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PERSONAL INFORMATION

Languages: English and French (Spoken and Written)

EDUCATION

2006 **Postdoctoral Fellow** (Biochemistry/Enzymology) **Harvard Medical School**, Boston, MA, USA.
2003 **Ph.D.** (Organic Chemistry) **University of Alberta**, Edmonton, Alberta, Canada. (GPA: 8.8/9.0)
1997 **M.Sc.** (Organic Chemistry) **Université Laval**, Sainte-Foy, Québec, Canada. (GPA: 4.0/4.3)
1995 **B.Sc.** (Chemistry) **Université Laval**, Sainte-Foy, Québec, Canada. (GPA: 4.9/5.0)

RESEARCH EXPERIENCE

2006- **John G. Searle Assistant Professor of Medicinal Chemistry** (College of Pharmacy) and **Research Assistant Professor** (Life Sciences Institute) **University of Michigan**, Ann Arbor, MI, USA.

2003-2006 **Harvard Medical School**

Research Advisor: Prof. Christopher T. Walsh
Department of Biological Chemistry and Molecular Pharmacology
Area of study: Mono/dipyrrole formation and modification in natural products

- Characterized the formation of the pyrrole moiety during aminocoumarin antibiotics biosynthesis
- Analyzed hybrid nonribosomal peptide-polyketide interfaces in the anticancer agent epothilone
- Identified and characterized the chlorinating agents in antifungal and antitumor agents
- Created most of the illustrations for and edited Christopher T. Walsh's new 480-page book "Posttranslational Modification of Proteins"

1997-2003 **University of Alberta**

Research Advisor: Prof. John C. Vederas
Department of Chemistry
Ph.D. Dissertation: "New Antimicrobial Agents Acting on Bacterial Cell Walls"

- Synthesized inhibitors (mono/disaccharides) of the transglycosylase penicillin-binding protein 1b
- Synthesized farnesyltransferase inhibitors
- Identified and characterized novel bacteriocins (potential food preservatives)

1995-1997 **Université Laval**

Research Advisor: Prof. Robert Chênevert and Prof. Perséphone Canonne
Department of Chemistry
M.Sc. Dissertation: "Synthesis of (+)-striatene and inhibitors of glutamyl-tRNA synthetase"

1993, 1994 **Université Laval**

Research Advisor: Prof. C. Geraldine Bazuin and Prof. Anna M. Ritcey
Department of Chemistry
Area of study: Assistant researcher in calorimetric and Langmuir-Blodgett studies of polymers

TEACHING EXPERIENCE

1997-2003 **University of Alberta**

Course developer and teaching assistant
Developed the advanced organic chemistry course (see in Published Manuals and Course Materials)
Supervised teaching assistants for the advanced organic chemistry course
Lectured the laboratory section of the advanced organic chemistry course

1995-1997 **Université Laval**
Supervisory teaching assistant
Supervised and lectured the advanced organic chemistry laboratory

HONORS AND AWARDS

2006 John G. Searle Assistant Professor Endowed Chair
2002 Graduate Student Teaching Award
1999-2003 Izaak Walton Killam Memorial Scholarship
2001 Mary Louise Imrie Graduate Student Award
1999-2001 Alberta Heritage Foundation for Medical Research Scholarship
1997-1999 Walter H. John Scholarship
1997-1999 NSERC (Natural Sciences and Engineering Research Council) ESB
1995-1997 NSERC ESA
1995-1999 FCAR (Fonds québécois de la recherche sur la nature et les technologies)
1992, 1995 Université Laval Entrance Fellowship for B.Sc. and M.Sc.
1995 CIC Award
1994 Lucien Piché Foundation Fellowship
1994 NSERC USRA
1993-1995 Honor's list at Laval University
1992-1995 Canada Scholarship
1992-1995 Price Foundation Fellowship

RESEARCH PUBLICATIONS

1. Fridman M, Balibar CJ, Lupoli T, Kahne D, Walsh CT, and **Garneau-Tsodikova S***. 2007. Chemoenzymatic Formation of Novel Aminocoumarin Antibiotics by the Enzymes CouN1 and CouN7. *Biochemistry* **46(28)**, 8462-8471.
2. Balibar CJ, **Garneau-Tsodikova S**, and Walsh CT. 2007. Covalent CouN7 Enzyme Intermediate for Acyl Group Shuttling in Aminocoumarin Biosynthesis. *Chem. Biol.* **14**, 679-690.
3. Dorrestein PC, Bumpus SB, Calderone CC, van Lanen S, **Garneau-Tsodikova S**, Aron Z, Straight P, Kolter R, Shen B, Walsh CT, and Kelleher NL. 2006. Facile Detection of Acyl- and Peptidyl-intermediates on Thiotemplate Carrier Domains via Phosphopantetheinyl Elimination Reactions During Tandem Mass Spectrometry. *Biochemistry* **45**, 12756-12766.
4. **Garneau-Tsodikova S**, Dorrestein PC, Kelleher NL, and Walsh CT. 2006. Protein Assembly Line Components in Prodigiosin Biosynthesis: Characterization of PigA,G,H,I,J. *J. Am. Chem. Soc.* **128**, 12600-12601.
5. **Garneau-Tsodikova S**, Stapon A, Kahne D, and Walsh CT. 2006. Installation of the pyrrolyl-2-carboxyl pharmacophore by CouN1 and CouN7 in the late biosynthetic steps of the aminocoumarin antibiotics clorobiocin and coumermycin A₁. *Biochemistry* **45(28)**, 8568-8578.
6. Ueki M, Galonic DP, Vaillancourt FH, **Garneau-Tsodikova S**, Yeh E, Vosburg DA, Schroeder FC, Osada H, and Walsh CT. 2006. Enzymatic Generation of the Antimetabolite g,g-Dichloroaminobutyrate by NRPS and Mononuclear Iron Halogenase Action in a Streptomycete. *Chem. Biol.* **13**, 1183-1191.
7. Dorrestein PC, Blackhall J, Straight P, Fishbach M, **Garneau-Tsodikova S**, Edwards DL, McLaughlin S, Lin M, Gerwick WC, Kolter R, Walsh CT, and Kelleher NL. 2006. Substrate and Activity Screening of Carrier Domains with Complex Reaction Mixtures by Large Molecule Mass Spectrometry. *Biochemistry* **45(6)**, 1537-1546.
8. Dorrestein PC, Yeh E, **Garneau-Tsodikova S**, Kelleher NL, and Walsh CT. 2005. Dichlorination of a pyrrolyl-S-carrier protein by FADH₂-dependent halogenase PltA during pyoluteorin biosynthesis. *Proc. Nat. Acad. Sci.* **102(39)**, 13843-13848.
9. Yeh E, **Garneau S**, and Walsh CT. 2005. Robust *in vitro* activity of RebF and RebH, a two-component reductase/halogenase, generating 7-chlorotryptophan during rebeccamycin biosynthesis. *Proc. Nat. Acad. Sci.* **102(11)**, 3960-3965.
10. **Garneau S**, Dorrestein PC, Kelleher NL, and Walsh CT. 2005. Characterization of the Formation of the Pyrrole Moiety during Clorobiocin and Coumermycin A₁ Biosynthesis. *Biochemistry* **44(8)**, 2770-2780.
11. **Garneau S**, Qiao L, Chen L, Walker S, and Vederas JC. 2004. Synthesis of Mono- and Disaccharide Analogs of Moenomycin and Lipid II for Inhibition of Transglycosylase Activity of Penicillin-Binding Protein 1b. *Bioorg. Med. Chem.* **12(24)**, 6473-6494.
12. Liu F, **Garneau S**, and Walsh CT. 2004. Hybrid Nonribosomal Peptide-Polyketide Interfaces in Epothilone Biosynthesis: Minimal Requirements at N- and C- Termini of EpoB for Elongation. *Chem. Biol.* **11(11)**, 1533-1542.
13. Mau CJD, **Garneau S**, Scholte AA, Vederas JC, Van Fleet JE, and Cornish K. 2003. Protein farnesyltransferase inhibitors interfere with farnesyl diphosphate binding by rubber transferase. *Eur. J. Biochem.* **270**, 3939-3945.
14. **Garneau S**, Ference CA, van Belkum MJ, Stiles ME, and Vederas JC. 2003. Purification and Characterization of Brochocin A and Brochocin B(10-43), a Functional Fragment Generated by Heterologous Expression in *Carnobacterium piscicola*. *Appl. Environ. Microbiol.* **69(3)**, 1352-1358.
15. **Garneau S**, Rondeau P, Bazuin CG, and Ritcey AM. 2000. Stabilisation of spread monolayers of an amine-functionalised biphenyl mesogen by association with a carboxymethyl cellulose salt. *Macromol. Chem. Phys.* **201(17)**, 2535-2541.
16. Desjardins M, **Garneau S**, Desgagnés J, Lacoste L, Yang F, Lapointe J, and Chênevert R. 1998. Glutamyl Adenylate Analogues are Inhibitors of Glutamyl-tRNA Synthetase. *Bioorg. Chem.* **26(1)**, 1-13.

REVIEWS

1. Walsh CT, **Garneau-Tsodikova S**, and Howard-Jones AR. **2006**. Biological Formation of Pyrroles: Nature's Logic and Enzymatic Machinery. *Nat. Prod. Rep.* **23(4)**, 517-531.
2. Vaillancourt FH, Yeh E, Vosburg DA, **Garneau-Tsodikova S**, and Walsh CT. **2006**. Nature's Inventory of Halogenation Catalysts: Oxidative Strategies Predominate. *Chem. Rev.* **106**, 3364-3378.
3. Walsh CT, **Garneau-Tsodikova S**, and Gatto JG. **2005**. Protein Posttranslational Modifications: The Chemistry of Proteome Diversifications. *Angew. Chem. Int. Ed. Engl.* **44(45)**, 7342-7372.
4. **Garneau S**, Martin NI, and Vederas JC. **2002**. Two-Peptide Bacteriocins Produced by Lactic Acid Bacteria. *Biochimie* **84**, 577-592.

ORAL PRESENTATIONS

1. **Garneau S**, and Vederas JC. **2002**. 19th Mona Symposium. Kingston, Jamaica, January 7-11. Approaches to the Structure Elucidation of Brochocin-C.
2. Chênevert R, Desjardins M, Desgagnés J, and **Garneau S**. **1997**. Canadian Society for Chemistry Conference. Windsor, ON, Canada, June 1-4. Synthesis of Inhibitors of Glutamyl-tRNA Synthetase.
3. Chênevert R, Desjardins M, Desgagnés J, and **Garneau S**. **1997**. 65^e Congrès de l'ACFAS. Trois-Rivières, QC, Canada, May 13-17. Synthèse d'inhibiteurs de la glutamyl-tARN synthétase.
4. **Garneau S**, Potvin S, and Canonne, P. **1996**. 64^e Congrès de l'ACFAS. Montréal, QC, Canada, May 13-17. Synthèses totales du (+)-striatène et de la (-)-microcionine 2.
5. **Garneau S**, and Canonne P. **1995** 6th Ontario/Quebec Minisymposium in Synthetic/Bioorganic Chemistry. Montréal QC, Canada, October 27-29. Méthodologies stéréosélectives appliquées à la synthèse de sesquiterpènes mono- et dicarbocycliques.
6. **Garneau S**, Ritcey AM, and Bazuin CG. **1994**. Colloquium of undergraduate summer student NSERC fellowship holders. Université Laval, Ste-Foy, QC, Canada, September 23. Stabilisation de couches monomoléculaires par interactions polaires avec un polymère rigide. (**awarded first prize**).
7. **Garneau S**, Ritcey AM, and Bazuin CG. **1994**. 6th Undergraduate Chemistry Colloquium of the Province of Québec. Sherbrooke, QC, Canada, October 28. Stabilisation de couches monomoléculaires par interactions polaires avec un polymère rigide. (**awarded first prize**).

ABSTRACTS AND CONFERENCE PROCEEDINGS

* first authorship

1. 2005 International Chemical Congress of Pacific Basin Societies (Pacifichem), Honolulu, HI, USA, December 15-20, **2005**.
2. 36th ACS Great Lakes Regional Meeting 2004, Peoria, IL, USA, October 17-20, **2004**.
3. * *Harvard University BCMP Dept. Annual Retreat*, Whitefield, NH, USA, September 26-28, **2004**.
4. *Harvard University BCMP Dept. Annual Retreat*, Whitefield, NH, USA, September 26-28, **2004**.
5. * 39th IUPAC Congress and 86th CSC Conference, Ottawa, ON, Canada, August 10-15, **2003**.
6. * 85th CSC Conference, Vancouver, BC, Canada, June 1-5, **2002**.
7. * 84th CSC Conference, Montréal, QC, Canada, May 26-30, **2001**.
8. 84th CSC Conference, Montréal, QC, Canada, May 26-30, **2001**.
9. * *Volcano Conference in Bioorganic Chemistry*, Pack Forest, Eatonville, WA, USA, February, **1999**.

PUBLISHED MANUALS AND COURSE MATERIALS

1. Browne LM, **Garneau S**, and Pollard MM. Chemistry 361/363 Laboratory Manual, University of Alberta, **2001-2002**.
2. Browne LM, **Garneau S**, and Pollard MM. Chemistry 361 Spectroscopy Notes, University of Alberta, **2001-2002**.
3. Browne LM, **Garneau S**, and Adams A. Teaching Assistant's Manual Chemistry 361, University of Alberta, **2001-2002**.
4. Tiege PB, Murguly ES, **Garneau S**, Mah HM, Hawkins T, and Browne LM. ¹H NMR Interactive tutorial, University of Alberta.
<http://www.chem.ualberta.ca/~orglabs/spectroscopy/HnmrDirectPage.html>
<http://www.chem.ualberta.ca/~orglabs/spectroscopy/hnmr/HNMRmain.html>

SOCIETY MEMBERSHIPS

- Chemical Institute of Canada (CIC)
- American Chemical Society (ACS)

REFERENCES

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Molecular Pharmacology,
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