

SÉBASTIEN RENAUT

Research Professional
Quebec Centre for Biodiversity Science
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EDUCATION

- 2006-2010 Doctorate of Philosophy (supervisor: Louis Bernatchez), Biology, *Université Laval*, Quebec City
- 2002-2004 Master of Science (supervisor: Graham Bell), Biology, *McGill University*, Montreal
- 1998-2001 Bachelor of Science (Agriculture), Environmental Biology, *McGill University*

EXPERIENCE

- 2014-current Research Professional, Quebec Centre for Biodiversity Science (located at the Montreal Botanical Garden), *Université de Montréal*, Montreal
- Supervise graduate students and provide bioinformatics support
 - Lead and teach training workshops in genomics and biodiversity science
 - Organize an annual symposium for members of the centre
 - Act as liaison between administration, students, researchers and funding agencies
- 2013-current Subject Editor, *Molecular Ecology / Molecular Ecology Resources (Wiley-Blackwell)*
- Specialize in High Throughput Sequencing, transcriptomics and speciation genomics
 - 103 submissions handled since January 2013
- 2008-current Reviewer
- Journals (35+ journals, 60+ reviews, see [Publons profile](#)):
African Journal of Agricultural Research, The American Naturalist, AxiosReview.org, Biological Journal of the Linnean Society, BMC ecology, BMC evolutionary biology, BMC genomics, Conservation Genetics, Ecology Letters, Ecology and Evolution, Endangered Species Research, Evolution, Evolution Letters, Evolutionary Applications, Forest MDPI, Genome Biology and Evolution, Genetics, Genome Research, G3:Genes|Genomes|Genetics, Heredity, International Journal of Molecular Sciences, Journal of Animal Ecology, Journal of Applied Ichthyology, Journal of Fish Biology, Journal of Evolutionary Biology, Le Naturaliste Canadien, Molecular Ecology, Molecular Ecology Resources, Molecular Biology and Evolution, Molecules, Nature Plants, Nucleosides Nucleotides and Nucleic Acids, Philosophical Transactions of the Royal Society B, Proceedings of the National Academy of Sciences of the USA (PNAS), Proceedings of the Royal Society B, Scientific Reports

-Grant proposals (20+ reviews, 10+ million US dollars of funds requested):

Mitacs Accelerate (Canada), W.M. Keck Foundation (USA), Agence Nationale de Recherche (France), Czech Science Foundation (Czech Republic), German Research Foundation (Germany), Biotechnology and Biological Sciences Research Council (UK), Netherlands Organisation for Scientific Research (Netherlands)

- 2010-2014 Postdoctoral fellow (supervisor: Dr Loren Rieseberg), *Biodiversity Research Centre, University of British Columbia, Vancouver*
- 2008-2016 Invited Guest Speaker and Lecturer, Université Laval, UQAM (Montreal)
-Ecology and Evolution Seminar (2016), Molecular Ecology (2009), Biogeography (2007)
- 2002-2008 Teaching Assistant, *Université Laval, McGill University*
-Vertebrate Evolution (2007 & 2008), Plant Structure and Function (2006), Molecular and Cellular Biology (2003 & 2004), Genetics (2004), Methods in Biology of Organisms (2002, 2003 & 2004)
- 2006 Lab Technician, Plant Molecular Systematics, *Université de Montréal*
- 2005-2006 Lab Manager, Plant tissue culture and plant molecular biology laboratory, Institut de Recherche en Biologie Végétale, *Université de Montréal*
- 2001-2002 Lab Technician, Biotechnology Research Institute, *National Research Council Canada, Montreal*

AWARDS, FELLOWSHIPS

- 2017 QCBS seed grant, *co-applicant (5,000\$)*
- 2012-2013 Postdoctoral Fellowship, *Natural Sciences and Engineering Research Council of Canada (80,000\$)*
- 2011-2012 Postdoctoral Fellowship, *Fonds de Recherche du Québec - Nature et Technologies (60,000\$, declined)*
- 2010 Richard Bernard PhD Scholarship, *Université Laval (3,000\$)*
- 2009 & 2010 Travel Scholarship (conference), *Québec-Océan (2,000\$)*
- 2009 Tuition Waiver (Institute of Statistical Genetics), *University of Washington (1,500\$)*
- 2009 Travel Scholarship (Institute of Statistical Genetics), *Québec-Océan (1,000\$)*
- 2008-2009 Post Graduate Scholarship, *NSERC (42,000\$)*
- 2008-2009 Post Graduate Scholarship, *FRQNT (42,000\$, declined)*
- 2007 Post Graduate Scholarship, *Fondation Bourgie (5,000\$)*
- 2006 PhD Support Fund, *Université Laval (3,000\$)*
- 2002 Graduate Student & Alma Mater Student Travel Fund, *McGill University (1,300\$)*

SUPERVISION AND MENTORSHIP

- 2017 Alice Fornasiero (Università di Udine, PhD candidate, external thesis examiner)
- 2015-2017 Charlotte Capt (UdeM, PhD candidate)
- 2016 Hermine Alexandre (UdeM, PhD candidate, internal thesis examiner)

- 2015-2016 Jacynthe Masse (UBC, PhD candidate, see Masse *et al.* 2017)
- 2011-2013 Christopher Grassa (UBC, MSc candidate /staff, see Renault *et al.* 2012b, 2013)
- 2012-2013 Anne-Marie Dion Côté (U Laval, PhD candidate, see Dion-Côté *et al.* 2014)
- 2013 Jobran Chebib (University of Calgary, MSc candidate, see Chebib *et al.* 2016)
- 2010-2012 Francois Olivier Hebert (U Laval, MSc candidate, see Hebert *et al.* 2013)
- 2011 Sreepriya Pramod (Mississippi State University, PhD candidate)
- 2010 Nicolas Maillet (U Laval, MSc candidate, see Renault *et al.* 2012a)

PEER REVIEWED PUBLICATIONS

- 1700+ citations, H-index: 21 ([google scholar](https://scholar.google.com/citations?user=...), December 2017)

- 2017
37. Capt C., **Renaut S**, Ghiselli F, Milani L, Johnson N, Sietman B, Stewart D, Breton S. Deciphering the link between doubly uniparental inheritance of mtDNA and sex determination in bivalves: clues from comparative transcriptomics. *Accepted*
36. **Renaut S**, Budden AE, Gravel D, Poisot T, Perez-Neto P. Data management, archiving and sharing for ecologists and the role of libraries in the 21st century. *In review*
35. Tennant JP *et al.* (32 co-authors including **Renaut S**.) A multi-disciplinary perspective on emergent and future innovations in peer review. *F1000Research* [version 2; referees: 2 approved with reservations]. 6:1151
34. **Renaut S**. Illuminating the Sunflower Genome. 2017. *Nature Plants* 3:17099
33. Masse J, Prescott CE, **Renaut S**, Terrat Y, Grayston SJ. Vegetation cover as a driver of bacterial α - and β -diversity in reconstructed oil-sand soils and in natural boreal forest soils. *Applied and Environmental Microbiology* 83: e03319-16.
- 2016
32. Bailie A, **Renaut S**, *et al.* Phylogeographic and genetic variation in *Sorbus*, a traditional antidiabetic medicine – adaptation in action in both a plant and a discipline. *PeerJ* 4, e2645.
31. De Vriendt L, *et al.* (7 co-authors, including **Renaut S**). The role of population isolation in shaping plant genetic, phenotypic and fitness variation in naturally patchy ecosystems. *Journal of Plant Ecology*: rtw071.
30. **Renaut S**, Dion-Côté AM. 2016. History repeats itself: genomic divergence in copepods. Perspective for *Molecular Ecology* 25: 1417-1419
29. Chebib J, **Renaut S**, Bernatchez L, Rogers SM. 2016. Genetic structure and within-generation genome scan analysis of fisheries-induced evolution in a lake whitefish (*Coregonus clupeaformis*) population. *Conservation Genetics* 17: 473-483
- 2015
28. Andrew RL, Albert AYK, **Renaut S**, Rennison DJ, Bock DG, Vines TH. 2015. Assessing the reproducibility of discriminant function analyses. *PeerJ* 3: e1137.
27. **Renaut S**, Rieseberg LH. 2015. The accumulation of deleterious mutations as a consequence of domestication and improvement in sunflowers and other Compositae crops. *Molecular Biology and Evolution* 32: 2273-2283.
- 2014
26. Barb JG, *et al.* (6 co-authors, including **Renaut S**). 2014. Chromosomal evolution and patterns of introgression in *Helianthus*. *Genetics* 197: 969–979
25. **Renaut S**, Rieseberg LH, Rowe HC, Ungerer MC. 2014b. Genomics of Homoploid Hybrid Speciation: Diversity and Transcriptional Activity of LTR Retrotransposons in Hybrid Sunflowers. *Philosophical Transactions of the Royal Society B* 369:

20130345.

24. Dion-Côté AM, **Renaut S**, Normandeau E, Bernatchez L. 2014. RNA-seq reveals transcriptomic shock involving transposable elements reactivation in hybrids of young lake whitefish species. *Molecular Biology and Evolution* 31: 1188-1199.

23. Faria R, **Renaut S**, *et al.* 2014. Meeting Review: Advances in Ecological Speciation: an integrative approach. *Molecular Ecology* 23: 513-521.

22. **Renaut S**, Owens G, Rieseberg LH. 2014a. Shared selective pressure and local genomic landscape lead to repeatable patterns of genomic divergence in sunflowers. *Molecular Ecology* 23: 311-324.

21. Vines TH, *et al.* (9 co-authors, including **Renaut S**). 2014. The availability of research data declines rapidly with article age *Current Biology* 24: 94-97.

2013

20. Hebert FO, **Renaut S**, Bernatchez L. 2013. Targeted sequence capture and resequencing implies a predominant role of regulatory regions in the divergence of a sympatric lake whitefish species pair (*Coregonus clupeaformis*). *Molecular Ecology* 22: 4896-4914.

19. Genome Resources Development Consortium, King MG, **Renaut S**, Rieseberg LH, Rowe HC. 2013. Genomic Resources Notes accepted 1 February 2013 – 31 March 2013. *Molecular Ecology Resources* 13: 759

18. **Renaut S**, *et al.* 2013. Genomic islands of divergence are not affected by geography of speciation in sunflowers. *Nature Communications* 4: 1827

17. **Renaut S**. 2013. A new approach to quantify the adaptive potential of gene expression variation in gymnosperms. *Molecular Ecology* 22: 2361-2363

16. Vines TH, *et al.* (12 co-authors, including **Renaut S**) 2013. Mandated data archiving greatly improves access to research data. *FASEB Journal* 27: 1304-1308

2012

15. **Renaut S**, *et al.* 2012b. The population genomics of sunflowers and genomic determinants of protein evolution revealed by RNAseq. *Biology* 1: 575-596

14. Gilbert KJ, *et al.* (10 co-auteurs, incluant **Renaut S**) 2012. Recommendations for utilizing and reporting population genetic analyses: the reproducibility of genetic clustering using the program STRUCTURE. *Molecular Ecology* 21: 4925-2930

13. **Renaut S**, *et al.* 2012a. Genome-wide patterns of divergence during speciation: the lake whitefish case study. *Philosophical Transactions of the Royal Society B* 367: 354-363

2011

12. Rowe HC, **Renaut S**, Guggisberg A. 2011. Meeting Review: RAD in the realm of next-generation sequencing technologies. *Molecular Ecology* 20: 3499-3502

11. **Renaut S**. 2011. Contemporary hybrid speciation in sculpins (*Cottus* spp.). *Molecular Ecology* 20: 1320-1321

10. **Renaut S**, *et al.* Gradients of ecological speciation, SNP signature of selection on standing genetic variation, and association with adaptive phenotypes in lake whitefish species pairs (*Coregonus* spp.). *Molecular Ecology* 20: 545-559

9. **Renaut S**, Bernatchez L. 2011. Transcriptome-wide signature of hybrid breakdown associated with intrinsic reproductive isolation in lake whitefish species pairs (*Coregonus* spp. Salmonidae). *Heredity* 106: 1003-1011

2010

8. Jeukens J, **Renaut S**, St-Cyr J, Nolte AW, Bernatchez L. 2010. The transcriptomics of sympatric dwarf and normal lake whitefish (*Coregonus clupeaformis* spp., Salmonidae) divergence as revealed by next-generation sequencing. *Molecular Ecology* 19: 5389-5403.

7. Bernatchez L, **Renaut S**, *et al.* 2010. On the origins of species: Insights from the ecological genomics of whitefish. *Philosophical Transactions of the Royal Society B* 365: 1783-1800
6. **Renaut S**, Nolte AW, Bernatchez L. 2010. Mining transcriptome sequences towards identifying adaptive single nucleotide polymorphisms in lake whitefish species pairs (*Coregonus* spp. Salmonidae). *Molecular Ecology* 19: 115-131
- 2009 5. **Renaut S**, Nolte AW, Bernatchez L. 2009. Gene expression divergence and hybrid misexpression between lake whitefish species pairs (*Coregonus* spp. Salmonidae). *Molecular Biology and Evolution* 26: 925-936
4. Nolte AW, **Renaut S**, Bernatchez L. 2009. Divergence in gene regulation at young life history stages of whitefish (*Coregonus* sp.) and the emergence of genomic isolation. *BMC Evolutionary Biology* 9: 59
- 2008 3. Whiteley AR, *et al.* (9 co-auteurs, incluant **Renaut S**). 2008. The Phenomics and Expression Quantitative Trait Locus Mapping of Brain Transcriptomes Regulating Adaptive Divergence in Lake Whitefish Species Pairs (*Coregonus* sp.). *Genetics* 180: 147-164
- 2007 2. Lauzer D, **Renaut S**, St-Arnaud M, Barabé D. 2007. In vitro asymbiotic germination, protocorm development and plantlet acclimatization of *Aplectrum hyemale* (Orchidaceae). *Journal of the Torrey Botanical Society* 134: 344-348
- 2006 1. **Renaut S**, *et al.* 2006. The Ecology and Genetics of Fitness in *Chlamydomonas*. XIII. Fitness of Long-Term Sexual and Asexual Populations in Benign Environments. *Evolution* 60: 2272-2279

PUBLICATIONS (non peer-reviewed)

- 2007 4. **Renaut S**. Symbiose mycorhizienne: entre champignons et racines, c'est... donnant donnant! *Quatre Temps*, Dec: 44-47. Article de vulgarisation publié par Les Amis du Jardin Botanique de Montréal
- 2006 3. **Renaut S**. 2006. Grains de beauté. *Quatre Temps*, Dec: 21-24
- 2002 2. Yerushalmi L, **Renaut S** & Guiot SR. 2002 Traitement d'eaux contaminées au Technoparc, Montréal. Rapport final pour *Sanexen Service Environnementaux Inc.*
1. Frigon JC, Lorrain MJ, **Renaut S** & Guiot SR. 2002 Analyse de l'inhibition anaérobie pour le procédé MicroSludge. Rapport final pour *Paradigm Environmental Technologies Inc.*

INVITED CONFERENCE PRESENTATIONS AND UNIVERSITY SEMINARS

- Total: 50 scientific presentations since 2006, 27 presentations as first author (25 oral, 3 posters), 22 as co-author (16 oral, 6 posters)
- 26 invited conference talks and university seminars (*presenter):
- 2017 26. **Renaut S***. Biodiversity Science in Quebec, Genomes & Data. Biology Departmental Seminar, Université de Montréal.
- 2016 25. **Renaut S***. Data Archiving and Reproducibility in Ecology and Evolution. Quebec Centre for Biodiversity Science annual symposium. Montreal, Canada.

24. **Renaut S***. Évolution du transcriptome chez le tournesols, Biology Departmental Seminar, Université de Montréal.
23. **Renaut S***. Évolution du transcriptome, Evolution and Ecology Seminar, UQAM, Montreal, Canada.
- 2015 22. **Renaut S**, Rieseberg LH*. The Accumulation of deleterious mutations as a consequence of domestication and improvement in sunflowers. Canadian Society of Ecology and Evolution (CSEE), Saskatoon, Canada.
21. **Renaut S***. Rieseberg LH. The Accumulation of deleterious mutations as a consequence of domestication and improvement in sunflowers. CROPS, Huntsville, USA.
20. **Renaut S***. Transcriptome evolution in young species of sunflowers. Biology Departmental Seminar, Université Laval, Quebec City, Canada.
19. **Renaut S***. Rieseberg LH. The accumulation of deleterious mutations as a consequence of domestication and improvement in sunflowers. Plant and Animal Genome (PAG) XXIII, San Diego, USA.
- 2014 18. **Renaut S***. Transcriptome evolution in recently derived species. Departmental Seminar. Stony Brook University, Long Island, USA.
17. **Renaut S***. Transcriptome evolution in recently derived species. Departmental Seminar. McMaster University, Hamilton, Canada.
16. Estrella M* (11 co-authors, including **Renaut S**). Towards a fully sampled and well-resolved phylogeny of caesalpinoid legumes, Latin American Botanical Congress, Bahia, Brazil.
15. Rieseberg L*, Baute G, **Renaut S**, Khoury CK, Dempewolf H. Ecological genomics and the development of environmentally resilient crops. PAG XXII, San Diego, USA.
- 2013 14. **Renaut S***. Genomics of Adaptation and Speciation. Departmental Seminar. *Eawag* (Swiss Federal Institute of Aquatic Science and Technology), Kastanienbaum, Switzerland.
13. **Renaut S***. Genomics of adaptive divergence and speciation in wild sunflowers. UBC, Botany Departmental Seminar, Vancouver, Canada.
12. **Renaut S***. Genomics of Adaptive Divergence and speciation in sunflowers. Advances in Ecological Speciation. Porto, Portugal.
11. **Renaut S**, Rieseberg LH*. Parallel genomic evolution but not parallel speciation in annual sunflowers. PAG XXI, San Diego, USA.
- 2012 10. **Renaut S***. Genomics of adaptive divergence and speciation in sunflowers. Biology Departmental Seminar, Mississippi State University, Starkville, USA.
9. **Renaut S***. Genomics of adaptive divergence and speciation: from fish to plants. Biology Departmental Seminar. Katholieke Universiteit Leuven, Leuven, Belgium.
8. **Renaut S***, Rieseberg LH. The extent of genomic divergence among sunflower species with respect to their degree of geographic separation. The International Compositae Alliance, Montreal, Canada.
7. Rieseberg LH*, **Renaut S**. Genomics of plant speciation. Evolutionary Biology in the Pacific Northwest (EVO-WIBO). Port Townsend, USA.
- 2011 6. Rieseberg LH, Kane NC, Andrew R*, **Renaut S**, Scasitelli, M, Strasburg, J. The nature of species boundaries in plants. International Botanical Congress, Melbourne, Australia.
5. Rieseberg LH*, **Renaut S**, Kane NC, Andrew R, Grassa C, Lai Z. Patterns of genomic differentiation during speciation. CSEE, Banff, Canada.
4. Bernatchez L*. **Renaut S**, Rogers SM. The genetic basis of species boundaries: the lake whitefish case study. CSEE, Banff, Canada.

3. Rieseberg LH*, Kane NC, King M, **Renaut S**, Scascitelli M, Strasburg JL. The nature of species boundaries in plants. PAG XIX, San Diego, USA.
- 2010 2. Bernatchez L*, **Renaut S**. Dynamics of genomic islands of divergence during the speciation process of whitefish. First European Conference on Speciation Research, Laxenburg, Austria.
1. **Renaut S***. Génomique de la spéciation: le cas du grand corégone (*Coregonus clupeaformis*, Salmonidae). IBIS Departmental Seminar, Université Laval, Quebec city, Canada.

OUTREACH

- 2016 Quebec Centre for Biodiversity Science (QCBS) Annual Meeting, Panels organiser, Data Sharing panel and environmental DNA panel, *Montreal*
- 2015 QCBS Annual Meeting, Panel co-organiser, Biodiversity and health related issues, *Montreal*
- 2014 QCBS Annual Meeting, Panel co-organiser, Next generation uses of biodiversity data, *Montreal*
- 2004-2017 Member of *Quebec Centre for Biodiversity Science, Canadian Society of Ecology and Evolution, Society for the Study of Evolution, European Society for Evolutionary Biology*
- 2013 & 2014 Science Judge (*Greater Vancouver Regional Science Fair*)
- 2012-2015 Website developer and manager (<http://rieseberglab.botany.ubc.ca/>)
- 2010 Student representative, Institut de Biologie Intégrative et des Systèmes, *Université Laval*
- 2013-2017 Running clinic leader (*The Running Room Ltd.*) and pace setter (marathon, 1/2 marathon distances)