

# GENEVIÈVE J. PARENT

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## RESEARCH EXPERIENCE

**Research scientist in genomics** 2017-  
Fisheries and Oceans Canada, Government of Canada

## EDUCATION

**Postdoctoral fellow** 2016-2017  
University of Oxford, Oxford, United Kingdom

**Postdoctoral fellow** 2013-2015  
Université Laval, Quebec, Canada

**Ph.D. Biology** 2007-2012  
Université Laval, Quebec, Canada

**M.Sc. Oceanography** 2005-2008  
Université du Québec à Rimouski –ISMER, Rimouski, Canada

**B.Sc. Major Biochemistry** 2003-2005  
McGill University, Montreal, Canada

## GRANTS

**MOBELS: improving the management of beluga (*Delphinapterus leucas*) stocks by implementing innovative genomic tools in a new aged-structured population model** 2020-2023  
Species at risk, Government of Canada

**Defining habitat and characterising genetic diversity of freshwater seal (*Phoca vitulina mellonae*) in Northern Quebec using environmental DNA (eDNA)** 2019-2022  
Species at risk, Government of Canada

**Defining limits of Atlantic wolfish (*Anarhichas lupus*) habitat in marine protected areas using eDNA** 2019-2021  
Species at risk, Government of Canada

**Characterizing communities of coastal marine species in the St. Lawrence using eDNA** 2018-2021  
Ocean Protection Plan, Government of Canada

**PANOMICS: integrating genomics to current and future spatial management of northern shrimp (*Pandalus borealis*) along the Canadian coast** 2019-2022  
Genomics Research Development Initiative, Government of Canada

**Atlantic mackerel (*Scomber scombus*) population genomics across the Canada and US distribution** 2018-2020  
International Governance Fund, DFO, Government of Canada

**WESTPOPCOD: cod (*Gadus morhua*) population genomics within the Gulf of St. Lawrence and at the Canadian and U.S. boarder** 2017-2019  
Genomics Research Development Initiative, Government of Canada

**Detecting fish communities in back country lakes of La Mauricie National Park using eDNA** 2017-2019  
Parks Canada, Government of Canada

## SCHOLARSHIPS & AWARDS (SINCE 2011)

<b>Postdoctoral scholarship</b> Fonds de recherche du Québec – Nature et technologies	2015-2017
<b>NERC scholarship (UK)</b> Royal Botanic Gardens, Kew	2016
<b>Student-researcher award of May</b> Fonds de recherche du Québec – Nature et technologies	2015
<b>Thesis in 180 seconds (postdoctoral fellow category: first position)</b> Université Laval	2016
<b>Top 10 scientific discoveries of year 2014</b> Québec Science	2014
<b>Best early carrier scientist award</b> 5th international zooplankton production symposium	2011
<b>Honour distinction award</b> Québec-Océan	2011

## TEACHING EXPERIENCE

<b>Université Laval</b> Teaching, Evolution Teaching assistant, Physiology Teaching assistant, Molecular biology	2009-2015
<b>Université du Québec à Rimouski</b> Teaching assistant, Metabolism	2008

## PEER REVIEW EXPERIENCE

2012-...

- Canadian Journal of Fisheries and Aquatic Sciences
- Evolutionary Applications
- ICES - Journal of Marine Sciences
- Integrative and Comparative Biology
- Marine Biology
- Molecular Ecology Resources
- Limnology & Oceanography
- Polar Biology

## RELATED PROFESSIONAL EXPERIENCE

<b>Organizing committee</b> <i>IBIS Metascience day, Université Laval, Quebec</i>	2015
<b>Student representative for postdoctoral fellow</b> <i>Syndicat des stagiaires postdoctoraux, SARE</i>	2014-2015
<b>Translation</b> <i>Canadian Society of Zoology &amp; Canadian Society of Ecology and Evolution</i>	2008-2015
<b>Organizing committee</b> <i>International conference on spruce genome, Université Laval, Quebec</i>	2014
<b>Student representative for graduate studies</b> <i>Département de biologie, Université Laval, Quebec</i>	2011-2012
<b>Student representative, Board of directors</b> <i>Québec-Océan</i>	2008-2012
<b>Welcome committee</b> <i>Annual Conference of the Canadian Society for Ecology and Evolution, Quebec</i>	2009-2010

## PROFESSIONAL ASSOCIATIONS

European Society for Evolutionary Biology  
Canadian Society for Ecology and Evolution

## PEER-REVIEWED PUBLICATIONS

18. Puncher, G.N., Wang, Y., Martin, R., DeCelles, G., Cadrin, S.X., Zemeckis, D., Rowe, S., Leblanc, N.M., **Parent, G.J.**, Pavey, S.A. Transborder gene flow between Canada and the U.S.A. and fine-scale population structure of Atlantic cod in the broader Gulf of Maine Region, *Transaction of the American Fisheries Society*, accepted.
17. **Parent, G.J.**, Plourde, S., Browman, H., Turgeon, J., Petrusek, A. Defining what constitutes a reliable dataset to test for hybridization and introgression in marine zooplankton: Comment on Choquet et al. 2020 "No evidence for hybridization between *Calanus finmarchicus* and *C. glacialis* in a subarctic area of sympatry", *Limnology and Oceanography*, accepted.
16. Depardieu, C., Gérardi, S., Nadeau, S., **Parent, G.J.**, Mackay, J., Lenz, P., Lamothe, M., Girardin, M.P., Bousquet, J. and Isabel, N. Connecting tree-ring phenotypes, genetic associations, and transcriptomics to decipher the genomic architecture of drought adaptation in a widespread conifer, *Molecular Ecology*, accepted.
15. Benestan, L.M., Rougemont, Q., Senay, C., Normandeau, E., Parent, E., Rideout, R., Bernatchez, L., Lambert, Y., Audet, C., and **Parent, G.J.** Population genomics and history of speciation reveal fishery management gaps in two related redfish species (*Sebastes mentella* and *Sebastes fasciatus*), *Evolutionary Applications*, 00: 1–19, in press.
14. Puncher, G.N., Rowe, S., Rose, G.A., **Parent, G.J.**, Wang, Y., and Pavey, S.A. Life-stage-dependent supergene haplotype frequencies and metapopulation neutral genetic patterns of Atlantic cod, *Gadus morhua*, from Canada's Northern cod stock region and adjacent areas, *Journal of Fish Biology*, 00: 1–12, in press.
13. **Parent, G.J.**, Méndez-Espinoza, C., Giguère, I., Mageroy, M.H., Charest, M., Bause, Eé, Bohlmann, J., and Mackay, J.J. (2020) Hydroxyacetophenone defenses in white spruce against spruce budworm, *Evolutionary Applications*, 13: 62-75.
12. Puncher, G.N., Rowe, S., Rose, G.A., Leblanc, N.M., **Parent, G.J.**, Wang, Y., and Pavey, S. (2019) Chromosomal inversions in the Atlantic cod genome: implications for management of Canada's Northern cod stock, *Fisheries Research*, 216: 29-40.
11. Van Ghelder, C., **Parent, G.J.**, Rigault, P., Prunier, J., Giguère, I., Caron, S., Stival Sena, J., Deslauriers, A., Bousquet, J., Esmenjaud, D., and MacKay, J. (2019) The large repertoire of conifer NLR resistance genes includes drought responsive and highly diversified RNLs, *Scientific Reports*, 9: 1-13
10. Mendez Espinoza, C., **Parent, G.J.**, Lenz, P., Rainville, A., Adams, G., Tremblay, L., Bause, É., and MacKay, J.J (2018) Genetic control and evolutionary potential of a constitutive resistance mechanism against the spruce budworm (*Choristoneura fumiferana*) in white spruce (*Picea glauca*), *Heredity* 121: 142-154.
9. Lamara, M., **Parent, G.J.**, Giguère, I., Beaulieu, J., Bousquet, J., and MacKay, J.J. (2018) Association genetics of acetophenone defence against spruce budworm in mature white spruce, *BMC plant biology*, 18: 231
8. **Parent, G.J.**, Giguère, I., Mageroy, M., Bohlmann, J., and MacKay, J.J. (2018) Evolution of the biosynthesis of two hydroxyacetophenones in plants, *Plant, Cell & Environment*, 41: 620-629.
7. Melissa H Mageroy, M.H., Lachance, D., Jancsik, S., **Parent, G.**, Séguin, A., Mackay, J., and Bohlmann, J. (2017) In vivo function of *Pgβglu-1* in the release of acetophenones in white spruce, *PeerJ*, 5: e3535.

6. **Parent, G.J.**, Giguère, I., Germanos, G., Bauce, É., and MacKay, J.J (2017) Insect herbivory (*Choristoneura fumiferana*, Tortricidea) underlies tree population structure (*Picea glauca*, Pinaceae), *Scientific Reports*, 199: 379–398.
5. **Parent, G.J.**, Plourde, S., Joly, P., and Turgeon, J. (2015) Reproductive phenology and fitness of hybrids between *Calanus glacialis* and *C. finmarchicus* (Copepoda) in the St. Lawrence Estuary, *Marine Ecology Progress Series (feature article)*, 524: 1-9.
4. Mageroy, M.\*, **Parent, G.\***, Germanos, G.\*, Giguère, I., Delvas, N., Maaroufi, H., Bauce, É., Bohlmann, J., and MacKay, J.J. (2015) Expression of the beta-glucosidase gene *Pgβglu-1* underpins natural resistance of white spruce against spruce budworm, *The Plant Journal* 81: 68-80. \*First authors.
3. **Parent, G.J.**, Plourde, S., and Turgeon, J. (2012) Natural hybridization of *Calanus finmarchicus* and *C. glacialis* (Copepoda) in the Arctic and Northwest Atlantic, *Limnology and oceanography* 57: 1057-1066.
2. **Parent, G.J.**, Turgeon, J., and Plourde, S. (2011) Overlapping size ranges of *Calanus* spp. off the Canadian Coasts: impact on species' abundances, *Journal of Plankton Research* 33: 1654-1665.
1. **Parent, G.J.**, Pernet, F., Sévigny, J.-M., Ouellette, M., and Tremblay, R. (2008) Remodelling of membrane lipids in gills of adult hard clam *Mercenaria mercenaria* during declining temperature, *Aquatic Biology* 2: 101-109.

#### NON PEER-REVIEWED PUBLICATIONS

3. **Parent, G.J.**, Raherison, E., Sena, J. and MacKay, J.J. (2015) Forest tree genomics: review of progress. In C. Plomion & A.-F. Adam-Blondon (Eds.), *Land plants: trees*. Elsevier.
2. **Parent, G.J.** (2012) Hybridation entre *Calanus finmarchicus* et *C. glacialis* (Copepoda). Thesis. Québec, Québec, Université Laval, 110 p.
1. **Parent, G.J.** (2008). Acclimatation thermique de la palourde américaine, *Mercenaria mercenaria* : expérimentation en jardin commun. Mémoire. Rimouski, Québec, Université du Québec à Rimouski, Institut des sciences de la mer de Rimouski, 88 p.

#### CONFERENCE PRESENTATIONS

- Parent, G.J.** (2016) Evolution of a defence mechanism in conifers, Oxford Plant Sciences Conference, Oxford, United-Kingdom, regional conference (**invited speaker**).
- Parent, G.J.** (2016) Evolution of a resistance mechanism in conifers, IUFRO tree biotechnology conference, Bordeaux, France, international conference.
- Parent, G.J.** (2014-2015) Évolution d'un mécanisme de résistance contre la tordeuse des bourgeons de l'épinette, **1)** Centre d'étude de la forêt, Québec, Canada, regional conference, **2)** Faculté des sciences du bois et de la forêt, Université Laval, Québec, Canada, regional conference (**faculty finalist**), **3)** Faculté des études supérieures et postdoctorales, Université Laval, Québec, Canada, regional conference (**first position**).
- Parent, G.J.**, Plourde S., and Turgeon J. (2011) Temporal variability of fitness of *Calanus finmarchicus*, *C. glacialis*, and their hybrids (Copepoda) in the St. Lawrence Estuary, Québec-Océan, Québec, Canada, provincial conference.
- Parent, G.J.**, Plourde, S., and Turgeon, J. (2010) Hybridization of *Calanus* spp. off the Canadian coast, Québec-Océan, Québec, Canada, provincial conference (**honourable distinction**).
- Parent, G.J.**, Plourde, S., and Turgeon, J. (2010) Hybridization of *Calanus* spp. off the Canadian coast: impact on oceanographic surveys, **1)** Evolution, Portland, USA, international conference, **2)** Canadian Society for Ecology and Evolution, Québec, Canada, national conference.

- Parent, G.J.,** Pernet, F., Sévigny, J.-M., Ouellette, M., and Tremblay, R. (2007) Thermal adaptation of the hard clam *Mercenaria mercenaria*, **1)** Comparative Biochemistry and Physiology A-Molecular & Integrative physiology, S78-S78, Salvador, Brazil, international conference (**invited speaker**), **2)** Canadian Society of Zoology, Montréal, Canada, national conference.
- Parent, G.J.** (2006-2007) Santé de palourdes aux acides gras et aux stérols, **1)** Science outreach conference, Université du Québec à Rimouski, Rimouski, Canada, regional conference, **2)** CÉGEP de Rimouski (**invited speaker**), Rimouski, Canada, regional conference, **3)** ACFAS (**invited speaker**), Trois-Rivières, Canada, provincial conference.

## CONFERENCE POSTERS

- Parent, G.J.,** Giguère, I., MacKay, J.J. (2015) Geographic variation in resistance of a tree against an insect, 15<sup>th</sup> meeting of the European society for evolutionary biology, Lausanne, Switzerland, international conference.
- Parent, G.J.,** Giguère, I., MacKay, J.J. (2015) Interspecific variation of a constitutive defence mechanism in conifers, IUFRO tree biotechnology conference, Florence, Italy, international conference.
- Parent, G.J.,** Giguère, I., MacKay, J.J. (2015) Microevolutionary patterns of a resistance mechanism in white spruce, New Phytologist 35<sup>th</sup> symposium, Boston, United States, international conference (**best poster**).
- Parent, G.J.,** Plourde, S., Joly, P., and Turgeon, J. (2012) Maternal ancestry is linked with phenotype and reproductive output in hybrids between, *Calanus glacialis* and *C. finmarchicus* (Copepoda) in the St. Lawrence Estuary, Canada, joint meeting of the Canadian society of ecology and evolution and the Society of evolution, Ottawa, Canada, international conference.
- Parent, G.J.** (2015) Profil géographique de la résistance contre la tordeuse des bourgeons de l'épinette, Centre d'étude de la forêt, Rimouski, Canada, provincial conference.
- Parent, G.J.,** Plourde, S., Joly, P., and Turgeon, J. (2011) Hybridization between *Calanus finmarchicus* and *Calanus glacialis* off the Canadian Coast, 5<sup>th</sup> international zooplankton production symposium, Pucon, Chile, international conference (**best poster**).
- Parent, G.J.,** Turgeon, J., Joly, P., and Plourde, S. (2011) Overlapping size ranges of *Calanus* spp. off the Canadian Arctic and Atlantic Coasts: impact on species' abundances, 5<sup>th</sup> international zooplankton production symposium, Pucon, Chile, international conference.
- Parent, G.J.,** Plourde, S., et Turgeon, J. (2009) Population structure of *Calanus finmarchicus* in the Estuary and Gulf of St. Lawrence and adjacent areas **1)** Société canadienne d'écologie et d'évolution, Halifax, Canada, national conference; **2)** CHONe, Montréal, Canada, national conference; **3)** Québec-Océan, Rivière-du-Loup, Canada, provincial conference.
- Parent, G.J.,** Pernet, F., Sévigny, J.-M., Ouellette, M., and Tremblay, R. (2007) Thermal adaptation of the hard clam *Mercenaria mercenaria*, Comparative Biochemistry and Physiology A-Molecular & Integrative physiology, S78-S78, Salvador, Brazil, international conference.
- Parent, G.J.,** Pernet, F., Sévigny, J.-M., Ouellette, M. and Tremblay, R. (2006) Potentiel d'acclimatation de *Mercenaria mercenaria*. Réseau Aquaculture Québec, Rimouski, Canada, provincial conference (**second best poster**).
- Gurd, W., **Parent, G.,** Eniojukan, R., Bowers, C.Y., and Tannenbaum, G.S. (2001) Interrelationship between the novel peptide ghrelin and somatostatin/GHRH in regulation of pulsatile GH secretion. Endocrine Society, OR3-5, Toronto, Canada, international conference.