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RESEARCH INTERESTS

Using innovative techniques and experimental design, I aim to explore and manipulate neuron-immune cell interactions to improve repair and recovery in neurologic disorders.

- Aim to reveal novel convergent targets that benefit neuron and immune cell responses injury or disease, potentially regulating key events:
 - Behavioural recovery
 - Neurotoxicity (secondary damage)
 - Chronic neuroinflammation
 - Axon plasticity and regeneration
 - Remyelination
 - Neuropathic pain

EDUCATION AND TRAINING

Postdoctoral Research Associate January 2015-present
University of Colorado Boulder Boulder, CO
Advisor: Dr Linda Watkins

Postdoctoral Fellow January 2011-December 2014
The Ohio State University Columbus, OH
Advisor: Dr Phillip Popovich

Ph.D. 2003-2010
University of British Columbia Vancouver, BC
Advisor: Dr Matt Ramer
Thesis: "Role of galectin-1 in sensory neuron development and peripheral nerve repair."

B.Sc., Cell Biology and Genetics 2000-2003
University of British Columbia Vancouver, BC

First year life sciences 1999-2000
University of Toronto Toronto, ON

REFEREED PUBLICATIONS

1. **Gaudet AD**, Fonken LK, Watkins LR, Nelson RJ, Popovich PG. microRNAs: Roles in regulating neuroinflammation. *Neuroscientist*. In press.
2. **Gaudet AD**, Ayala MT, Schleicher WE, Smith EJ, Bateman EM, Maier SF, Watkins LR. Exploring acute-to-chronic neuropathic pain in rats after contusion spinal cord injury. *Experimental Neurology*. 2017;295:46-54. **PMID: 28552717**
3. **Gaudet AD**, Mandrekar-Colucci S, Hall JCE, Sweet DR, Schmitt PJ, Xu X, Guan Z, Mo X, Guerau-de-Arellano M, Popovich PG. miR-155 deletion in mice overcomes neuron-intrinsic and -extrinsic barriers to spinal cord repair. *Journal of Neuroscience*. 2016;36(32):8516-8532. **PMID: 27511021**

4. Fonken LK, Kitt MM, **Gaudet AD**, Barrientos RM, Watkins LR, Maier SF. Diminished circadian rhythms in microglia may contribute to age-related neuroinflammatory sensitization. *Neurobiology of Aging*. 2016;47:102-112. **PMID: 27568094**
5. Jablonski K, **Gaudet AD**, Amici S, Popovich PG, Guerau-de-Arellano M. Control of the macrophage inflammatory transcriptional signature by miR-155. *PLoS ONE*. 2016;11(7):e0159724. **PMID: 27447824**
6. **Gaudet AD***, Fonken LK*, Gushchina LV, Aubrecht TG, Maurya SK, Periasamy M, Nelson RJ, Popovich PG. miR-155 deletion in female mice prevents diet-induced obesity. *Scientific Reports*. 2016;6:22862. **PMID: 26953132**
* Contributed equally.
7. Grace PM, **Gaudet AD**, Staikopoulos V, Maier SF, Hutchinson MR, Salvemini D, Watkins LR. Nitroxidative signaling mechanisms in pathological pain. *Trends in Neuroscience*. 2016;29(12):862-879. **PMID: 27842920**
8. Fonken LK*, **Gaudet AD***, Gaier KR, Nelson RJ, Popovich PG. microRNA-155 deletion reduces anxiety- and depressive-like behaviors in mice. *Psychoneuroendocrinology*. 2015;63:362-369. **PMID: 26555429**
* Contributed equally.
9. Carpenter RS, Kigerl KA, Marbourg JM, **Gaudet AD**, Huey D, Niewiesk S, Popovich PG. Traumatic spinal cord injury in mice with human immune systems. *Experimental Neurology*. 2015;271:432-444. **PMID: 26193167**
10. **Gaudet AD**, Sweet DR, Polinski NK, Guan Z, Popovich PG. Galectin-1 in injured rat spinal cord: Implications for macrophage phagocytosis and neural repair. *Molecular and Cellular Neuroscience*. 2015;64:84-94. **PMID: 25542813**
11. **Gaudet AD**, Popovich PG. Extracellular matrix regulation of inflammation in the healthy and injured spinal cord. *Experimental Neurology*. 2014;258C:24-34. **PMID: 25017885**
12. Gensel JC, Kigerl KA, Mandrekar-Colucci SS, **Gaudet AD**, Popovich PG. Achieving CNS axon regeneration by manipulating convergent neuro-immune signaling. *Cell Tissue Res*. 2012;349(1):201-13. **PMID: 22592625**
13. **Gaudet AD**, Popovich PG, Ramer MS. Wallerian degeneration: Gaining perspective on inflammatory events after peripheral nerve injury. *J Neuroinflammation*. 2011;8(1):110. **PMID: 21878126**
14. **Gaudet AD**, Ramer LM, Nakonechny J, Cragg JJ, Ramer MS. Small-group learning in an upper-level university biology class enhances academic performance and student attitudes toward group work. *PLoS ONE*. 2010;5(12):e15821. **PMID: 21209910**
15. **Gaudet AD**, Leung M, Poirier F, Kadoya T, Horie H, Ramer MS. A role for galectin-1 in the immune response to peripheral nerve injury. *Experimental Neurology*. 2009;220(2): 320-7. **PMID: 19766118**

16. **Gaudet AD**, Ramer LM. Mind the GAP: a role for neurofibromin in restricting axonal plasticity. *J Neurosci*. 2007;27(21):5533-4. **PMID: 17522298**
 17. McGraw J, **Gaudet AD**, Oschipok LW, Kadoya T, Horie H, Steeves JD, Tetzlaff W, Ramer MS. Regulation of neuronal and glial galectin-1 expression by peripheral and central axotomy of rat primary afferent neurons. *Experimental Neurology*. 2005; 195(1):103-14. **PMID: 15893752**
 18. McGraw J*, **Gaudet AD***, Oschipok LW, Steeves JD, Poirier F, Tetzlaff W, Ramer MS. Altered primary afferent anatomy and reduced thermal sensitivity in mice lacking galectin-1. *Pain*. 2005;114(1-2):7-18. **PMID: 15733626**
- * Contributed equally.
19. **Gaudet AD**, Steeves JD, Tetzlaff W, Ramer MS. Expression and functions of galectin-1 in sensory and motoneurons. *Current Drug Targets*. 2005;6(4):419-25. **PMID: 16026260**
 20. **Gaudet AD**, Williams SJ, Hwi LP, Ramer MS. Regulation of TRPV2 by axotomy in sympathetic, but not sensory neurons. *Brain Research*. 2004;1017(1-2):155-62. **PMID: 15261111**

OTHER PUBLICATIONS

1. **Gaudet AD**, Fonken LK. "Ten tips for finding an effective mentor." *Naturejobs*. Web. 25 January 2017.
2. **Gaudet AD**, Fonken LK. "Scientific presentations: A cheat sheet." *Naturejobs*. Web. 11 January 2017.
3. **Gaudet A**. "A grad school survival guide." *Science*. 2015;347(6228):1386. **PMID: 25792331**
4. **Gaudet AD**. "Secrets to thriving in graduate school." *Science Careers*. Science Magazine. Web. 21 January 2015.

RESEARCH SUPPORT

Ongoing

Inhibiting miR-155 in mice to improve spinal cord injury repair

Co-Principal Investigators: Andrew Gaudet & Linda Watkins

Agency: Wings for Life. Type: Project Grant. Period: 2016-2018

This project will explore whether inhibiting miR-155 improves post-SCI neuroprotection and functional recovery.

microRNA-155 is a novel target for ameliorating SCI-induced neuropathic pain and locomotor deficits

Principal Investigator: Steven Maier. Contributor and co-author: Andrew Gaudet

Agency: Craig H. Neilsen Foundation. Type: Pilot Grant. Period: 2016-2018

This project follows from work in Dr. Popovich's lab; it will determine whether miR-155 deletion and inhibition relieves post-SCI neuropathic pain.

Completed***miRNA regulation of macrophages after spinal cord injury***

Principal Investigator: Phillip Popovich. Contributor and co-author: Andrew Gaudet
 Agency: National Institutes of Health (NIH). Type: R21. Period: 2012-2014
 Funded studies on how miR-155 deletion affected post-SCI inflammation and recovery.

miRNA regulation of macrophage inflammation after spinal cord injury

Principal Investigator: Phillip Popovich. Contributor and co-author: Andrew Gaudet
 Agency: International Foundation for Research on Paraplegia (IRP). Type: Basic Research Grant. Period: 2012-2014
 Funded experiments on miR-155's role in macrophage inflammatory phenotype and spinal cord repair.

Improving the immune response to spinal cord injury using galectin-1

Awarded to: Andrew Gaudet
 Agency: Canadian Institutes for Health Research (CIHR). Type: Postdoctoral Fellowship.
 Period: 2011-2014
 Awarded for past achievements, abilities, and proposed research

Role of galectin-1 in regeneration and repair following nerve injury

Awarded to: Andrew Gaudet
 Agency: Michael Smith Foundation for Health Research & Rick Hansen Man in Motion Fund. Type: Senior Graduate Studentship. Period: 2006-2008
 Graduate scholarship based on past accomplishments and on proposed research

Galectin-1 as an enhancer of peripheral and central regeneration of primary afferent axons

Awarded to: Andrew Gaudet
 Agency: Natural Sciences and Engineering Research Council of Canada (NSERC).
 Type: Postgraduate Scholarship, Doctoral. Period: 2004-2007
 Awarded for past accomplishments and proposed research

MacLean Fraser Memorial Research Award

Awarded to: Andrew Gaudet
 Agency: University of British Columbia. Type: Graduate Student Entrance Scholarship.
 Period: 2003
 Selected for excellence in both research and academics during undergraduate years

ACADEMIC HONOURS AND AWARDS**Teaching Awards and Honours**

Killam Teaching Award Committee Member 2009-2010
University of British Columbia Faculty of Science

- Attended classes of nominees for teaching award; gained unique perspective
- Contributed to discussion and decisions for the awards

Graduate Teaching Assistant Teaching Award Winner 2008-2009
University of British Columbia

- Award based on skills, abilities and contributions that resulted in a high level of respect from undergraduate students and faculty

Top Poster Awards

1. Ohio State University Neuroscience Research Day, Columbus, OH, 2013
2. Disabilities Health Research Network Conference, Vancouver, BC, 2010

Conference Travel Awards

Disabilities Health Research Network (DHRN), 2008 & 2009
International Brain Research Organization (IBRO) Congress, Melbourne, Australia, 2007
International Symposium on Neural Regeneration, Asilomar, CA; 2003, 2005, 2007, 2009
Asian Pacific Symposium on Neural Regeneration, Osaka, Japan, 2004

INVITED PRESENTATIONS

Modulating neuroinflammatory dynamics to improve nervous system repair.

Invited speaker. University of Alberta. Edmonton, AB, 2017.

Modulating neuroinflammatory dynamics to improve nervous system repair.

Invited speaker. Texas A&M. College Station, TX, 2017.

Novel neuroimmune strategies for improving axon plasticity and spinal cord repair. CNS Neuroregeneration Strategies Symposium. Houston, TX, 2017.

Modulating neuroinflammatory dynamics to improve nervous system repair.

Invited speaker. University of Calgary. Calgary, AB, 2016.

Using the immune system to resolve paralysis and pain after spinal cord injury.

Postdoctoral Research Symposium. Boulder, CO, 2016.

Outstanding Postdoc Award Finalist.

Effects of spinal cord injury on rat circadian function. Annual Colorado Sleep and Circadian Research Symposium. Boulder, CO, 2016.

microRNA-155 deletion improves spinal cord repair. International Symposium for Neural Regeneration. Pacific Grove, CA, 2015.

microRNA-155 deletion alters inflammation and axon growth: Implications for spinal cord repair. Spinal Research Trust Meeting. London, UK, 2014.

Regeneration of peripheral nerves following injury. International Brain Research Organization School of Neuroscience Workshop. Vancouver, BC, 2009.

Role of galectin-1 in sensory neuron development and peripheral nerve repair.

Invited speaker. University of Manchester. Manchester, UK, 2007.

Role of galectin-1 in sensory neuron development and peripheral nerve repair.

Invited speaker. Queen Mary University of London. London, UK, 2007.

ABSTRACTS PRESENTED (SELECTED)

1. **Gaudet AD**, Ayala MT, Fonken LK, Maier SF, Watkins LR (2016) Spinal cord injury in rats disrupts bowel function and daily activity rhythms. (Society for Neuroscience Annual Meeting, San Diego, USA)
2. **Gaudet AD**, Schmitt PG, Xu X, Hargrove A, Sweet DR, Guan Z, Guerau-de-Arellano M, Popovich PG (2014) MicroRNA-155 deletion restricts inflammatory signaling in macrophages and enhances axon growth capacity: implications for spinal cord repair. (Spinal Research Trust Meeting, London, UK)

3. **Gaudet AD**, Schmitt PG, Hargrove A, Guerau-de-Allerano M, Popovich PG (2013) The inflammatory microRNA miR-155 drives macrophage-mediated neurotoxicity and neurite outgrowth inhibition. (International Symposium on Neural Regeneration, Asilomar, USA)
4. **Gaudet AD**, Polinski NK, Sweet DR, Guan Z, Popovich PG (2012) Are galectins good for the injury microenvironment? Spinal cord injury-induced expression of galectin-1 in macrophages and astrocytes. (Society for Neuroscience Annual Meeting, New Orleans, USA)
5. **Gaudet AD**, Leon G, Rowen R, Kadoya T, Horie H, Poirier F, Ramer MS (2009) A peripheral perspective: Exploring galectin-1's role in axon regeneration. (International Symposium on Neural Regeneration, Asilomar, USA)
6. **Gaudet AD**, Bennett JL, Duncan S, Ramer MS (2008) A peripheral role for galectin-1: implications in the immune response to axotomy. (Society for Neuroscience Annual Meeting, Washington, D.C.)
7. **Gaudet AD**, Ramer LM, Cragg JJ, Ramer MS, Nakonechny J (2008) Group learning in developmental neurobiology: relationships between attitudes surrounding group learning and course achievement. (Society for Neuroscience Annual Meeting, Washington, D.C.)
8. **Gaudet AD**, Bennett JL, Kadoya T, Horie H, Poirier F, Tetzlaff T, Ramer MS (2007) Galectin-1 facilitates macrophage accumulation in intact and injured peripheral nerves. (International Symposium on Neural Regeneration, Asilomar, USA)
9. **Gaudet AD**, Bennett JL, Kadoya T, Horie H, Poirier F, Tetzlaff T, Ramer MS (2007) The role of galectin-1 in macrophage accumulation following peripheral nerve injury. (IBRO World Congress of Neuroscience, Melbourne, Australia)
10. **Gaudet AD**, Horie H, Poirier F, Tetzlaff W, Ramer MS (2005) Mice lacking galectin-1 exhibit impaired macrophage responses following peripheral axotomy. (International Symposium on Neural Regeneration, Asilomar, USA)
11. **Gaudet AD**, Horie H, Poirier F, Tetzlaff W, Ramer MS (2004) Mice lacking galectin-1 exhibit diminished macrophage invasion of the nervous system following peripheral axotomy. (Poster, Asia-Pacific Symposium on Regeneration, Osaka, Japan)

PEER REVIEW

I have completed peer review. Journals: *Cellular and Molecular Life Sciences*; *Brain Research Bulletin*; *Oncotarget*; *Journal of Neurotrauma*; *Brain, Behavior & Immunity*; and *Scientific Reports*. Grants: Wings for Life Foundation.

TEACHING EXPERIENCE

Teaching Positions

Instructor, Graduate Professional Development Course, CU-Boulder 2017

- Developed and led a seminar to encourage students' success in graduate school

Instructor, Principles of Neuroimmunology – MVIMG 750, OSU 2011, 2013

- Developed and presented a lesson twice to a class of 20 graduate students: "Neuroinflammation: Gaining perspective from the periphery"
- Incorporated interactive techniques to engage students and consolidate learning

Instructor, Fourth Year Developmental Neurobiology, UBC 2008 (twice), 2009, 2010

- Re-developed and instructed the course to 50 upper-level students per semester
- Major themes: neural induction, neuraxis formation and patterning, differentiation, axonal growth and targeting, nervous system refinement
- Based course on a small-group learning model, with active learning at its core
- Focus on linking concepts and on scientific process to improve scientific thought

Instructor, Third Year Cell Physiology, UBC 2010

- Taught several themes: biological techniques, cell communication, cell junctions, cell adhesions, the extracellular matrix
- Re-developed course: used small-group learning; focused on linking concepts

Teaching Assistant, First Year Human Physiology, UBC 2004, 2005, 2007-2009

- Prepared brief lessons on topics that were studied in the laboratory
- Taught class independently and demonstrated a variety of techniques
- Re-developed quizzes and reports – focus on scientific process and concepts

Teaching Assistant, Third Year Cell Physiology, UBC 2003-05

- Led laboratory section; taught students complicated biological lab techniques.

Other Teaching and Supervisory Experience

Teaching for the Life Sciences student – BIOL 535, UBC 2006

- Completed a graduate course on teaching in post-secondary institutions
- Learned important pedagogical philosophies and techniques

Supervisor of directed studies/summer students 2003-04, 2009, 2010-present

- Planned, implemented, and led projects completed by a Professional Research Assistant (2015-present) and 15 undergraduates (2003-present)

OUTREACH / VOLUNTEER / RELATED EXPERIENCE

Departmental activities

Creator & co-leader, Neuroimmunology Journal Club at The University of Colorado Boulder 2015-present

- Created and organized a bi-weekly journal club that engages attendees and encourages participation & discussion
- Provides a unique forum for trainees to discuss new research and collaborations

Creator & leader, Center for Brain and Spinal Cord Repair Trainee Seminar Series (CBSCR TSS) at Ohio State University 2012-2014

- Developed a monthly seminar in which trainees present data to their peers
- Provided a supportive setting to improve presentation skills and foster ideas

Leader, Journal Club for CBSCR at Ohio State University 2011-2014

- Re-organized journal club to involve and engage attendees more effectively

Science outreach

Member, Neuroscience Education for Urban and Rural Outreach, OSU 2012-2014

- Helped re-start NEURO to promote neuroscience education in Ohio
- Help lead monthly outreach events that raise awareness and interest in the brain (and science), particularly in less privileged neighbourhoods and schools.

Community-Based Project Leader 2008-2009

- Developed a project that engaged 145 elementary school students (K-5) in various science-based activities for three days in February 2009
- Taught and led 35 undergraduates, who carried out the activities at discovery workstations with younger students to foster childrens' passion for science.
- Required leadership, organization, planning, creativity, and vision

Community Learning Initiative Leadership Program (CLILP) 2008-2009

- Associated with the community-based project through the Learning Exchange
- Four day-long workshops that explored leadership; team-building; understanding our role working in the community; and strengthening learning through reflection

Let's Talk Science Partnership Program Member 2008-2009

- Involved in science outreach program: designed to engage young students in science, and to promote scientific literacy and critical thinking
- Led fun science activities for two 25-student inner-city grade seven classes

Other Volunteer & Personal Development Experiences

Big Brother, Big Brothers of Vancouver 2003-2010

- Visited with my Little Brother for 2-4 hours once per week – organized fun events
- Discussed any relevant personal issues to improve challenging situations
- Required empathy, logic, sense of humour, and a friendly nature

Freelance Article Writing Course, UBC 2009

- Developed writing abilities in this interactive course taught by a successful writer
- Learned how to cultivate ideas, research for stories, interview effectively, structure writing, and publish freelance work – also applies to scientific writing