DANIEL GASTON, PHD

Phone: (902) 473-7219
Daniel.gaston@dal.ca

Pathology and Laboratory Medicine
5788 University Avenue, Halifax NS
B3H 1V8

EDUCATION

PhD	Dalhousie University Department of Biochemistry and Molecular Biology Supervisor: Dr. Andrew Roger	Feb 2012
Cert	Seneca College Bioinformatics	May 2006
BSc	University of New Brunswick, Biology and Chemistry Honours	May 2005

EMPLOYMENT

Clinical Laboratory Bioinformatician
Nova Scotia Health Authority, Halifax NS — 2015 to Present

Assistant Professor
Dalhousie University, Halifax NS — 2015 to Present

Post-Doctoral Fellow
Dr. Karen Bedard, Dalhousie University, Halifax NS — 2012 to 2015

Visiting Scholar
Stanford University, Stanford CA — 2012 to 2013

PhD
Dr. Andrew Roger, Dalhousie University, Halifax NS — 2006 to 2012

PUBLICATIONS

Book Chapters

Gaston D and Giacomantonio C. (2014). Genomics of Colorectal Cancer. Dellaire G, Berman J, and Arceci R. Cancer Genomics. Elsevier, United Kingdom

Journal Publications

1. Cutler SD, Knopf P, Campbell CJV, Thoni A, el Hassan MA, Forward N, White D, Wagner J, Goudie M, Boudreau JE, Kennedy BE, Gujar S, Gaston D*, Elnenaei MO*

(2021) DMG26: A Targeted Sequencing Panel for Mutation Profiling to Address Gaps in the Prognostication of Multiple Myeloma

2. DeCoste RC, Carter MD, Pasternak S, Fleming KE, Gaston D, Legge A, Ly TY, Walsh NM (2021) Relationship between p63 and p53 expression in Merkel cell carcinoma and corresponding abnormalities in TP63 and TP53: a study and proposal. Human Pathology. 117: 31-41
3. Betsch D, Orr A, Nightingale M, Gaston D, Gupta R (2021) Familial Optic Disc Pits in 2 Father-Son Pairs: Clinical Features and Genetic Analysis. Case Reports in Opthalmology 12(2): 603-610
4. Gaston D, Crawford Z, Weeks A, Carter M, Croul S (2021) Diagnosis of Adult Glioma: A Comparison of a Custom NGS AmpliSeq Panel to WHO 2016 Glioma Classification Practice Guidelines. Canadian Journal of Pathology (Accepted)
5. Zheng Li et al (2021) Association of Rare CYP39A1 Variants with Exfoliation Syndrome Involving the Anterior Chamber of the Eye. JAMA 325 (8): 753-764
6. Rajan V, Melong N, Wong WH, King B, Tong RS, Mahajan N, Gaston D, Lund T, Rittenberg D, Dellaire D, Campbell CJV, Druley T, Berman JN (2020) Humanized zebrafish enhance human hematopoietic stem cell survival and promote acute myeloid leukemia clonal diversity. Haematologica.
7. Pringle ES, Robinson CA, Crapoulet N, Monjo ALA, Bouzanis K, Leidal AM, Lewis SM, Gaston D, Uniacke J, McCormick C (2020) KSHV lytic mRNA is efficiently translated in the absence of eIF4F. bioRxiv
8. Elnenaei MO*, Knopf P*, Cutler SD*, Sinclair K, El Hassan MA, Greer W, Goudie M, Wagner J, White D, Couban S, Forward N, Gaston D+, Campbell CJV+. (2019). Low-depth sequencing for copy number abnormalities in multiple myeloma supersedes fluorescent in situ hybridization in scope and resolution. clinical genetics. 96(2): 163-168 *Co-First Authors +Co-Senior Authors
9. Carter MD, Gaston D, Huang WY, Greer WL, Pasternak S, L TY, Walsh NM. (2018). Genetic profiles of different subsets of Merkel cell carcinoma show links between combined and pure MCPyV-negative tumors. Human Pathology. 71: 117-125.
10. Ahmed Mokhtar, Thomas Arnason, Daniel Gaston, Weei-Yuarn Huang, Heather MacKenzie, Rayan Al-Hazmi, Nadine Vaninetti, Barna Tugwell, Daniel Rayson. (2018). ACTH-Secreting Neuroendocrine Carcinoma of the Cecum: A case report and review of the literature. Clinical Colorectal Cancer. 11 August
11. Sinha N, Gaston D, Manders D, Goudie M, Matsuoka M, Xie T, Huang WY. (2018). Characterization of genome-wide copy number aberrations in colonic mixed adenoneuroendocrine carcinoma and neuroendocrine carcinoma reveals recurrent amplification of PTGER4 and MYC genes. Human Pathology. 73: 16-25.
12. Salsman J, Stathakis A, Parker E, Chung D, Anthes LE, Koskowich KL, Lahsaee S, Gaston D, Kukurba KR, Smith KS, Chute IC, Léger D, Frost LD, Montgomery SB, Lewis SM, Eskiw C, Dellaire G. (2017). PML nuclear bodies contribute to the basal expression of the mTOR inhibitor DDIT4. Scientific Reports. 7(45038): 45038.
13. Aung T, Ozaki M, Lee MC, et al. (2017). Worldwide genetic association study of exfoliation syndrome identifies a protective rare variant at LOXL1 and five new common-variant susceptibility loci. Nature Genetics. 49(7): 993-1004.
14. Fernandez-Murray JP, Prykhozhij SV, Dufay JN, Steele S, Gaston D, Nasrallah G, Coombs A, Liwski R, Fernandez C, Berman J, McMaster C. (2016). Glycine and Folate Ameliorate Congenital Sideroblastic Anemia. PLoS Genetics. 0: 0.
15. Prykhozhij SV, Rajan V, Gaston D, Berman JN. (2015). CRISPR MultiTargeter: a web tool to find common and unique CRISPR single guide RNA targets in a set of similar sequences. PLoS ONE. 10(3): e0119372.

16. Gaston D, Hansford S, Oliveira C, Nightingale M, Pinheiro H, Macgillivray C, Kaurah P, Rideout A, Steele P, Soares G, Huang WY, Whitehouse S, Blowers S, LeBlanc MA, Jiang H, Greer W, Samuels M, Orr A, Fernandez CV, Ludman M, Penney L, Mcmaster CR, Huntsman D, Bedard K. (2014). Germline mutations in MAP3K6 are associated with familial gastric cancer. PLoS Genetics. 10(10): e1004669.
17. Tsaousis AD, Gentekaki E, Eme L, Gaston D, Roger AJ. (2014). Evolution of the Cytosolic Iron-Sulfur Cluster Assembly Machinery in Blastocystis Species and Other Microbial Eukaryotes. Eukaryotic Cell. 13(1): 143-153.
18. Robitaille JM, Gillett RM, Leblanc M, Gaston D, Nightingale M, Mackley MP, Parkash S, Hathaway J, Thomas A, Ells A, Trabouls E, Héon E, Roy M, Shalev S, Fernandez C, MacGillivray C, Wallace K, McMaster CR, Bedard K. (2014). Phenotypic Overlap Between Familial Exudative Vitreoretinopathy (FEVR) and Microcephaly Lymphedema Chorioretinal Dysplasia (MLCRD) Caused by KIF11 Mutations. JAMA Ophthalmology. 132(12): 1393-1399.
19. Venkatesh J, Yu JW, Gaston D, Park SW. (2014). Molecular evolution and functional divergence of Xintrinsic protein genes in plants. Molecular Genetics and Genomics. 290(2): 443-460.
20. Leblanc MA, Penney LS, Gaston D, Shi Y, Aberg E, Nightingale M, Jiang H, Gillett RM, Fahiminiya S, Macgillivray C, Wood EP, Acott PD, Khan MN, Samuels ME, Majewski J, Orr A, McMaster CR, Bedard K. (2013). A novel rearrangement of occludin causes brain calcification and renal dysfunction. Human Genetics. 132(11): 1223-1234.
21. Gaston D and Roger AJ. (2013). Functional Divergence and Convergent Evolution in the Plastid-Targeted Glyceraldehyde-3-Phosphate Dehydrogenases of Diverse Eukaryotic Algae. PLoS ONE. 8(7): e70396.

RESEARCH FUNDING AND FELLOWSHIPS

Marathon of Hope Atlantic Cancer Consortium Pilot Project
Co-Applicant, Bioinformatics Core Co-Lead
PI: Dr. Sherry Christianson (MUN)
Terry Fox Research Institute
2021-2023
Up to $3M pending completion of Phase I Activities

Implementation of Clinical Exomes in a Pre- and Peri-Natal Setting
Co-Applicant, PIs: Drs. Karen Bedard
Genome Canada
2021-2024
$4.8M

Early Detection of bipolar disorder and optimized selection of long-term treatment
Co-Applicant. PI: Dr Martin Alda
Genome Canada
2019-2022
974996 CAD

RNA Sequencing for Gene Fusion Detection in Sarcoma
Co-Applicant. PI: Dr. Weei-Huang Wang

NSHA Research Foundation
2018-2020
25000CAD

Next-Generation Sequencing Based Transcriptional Profiling of MAP3K6 Mutation Positive Gastric Cancer
Principal Investigator
NSHA Research Foundation
2015-2017
15000 CAD

Next-Generation Sequencing of Acadian Breast and Ovarian Cancer Families Without BRCA1 or BRCA2 Mutations
Co-Investigator
Beatrice Hunter Cancer Research Institute
2016–2017
10000CAD

Detection and Discrimination of Vaccine-Preventable Serotypes of Streptococcus pneumoniea: Tackling the Limitations of PCR-Based Surveillance using Next-Generation Sequencing
Co-Applicant
Capital Health Research Fund
15000 CAD

Transcriptional Profiling in Familial Gastric Cancer associated with Mutations in MAP3K6
Beatrice Hunter Cancer Research Institute
Post-Doctoral Fellowship
2014-2015
36750 CAD

Detection and Discrimination of Vaccine-Preventable Serotypes of Streptoccocus pneumoniae: Tackling the Limitations of PCR-Based Surveillance using Next-Generation Sequencing
CIRN
Post-Doctoral Fellowship
2014-2015
22000 CAD

INVITED PRESENTATIONS

1. Gaston D (2018). Low-Pass Whole Genome for Structural Variant Identification in Multiple Myeloma. Illumina User Group Meeting, Canada

2. Gaston D (2018). Low-Pass Whole Genome for Structural Variant Identification in Multiple Myeloma. Illumina User Group Meeting, Canada

3. Sinha N, Gaston D, Goudie M, Matsioka M, Huang WY. (2017). Genome-Wide Copy Number Aberrations Analysis Reveals Recurrent High Copy Number Gain of PTGER4 Gene in Colonic Mixed AdenoNeuroEndocrine Carcinoma and NeuroEndocrine Carcinoma. Laboratory Investigation, Canada

4. Maedler C, Gaston D, Obaid NM, Arnason T, Bedard K, Huang WY. (2017). Gene Expression Profiling of Appendiceal Goblet Cell Carcinoid Tumors. LABORATORY INVESTIGATION, Canada

5. Gaston D and Bedard K (2014). Germline Mutations in MAP3K6 Predispose to Gastric Cancer. European Society for Human Genetics. European Society of Human Genetics, Italy

STUDENT/POSTDOCTORAL SUPERVISION (CURRENT)

PhD
Leah MacLean
Dalhousie University, Department of Pathology (Co-Supervisor)
Fall 2020 – Present
NK Cells and Immunotherapy in Lung Cancer

STUDENT/POSTDOCTORAL SUPERVISION (PAST)

MSc
Sam Cutler
Dalhousie University, Department of Pathology (Co-Supervisor)
Fall 2019 – Present
Precision Medicine in Multiple Myeloma

BSc
Keaton Sinclair
Dalhousie University, Department of Biology Honours
Fall 2018 – Winter 2019
Low-Pass Whole Genome Sequencing Approaches for Discovery of Structural Variants in Cancer

Jeung Kwon
Dalhousie University, Medical Sciences
Fall 2017 – Winter 2018
Transcriptomic Profiling of Goblet Cell Carcinoma

Katya Radan
Saint Mary's University, Department of Biology Honours
Summer 2016 – Winter 2017
Applications of Functional Divergence Analysis to Mendelian Disease

COMMITTEE MEMBERSHIP

Atlantic Cancer Consortium Data and Biospecimens Governance and Access Committee
Co-Chair
2021 – Present

Pathology Research Day Sub-Committee (Dalhousie)
Acting Co-Chair (2021)
2020-Present

Genomics in Medicine Wave Executive Committee (Dalhousie)
Member
2020 - Present

Pathology Graduate Program Committee (Dalhousie)
Member
2019-Present

Genomics Core Steering Committee (Dalhousie)
Member
2019 - Present

Molecular Testing Committee (NS Health)
Member
2019 – Present

Molecular Operations Committee (NS Health)
Member
2015 - Present