges of moving from testing toxic chemicals on single organisms in the laboratory to assessing the effects of toxic chemicals on ecosystems. The influence of food chain processes, photochemistry, and other natural processes (sedimentation, volatilization) will be discussed
- BIO4546: Ecotoxicologie (15 étudiants, 20 lectures, 3 credits): Ce cours explore les difficultés liées à la compréhension de l'impact des substances chimiques toxiques sur les écosystèmes alors que la recherche sur ces substances se fait surtout en laboratoire sur des organismes. L'impact de processus propres à la chaîne alimentaire, la photochimie ainsi que d'autres processus naturels (sédimentation, volatilisation, etc.) seront étudiés.
- BIO8102: L'épigénétique moléculaire comparative (1 student, 14 day lab course, 3 credits): Ce cours couvrira un aperçu théorique des progrès récents en épigénétique comparative en mettant l'accent sur les poisson téléostéens. Un accent particulier sera mis sur les approches méthodologiques axées sur l'utilisation des outils bioinformatiques ainsi que les approches épigénétiques moléculaires pour étudier la méthylation de l'ADN spécifique du promoteur et l'expression des ARN non-codants spécifiques par des approches de PCR en temps réel. Ce cours est ouvert aux étudiants francophones et anglophones et l'enseignement est bilingue.
- BIO8120: Directed Studies. 1 student, 3 credits): Theoretical and practical approaches to study the involvement of microRNA in regulating gene expression in salmonid fish.
- BIO8361: Advanced Animal Physiology - Co-Instructor, organized by Dr. Gilmour (10 Students, 3 credits): Advanced Animal Physiology is a seminar course that focuses on techniques used in comparative physiology. The goal is to introduce you to a variety of experimental techniques, focusing on the theory behind each technique, good practices using it, and the actual and potential applications of the technique in comparative physiology.
- CMM8300: Special Topics in Reproductive and Developmental Biology - Co-instructor, organized by Dr. Van der Hyden (10 students, 3 credits): In-depth study of current topics in reproductive and developmental biology, with emphasis on state-of-the art molecular and cell biology techniques as well as their applications to reproductive diseases. Topics may include assisted reproductive technologies, embryonic stem cells, contraception, endocrine disruptors, reproductive toxicology, and transgenics.

B. UNIVERSITÉ DE PAU ET DES PAYS D'ADOUR, BAYONNE, AQ, FRANCE (2011-2013)

- Assistant d'enseignement responsable des Travaux pratiques en Biochimie L2 (Dr. Salvado), 30 students.

C. UNIVERSIY OF OTTAWA, ON CANADA (2006-2010)

- BIO1130 Introduction to Organismal Biology, Dr. Avaron, Lab demonstrator, 40 students.
- BIO1140 Introduction to Cell Biology, (Dr. Avaron, Lab demonstrator, 40 students.
- BIO2127 Introduction to Plant Science, Dr. Heinermann, Lab demonstrator, 40 students.

- BIO2133 Genetics lab, Dr. Heineremann, Lab demonstrator, 40 students.
- BIO3151 Molecular Biology, Dr. Basso, Lab demonstrator, 40 students.

D. UNIVERSITÄT STUTTGART, BW, GERMANY (2003-2004)

- Lab demonstrator for the course Einführung in biophysikalische Methoden der Forschung (Introduction to biophysical research methods), Dr. Hülser), 8 students.

PROFESSIONAL AND PUBLIC SERVICE

A. STUDENT EXAMINATION COMMITTEE MEMBER

PHD COMPREHENSIVE EXAM COMMITTEE MEMBER:

- Hanane Hadj-Moussa, University of Ottawa (2019)
- Janet Cheung, PhD Candidate, University of Ottawa (2019)
- Katherine Shaw, PhD Candidate, University of Ottawa (2019)
- Amin Nozari, PhD candidate, University of Ottawa (2018)
- Kimberly Reid, PhD candidate, University of Ottawa (2017)
- Keegan Lutek, PhD candidate, University of Ottawa (2017)
- Carol Best, PhD candidate, University of Ottawa (2016)
- Myy Mikwar, PhD Candidate Health Canada, Carleton University (2016)

EVALUATION OF GRADUATE STUDENT THESES AND THESIS DEFENCE COMMITTEE MEMBER

- Ivan Cadonic, MSc, University of Waterloo
- Myy Mikwar, PhD, Health Canada/Carleton University (2019)
- Joshua Ivare, MSc, University of Ottawa (2019)
- Simon Monis, MSc, University of Ottawa (2019)
- Myy Mikwar, PhD Candidate Health Canada, Carleton University (2019)
- Delaney Large, MSc, Environment and Climate Change Canada (2019)
- Erin MacFarlane, MSc, Carleton University (2019)
- Khatereh Shir-Mohammadi, MSc University of Ottawa (2018)
- Marylin Vera Chang, PhD, University of Ottawa (2018)
- Hue Eileen Phan MSc University of Ottawa (2018)
- Ibragim El-Sakli, MSc University of Ottawa (2018)
- Joleen Hanna, MSc University of Ottawa (2018)
- Nadia Stec, MSc University of Ottawa (2018)
- Eric Turenne, MSc University of Ottawa (2017)
- Maria Vu, MSc University of Ottawa (2017)
- Rami Yassine, MSc University of Ottawa (2017)
- Marissa Northorp, MSc University of Ottawa (2017)
- Megan Jung, MSc University of Ottawa (2017)
- Dillon DaFonte, MSc University of Ottawa (2016)
- Marie-Ève Bélair-Bambrick, MSc University of Ottawa (2016)

CHAired THESIS DEFENCE COMMITTEE MEMBER:

- Jon Tea, MSc University of Ottawa (2017)

GRADUATE STUDENT COMMITTEE MEMBER:

- Noa Gang, PhD, Carleton University (2019)
- Michael Kalyn, MSc, University of Ottawa (2019)
- Lorrie Boisvert, MSc (Carleton, University (2018)
- Ivan Cadonic, MSc (University of Waterloo (2018)
- Amin Nozari, PhD (University of Ottawa (2018)
- Emil Zaripov, MSc (University of Ottawa (2018)
- Hanane Hadj-Moussa, Carleton University (2018)
- Kimberley Reid, PhD University of Ottawa (2018)
- Erin MacFarlane, MSc, Carleton University (2017)
- Jonathon Forbes, MSc, University of Ottawa (2017)
- Delaney Large, CWS, Environment and Climate Change Canada (2017)
- Ibragim El-Sakli, MSc candidate University of Ottawa (2017)

EVALUATION OF UNDERGRADUATE STUDENT THESES:

- Elisabeth Farmer, Honour's thesis University of Ottawa (2009)
- Natalia Titkova, Honour's thesis University of Ottawa (2009)
- Anika Cyr, Honour's thesis University of Ottawa (2019)
- Raheem Javaid, Honour's thesis University of Ottawa (2019)
- Kyla Agtarap, Honour's thesis University of Ottawa (2019)
- Paige Benson, Honour's thesis University of Ottawa (2018)
- Katherine Jennings, Honour's thesis University of Ottawa (2018)
- Brittany Simotiuk, Honour's thesis University of Ottawa (2018)
- Prinica Anney, Honour's thesis University of Ottawa (2017)
- Christopher Prochasson, Rapport de stage, Baccalauréat professionnel, INRA (2013)
- Jake Zamora, Honour's thesis University of Ottawa (2011)

B. AD-HOC REVIEW ACTIVITIES FOR SCIENTIFIC JOURNALS

- Archives of Womens' Mental Health
- Aquatic Toxicology
- Aquaculture
- Biological Bulletins
- British Journal of Nutrition
- BMC Genomics
- Cells
- Developmental Biology
- Developmental and Comparative Immunology
- Ecotoxicology
- Endocrinology
- Endocrine Reviews
- Environmental Pollution

- Environmental Science and Technology
- Epigenetics
- Experimental Zoology Part A
- Fish and Shellfish Immunology
- Fish Physiology and Biochemistry
- Fishes
- Gene
- General and Comparative Endocrinology
- International Journal of Biological Science
- Molecular and Cellular Endocrinology
- Molecular and Cellular Biochemistry
- Nutritional Biochemistry
- PeerJ
- PLoS One
- Scientific Reports
- The British Journal of Nutrition
- The Journal of Comparative Physiology and Biochemistry, Part B: Biochemistry and Molecular Biology
- The Journal of Comparative Physiology and Biochemistry, Part C: Pharmacology, Toxicology and Endocrinology
- The Journal of Comparative Physiology and Biochemistry, Part D: Genomics and Proteomics
- The Journal of Clinical Endocrinology and Metabolism
- The Journal of Experimental Biology
- Toxicological and Environmental Chemistry
- The Journal of Fish Biology
- The International Journal of Fisheries and Aquaculture
- The Journal of Toxicology and Environmental Health, Part B: Critical reviews

C. GRANT AND POLICY REVIEW ACTIVITIES

- New Frontiers Research Fund grant competition 2019, external reviewer
- MITACS grant competition 2019, external reviewer
- NSF grant competition 2019, external reviewer
- NSERC Discovery grant competition 2019, external reviewer
- Review of draft Canadian Council of Animal Care guidelines: Zebrafish and other common, small warm water laboratory fish
- Peer review of Environmental and Indirect Human Health Risk Assessment of GloFish, Department of Fisheries and Oceans, Canada

D. CONFERENCE ORGANIZATION, SESSION CHAIRING AND INVITED TALK ORGANIZATION

- Organizing and co-chairing (with Dr. Langlois, INRS Québec) the session “Advances in endocrine disruption science” at the Canadian Ecotoxicology workshop (CEW) in Quebec City, QC, Canada (2019).
- Scientific Meeting program subcommittee member for NASCE at the University of Florida, Gainesville, FL, USA (2019).
- Organizing and co-chairing (with Dr. Langlois, INRS Québec) the session “Advances in endocrine disruption science” at North American Society for Comparative Endocrinology (NASCE) at Gainesville, FL, USA (2019).

- Local organizing committee (Sponsorship) 10th International Congress of Comparative Physiology and Biochemistry (ICCBP2019) at the University of Ottawa, Ottawa, ON, Canada (2018-2019).
- Local organizing committee (Volunteers) 10th International Congress of Comparative Physiology and Biochemistry (ICCBP2019) at the University of Ottawa, Ottawa, ON, Canada (2018-2019).
- Hosting the Departmental Seminar, Dr. Lucie Marandel - INRA France at the Department of Biology Seminar series, University of Ottawa, Ottawa, ON, Canada (2018).
- Hosting the Departmental Seminar, Dr. Iban Seilliez-INRA France at the Department of Biology Seminar series, University of Ottawa, Ottawa, ON, Canada (2018).
- Co-organizer (with Dr. Standen, University of Ottawa) of the 27th Comparative Physiology and Biochemistry workshop in Keene, ON, Canada (2018).
- Organizing and co-chairing (with Dr. Craig, University of Waterloo) the session on Endocrine disrupting chemicals at the 44th Canadian Ecotoxicology workshop in Guelph (2017).
- Chairing a student session at the 19th Annual Conference on Comparative Physiology and Biochemistry, Elmhirst's Resort, Keene, ON, Canada. Feb. 5th-7th (2010).

E. CONFERENCE ORGANIZATION, SESSION CHAIRING AND INVITED TALK ORGANIZATION

- Guest Editor for Special Issue 'Integrating Epigenomics into the Omics of Animal Physiology' in the Journal of Comparative Biochemistry and Physiology, Part D (2019)
- Member of the Departmental TA committee (2019)
- Member of the Departmental Search committee for a candidates for the Assistant Professor position in Cellular and Developmental Biology (2019)
- Guest lectures in BIO4920 (4th year Honour's seminar - Physiology Stream), BIO3137 (Experiments in Animal Physiology) and BIO8102 (Special Topics in Biology).
- Evaluator for student oral and poster presentations at the University of Ottawa for the following courses: BIO4920 (4th year Honour's seminar - Physiology Stream), BIO3137 (Experiments in Animal Physiology), and BIO8102 (Special Topics in Biology).
- Célébrons les sciences / Celebrate Science outreach 2018. University of Ottawa, March 28th, Ottawa, ON, Canada.
- Science Fair Judge for Oral and Poster presentations Science day 2017. Ashbury College, April 26th, Ottawa, ON, Canada
- Mentorship dinner participation and presentation and poster judge. 43rd Canadian Ecotoxicology Workshop 2016. Shaw Conference Center, September 25th -28th, Edmonton, AB, Canada
- INRA Association pour le Développement des Activités Sociales (2011-2013).
- VP Communications, Biology Graduate Student Association, University of Ottawa (2007-2008).
- Internship Environment Canada (CWS) in Dr. Sean Kennedy's lab, Ottawa, ON, Canada (2005).
Project: Development of a real-time RT-PCR-based assay to determine herring gull age based on telomere length.
- Let's Talk Science/Parlons Sciences volunteer, Ottawa, ON (2004-2005).
- AGDW refugee teaching volunteer, Stuttgart, Germany (2003-2004).