

**GABRIEL G. PERRON**

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**ACADEMIC EMPLOYMENTS**

**University of Ottawa**, Ottawa, ON.

*Banting Postdoctoral Fellow*, 2013 – present.

**Harvard University**, Cambridge, MA.

*FQRNT Postdoctoral Research Fellow*, 2010 – 2012.

**EDUCATION**

**University of Oxford**, Oxford, UK.

*Doctor of Philosophy (DPhil)*, Zoology. 2006 – 2010.

**McGill University**, Montréal, QC.

*Master of Science (M.Sc. Dean's Honor List)*. Biology. 2004 – 2006.

*Bachelor of Science (B.Sc.)*, Biology. 2001 – 2004.

**OTHER ACADEMIC POSITIONS**

**Bard College**, Annandale-on-Hudson, NY.

*Visiting Research Fellow*, Summer 2013.

**Harvard University**, Cambridge, MA.

*Visiting Research Fellow*, 2012 – 2013.

**Imperial College London**, Silwood Park, UK.

*Visiting Research Fellow*, 2009 – 2010.

**HONORS AND AWARDS**

**Banting Postdoctoral Fellowship**, Natural Sciences and Engineering Research Council of Canada, Ottawa, ON. 2013.

**Canadian National Award of Linacre College**, Linacre College, Oxford, UK. 2007.

**FUNDING, FELLOWSHIPS, & SCHOLARSHIPS**

- Postdoctoral Fellowship**, Banting program of the Natural Sciences and Engineering Research Council of Canada, Ottawa, ON. 2013 – present.
- Postdoctoral Fellowship**, Fonds de Recherche du Québec, Québec city, QC. 2010 – 2012.
- Long-term Postdoctoral Fellowship**. EMBO, Heidelberg, DE. 2010 – 2012. (*Declined*).
- Visiting Fellowship**. Natural Environment Research Council Centre for Population Biology, Silwood Park, UK. 2010.
- Postgraduate Scholarship (PGS-D)**. Natural Sciences and Engineering Research Council of Canada, Ottawa, ON. 2007 – 2010. (*Declined 2010*).
- Doctoral Scholarship**. Fonds Quebecois sur la Recherche, Québec city, QC. 2006 – 2009 (*Declined 2007-2009*).
- Clarendon Fund Scholarship**, University of Oxford, Oxford, UK. 2006 – 2009.
- Undergraduate Bursary**. Royal Tyrrell Museum, Drumheller, AB. 2002.

**PEER-REVIEWED PUBLICATIONS (CITATIONS >480, H-INDEX = 13)**

- (15) **Perron GG**, Whyte L, Turnbaugh PJ, Hanage WP, Dantas G, & Desai MM. (2013). “Functional characterization of bacteria isolated from ancient Arctic soil exposes diverse resistance mechanisms to modern antibiotics”. *PLoS ONE* –in press.
- (14) **Perron GG**, Lee AEG, Wang Y, Huang WE, & Barraclough TG (2012). “Bacterial recombination promotes the evolution of multidrug-resistance in functionally diverse populations”. *Proceedings B*. 279:1477-1484.
- (13) MacLean RC, **Perron GG**, & Gardner A. (2010). “Diminishing returns from beneficial mutations and pervasive epistasis shape the fitness landscape of rifampicin resistance in *Pseudomonas aeruginosa*”. *Genetics*. 186:1345-1354.
- (12) **Perron GG**, Hall A, & Buckling A. (2010). “Hypermutable and compensatory adaptation in antibiotic-resistant bacteria”. *The American Naturalist*. 176:303-311.
- (11) MacLean RC, Hall AR, **Perron GG**, & Buckling A. (2010). “The population genetics of antibiotic resistance: integrating molecular mechanisms and treatment contexts”. *Discovery Medicine*. 10:112-118.
- (10) MacLean RC, Hall AR, **Perron GG**, & Buckling A. (2010). “The population genetics of antibiotic resistance: integrating molecular mechanisms and treatment contexts”. *Nature Reviews Genetics*. 11:405-414.
- (9) <sup>a</sup>Kohler T, **Perron GG**, Buckling A. & van Delden C. (2010). “Quorum-sensing inhibition selects for virulence and cooperation in *Pseudomonas aeruginosa*”. *PLoS Pathogens*. 6:e1000883.

- (8) Benmayor R, Hodgson D, **Perron GG**, & Buckling A. (2009). “Host mixing and disease emergence”. *Current Biology*. 19:1-4.
- (7) Ward H, **Perron GG**, & MacLean RC. (2009). “The cost of multidrug resistance in *Pseudomonas aeruginosa*”. *Journal of Evolutionary Biology*. 22:997-1003.
- (6) **Perron GG**, Quessy S, & Bell G. (2008). “A reservoir of drug-resistant pathogens in asymptomatic hosts”. *PLoS ONE*. 3:e3749.
- (5) **Perron GG**, Gonzalez A, & Buckling A. (2008). “The rate of environmental change drives adaptation to an antibiotic sink”. *Journal of Evolutionary Biology*. 21:1724-1731.
- (4) <sup>b</sup> **Perron GG**, Bell G, & Quessy S. (2008). “Parallel evolution of multidrug-resistance in *Salmonella enterica* isolated from swine”. *FEMS Microbiology Letters*. 281:17-22.
- (3) **Perron GG**, Gonzalez A, & Buckling A. (2007). “Source-sink dynamics shape the evolution of antibiotic resistance and its associated pleiotropic fitness cost”. *Proceedings B*. 274:2351-2356.
- (2) **Perron GG**, Quessy S, Letellier A, & Bell G. (2007). “Genotypic diversity and antimicrobial resistance in asymptomatic *Salmonella enterica* serotype Typhimurium DT104”. *Infection, Genetics and Evolution*. 7:223-228.
- (1) <sup>c</sup> **Perron GG**, Zaslhoff M, & Bell G. (2006). “Experimental evolution of resistance to an antimicrobial peptide”. *Proceedings B*. 273: 251-256.

<sup>a</sup> Selected by Will Stubbings and Harald Labischinski, *Faculty of 1000 Biology*. 11 Jun 2010.

<sup>b</sup> Selected by Marilyn Roberts, *Faculty of 1000 Biology*. 12 Feb 2008.

<sup>c</sup> Selected as *News and Views* in Buckling and Brockhurst. *Nature*. 2005. 438:7065

## INVITED SEMINARS

- (19) Bard College, Annandale on Hudson, NY. (December 19, 2013). “The ecology and evolution of antibiotic resistance: from ancient bacteria to modern pathogens”
- (18) University of Tromsø, Tromsø, NO. (August 28, 2013). “Functional characterization of resistance genes isolated from ancient Arctic soil reveals resistance to modern antibiotics.”.
- (17) Gordon Research Conference on Microbial Population Biology, Andover, NH (July 22, 2013). “Multi-scale evolution of antibiotic resistance”.
- (16) University of Sheffield, Sheffield, UK. (February 27, 2013). “The evolutionary epidemiology of antimicrobial resistance: how evolution can guide public health strategies”.
- (15) Michigan State University, East Lansing, MI. (February 13, 2013). “The evolutionary epidemiology of antibiotic resistance: the origin and spread of antibiotic resistance genes in natural populations of bacteria”.

- (14) University of Ottawa, Ottawa, ON. (October 29, 2012). "Functional characterization of ancient antibiotic resistance genes".
- (13) Bard College, Annandale-on-Hudson, NY. (October 4, 2012). "A blizzard in a bottle: antibiotic resistance in ancient permafrost".
- (12) Université de Sherbrooke, Sherbrooke, QC. (July 5, 2012). "A blizzard in a bottle: the ecology and evolution of antimicrobial resistance [*Fr.*]".
- (11) University of Uppsala, Uppsala, SE. (June 7, 2012). "The origin of antibiotic resistance: 10,000 years of resistance evolution".
- (10) University of Toronto, Toronto, ON. (January 16, 2012). "A blizzard in a bottle: the ecology and evolution of antimicrobial resistance".
- (9) University of Edinburgh, Edinburgh, UK. (August 29, 2011). "A blizzard in a bottle: characterisation of antibiotic resistance in ancient microbial communities".
- (8) McGill University, Ste-Anne-de-Bellevue, QC. (February 23, 2011). "The evolution of antibiotic resistance: an example of applied evolution".
- (7) Université de Montréal, Faculty of Veterinary Sciences, CRIP Seminar series, St-Hyacinthe, QC. (September 23, 2010). "The evolution of antibiotic resistance: an example of applied evolution [*Fr.*]".
- (6) Imperial College London, Silwood Park, UK (July 19, 2010). "The evolutionary and community ecology of antimicrobial resistance".
- (5) ETH Zurich. Zurich, CH. (April 29, 2010). "The evolutionary ecology of antimicrobial resistance".
- (4) 3<sup>rd</sup> ASM Conference on Salmonella. Aix-en-Provence, FR. (October 7, 2009). "*Salmonella* in livestock animal".
- (3) Within-host bacterial dynamics workshop: University of Cambridge, Cambridge, UK (July 13, 2009). "The evolutionary ecology of antibiotic resistance: towards a community approach".
- (2) IEPSRC Workshop: Evolution of Antibiotic Resistance. Imperial College London, UK (January 15, 2009). "The evolutionary ecology of antibiotic resistance".
- (1) Université de Montpellier, Department of Biology. Montpellier, FR. (March 31, 2008). "The genetic and evolutionary ecology of antibiotic resistance [*Fr.*]".

**PEER-REVIEWED PRESENTATIONS**

- (17) Pseudomonas 2013, Lausanne, CH (September 5, 2013). "Functional characterization of *Pseudomonas aeruginosa*'s resistome".
- (16) Environmental dimension of antibiotic resistance symposium, Ottawa, ON (June 17, 2013). "Functional characterization of ancient bacteria exposes resistance to modern antibiotics".
- (15) First Joint Congress on Evolutionary Biology, Ottawa, ON (July 12, 2013). "Origin of antibiotic resistance: 10,000 years of experimental evolution (poster)".
- (14) 13<sup>th</sup> Congress of the European Society for Evolutionary Biology, Tübingen, DE (Aug 22, 2011). "Recombination alleviates the inhibitory effect of diversity in microbial populations".
- (13) Gordon Research Conference: Microbial Population Biology. Andover, NH (July 20, 2011). "Horizontal gene transfer alleviates the inhibitory effect of biodiversity (poster)".
- (12) 12<sup>th</sup> Congress of the European Society for Evolutionary Biology, Turin, IT (August 24, 2009). "The evolutionary ecology of antibiotic resistance: when the rate of change matters".
- (11) Gordon Research Conference: Microbial Population Biology. Andover, NH (July 19, 2009). "The effect of hypermutability on compensatory adaptation (poster)".
- (10) Canadian Society for Ecology and Evolution Annual Meeting. Vancouver, BC (May 5, 2008). "The evolutionary ecology of antibiotic resistance".
- (9) 11<sup>th</sup> Congress of the European Society for Evolutionary Biology. Uppsala, SE (August 21, 2007). "Immigration, antibiotic resistance, cost of resistance and compensatory mutation".
- (8) Evolution Annual Meeting. Christchurch, NZ (June 17, 2007). "Immigration, antibiotic resistance, cost of resistance and compensatory mutations".
- (7) Swine Infectious Disease Network. St-Hyacinthe, QC (June 1, 2006). "Redefining the ecology of pathogenic bacteria: genetic and phenotypic diversity in *Salmonella* Typhimurium DT104 [Fr.] (poster)".
- (6) Canadian Society for Ecology and Evolution Inaugural meeting. Montréal, QC (April 4, 2006). "Redefining the ecology of pathogenic bacteria: genetic and phenotypic diversity of asymptomatic *Salmonella* Typhimurium DT104".
- (5) 10<sup>th</sup> Congress of the European Society for Evolutionary Biology. Krakow, PT (August 16, 2005). "The population structure of *Salmonella*: redefining a clonal model (poster)".
- (4) 90th Congress of the Ecological Society of America. Montréal, QC (August 8, 2005).

- "The evolution of multidrug-resistance: a replicated selection experiment".
- (3) Gordon Research Conference: Microbial Population Biology. Andover, NH (July 18, 2005). "The population structure of *Salmonella*: redefining a clonal model (poster)".
  - (2) Ontario Ecology and Ethology Colloquium. Ottawa, ON (May 8, 2005). "The population structure of *Salmonella*: redefining a clonal model organism".
  - (1) Ontario Ecology and Ethology Colloquium. Mississauga, ON (May 12, 2004). "Experimental evolution of resistance to an antimicrobial peptide".

## TEACHING AND LEARNING

### University of Ottawa, Ottawa, ON.

*Undergraduate student co-supervisor*, 2013 – present.

- Ms Elizabeth O'Reilly, *B.Sc. Honours*.

*Co-investigator: Biomedical doctorates in the contemporary universities*, 2011 – present.

- Goal: investigating and improving higher education in the biomedical sciences.
- Main investigator: Dr Matt Kemp, University of Western Australia, Perth, AUS.

### Université de Montréal, St-Hyacinthe, QC.

*Guest Lecturer*, 2012-present.

"Toxicology", Fall 2012 & 2013.

- Two-hour class on risk management of antibiotic resistance in environmental reservoirs.
- Developed a one-page essay mid-term and two final exam questions.

*Lecturer*, 2012

"Statistics for the Life Sciences using GLM", March 30<sup>th</sup> 2012.

- I designed and taught a five hour workshop for graduate students, postdocs and principal investigators working in Veterinary Sciences and related fields
- Concepts taught: Experimental design, analysis of variance, regression analysis and generalized linear models.

### Harvard University, Cambridge, MA.

*Derek Bok Center*, 2011 – 2012.

- Courses taken: *Teaching Philosophy & Public Speaking for Teachers and Scholars*.

### Imperial College London, Silwood Park, UK.

*Graduate student co-supervisor*, 2010.

- Mr Alexander Lee, *M.Sc. (now a PhD candidate at King's College, UK)*.

### University of Oxford, Oxford, UK.

*Graduate student co-supervisor*, 2008.

- Ms Helen Ward, *M.Sc. (now a PhD candidate at University of London, UK)*.

*College Tutor in Biology at Keble College, 2008 – 2009.*

- Tutorials in statistics, evolutionary biology, and infectious diseases.

*Head demonstrator, 2009*

- Quantitative methods and statistics, *B.A.* Academic year 2009.

*Demonstrator, 2006 – 2008.*

- Quantitative methods and statistics, *M.Sc.* Winter 2007 & 2008.
- Quantitative methods and statistics, *B.A.* Academic year 2006 – 2008.

**McGill University**, Montréal, QC.

*Guest lecturer, 2006*

- Natural Selection (one lecture), *B.Sc.* Fall 2006

*Teaching assistant, 2004 – 2005.*

- Methods in Biology of Organisms, *B.Sc.* Fall 2005.
- Biometry and Statistics, *B.Sc.* Fall 2004.
- Cell and Molecular Biology, *B.Sc.* Winter 2004.

## SERVICES

### Committees, Grants, and Examination

**Committee member on the GT-FESP (Destination 2020):** This committee was mandated by the Vice-President Academic and the Administration Committee at the University of Ottawa and has for objective to promote recruitment within the Faculty of Graduate and Postdoctoral studies. Fall 2013 – present.

**PhD thesis external examiner:** Paolo Ocamapos (University of Zurich). Fall 2013.

**Grant external reviewer:** Austrian Science Fund (FWF). Fall 2013.

### Academic Editing and Refereeing

**Guest-Editor:** Special Issue for *Evolutionary Applications* entitled “The Genetics and Adaptation of Resistance”. *To be published in Fall 2014.*

**Reviewer:** *The American Naturalist* (2), *BMC Evolutionary Biology* (1), *Drug Resistance Updates* (1), *Ecology Letters* (2), *Evolutionary Applications* (4), *Evolutionary Ecology* (1), *FEMS Microbial Ecology* (1), *FEMS Microbiology Letters* (3), *Journal of Antimicrobial Chemotherapy* (1), *Journal of Evolutionary Biology* (3), *Microbiology* (2), *Nature Protocols* (1), *PLoS One* (7), *PLoS Pathogens* (1), *Proceedings of the National Academy of Sciences of the USA* (2), *Proceedings of the Royal Society B* (3), *Risk Analysis* (1), & *Undersea and Hyperbaric Medicine* (2).

### Conference Organization

**Symposium Organizer:** 15<sup>th</sup> Congress of the European Society for Evolutionary Biology. Lisbon, PR (August 19-24, 2013).

**Discussion Leader:** Gordon Research Conference: Microbial Population Biology. Andover, NH (July 23, 2013).

**Associate-Chair:** Gordon Research Seminar: Microbial Population Biology. Andover, NH (July 20-21, 2013).

**Professional affiliations:** I am an active member of the Canadian Society for Ecology and Evolution, and the European Society for Evolutionary Biology.

### OUTREACH

#### Public events:

- I co-organized a Bar des Sciences "Science Pub" with Radio-Canada & Quebec Science, Gatineau, QC (April 3, 2013). "Is science necessary for policy making? [Fr.]".

#### Public presentations:

- "Nature walk: Seeing evolution in action". Bard College, Annandale-on-Hudson, NY (April 18, 2012).
- "Meet a scientist". Bard College, Annandale-on-Hudson, NY (April 4, 2011).
- "Physicists in biosciences: The biology of evolution". The Oxford Tradition, Oxbridge Academic Programs. Oxford, UK (July 19, 2010).

#### Social Implications:

- Social media relation for "Bacon and Egghead". A flagship series organized by the Partnership Group for Science and Engineering in Canada that brings Parliamentarians with experts to discuss topical scientific issues in a non-partisan forum. Ottawa, ON. Fall 2013 – present.