

# Rhiannon Cameron

rcameron[at]sfu.ca

## PhD. CANDIDATE, BSc. MICROBIOLOGY

[Address: Omitted]

North Vancouver B.C., Canada

website: [cmrn-rhi.github.io](https://cmrn-rhi.github.io)

GitHub: [github.com/cmrn-rhi](https://github.com/cmrn-rhi)

[linkedin.com/in/rhiannon-cameron](https://linkedin.com/in/rhiannon-cameron)

ORCID: 0000-0002-9578-0788

Google Scholar: [bit.ly/gscholar-rcameron](https://bit.ly/gscholar-rcameron)

## EDUCATION

2021-PRESENT Ph.D. Faculty of Health Sciences // SIMON FRASER UNIVERSITY, B.C.

CGPA: 4.00/4.33 (A)

2020-2021\* M.Sc. Bioinformatics // UNIVERSITY OF BRITISH COLUMBIA, B.C. // *\*Transferred*

CGPA: 4.33/4.33 (A+)

2019 B.Sc. Microbiology // UNIVERSITY OF VICTORIA, B.C.

GGPA: 4.00/4.33 (A)

## AWARDS

### CIHR CGS-M Awardee (\$17,500)

Canadian Institutes of Health Research (CIHR) Canada Graduate Scholarship – Masters Award (CGS-M) for [2022-2023](#).

### NSERC-CREATE Bioinformatics Scholarship Awardee (\$24,300)

Natural Sciences and Engineering Research Council (NSERC) Collaborative Research and Training Experience (CREATE) Bioinformatics Graduate Training Program Grant for 2020-2021.

## SKILLS & EXPERTISE

**Research Interests** // Ontologies, Bioinformatics, Genomics, Metabolomics, Infectious diseases, Public Health, Human microbiome, Microbial ecology, Signal transduction pathways, Metabolism, UX design.

**Computation** // Python (Proficient), R (Proficient), C++ (Basics), Linux/Windows/MacOS Command line/Terminal, Version control (GitHub), BASH (RegX), Bioinformatics: Protégé, BLAST, MSA, Genome Databases/Organizers, Phylogenetics, Nextflow, Conda.

**Math/Statistics** // Calculus, Linear Algebra, Statistics (e.g., Binomial, Poisson, and Normal distribution; ANOVA; Regression and Correlation).

**Laboratory** // Fundamental biochemical, microbiological, and molecular biological laboratory techniques including but not limited to: SDS-PAGE, Protein Purification, ELISA, Culturing Hybridomas, Gel Electrophoresis, Molecular Cloning, Transposon Mutagenesis, and PCR.

**Other** // Markdown, Academic Writing, Grant Writing, Graphic Design, TESL, French (Conversational).

## RESEARCH EXPERIENCE

### **CENTRE FOR INFECTIOUS DISEASE GENOMICS AND ONE HEALTH ([CIDGOH](#)) //** **GRADUATE STUDENT RESEARCHER**

SEP 2020 – PRESENT | DR. WILLIAM HSIAO | SIMON FRASER UNIVERSITY, B.C.

**Thesis** work involves ontology specification curation and development for outbreak investigation and surveillance of SARS-CoV-2 for the Canadian COVID-19 Genomics Network ([CanCOGeN](#)), and ontology modeling of risk assessment in food borne pathogen surveillance for the Canadian Antimicrobial Resistance Genomics Research and Development Initiative ([AMR-GRDI](#)).

- Ontology modeling of application schemas and risk assessment queries.
- Assist in COVID-19 DataHarmonizer tool development, quality control, user testing, as well as the development and maintenance of associated standard operating procedures.
- Collaborate with the National Microbiology Laboratory (NML) on CanCOGeN metadata initiatives.
- Contribute to, demo, and present at CanCOGeN provincial workshops/training sessions.
- Write public health reports (e.g. "CanCOGeN VirusSeq – Comparison and Analysis of Canadian Public Health SARS-CoV-2 Case Report Forms").
- Participate in the AMR-GRDI workgroup meetings, specification management, template updates/releases, and food-borne pathogen risk assessment modeling.
- Project lead on the development of community and lab ontology training resources.
- Continuation of work pertaining to previous roles (see "Research Assistant / Database Curator") working on GenEpiO, FoodOn, and the Joint Food Ontology (JTO).

### **PATHOGEN HEALTH ALLIANCE FOR GENOMIC EPIDEMIOLOGY ([PHA4GE](#)) //** **DATA STRUCTURES WORKING GROUP MEMBER**

MAR 2023 – PRESENT | DR. EMMA GRIFFITHS (CHAIR) | BELLVILLE, SOUTH AFRICA (REMOTE)

- Began collaborating with PHA4GE in 2020-2021 on the SARS-CoV-2 contextual data specification package and in 2023 on the quality control contextual data tags before joining.
- Work on contextual metadata field and term development, harmonization, and ontologizing.
- Attend monthly workgroup meetings to discuss current and prospective projects.

### **SOUTHERN ALBERTA GENOME SCIENCES CENTRE ([SAGSC](#)) //** NSERC-CREATE INTERN

MAY 2021 – MAY 2022\* | DR. ATHANASIOS ZOVOILIS | UNIVERSITY OF LETHBRIDGE, A.B.

*\* Full-time internship finished at the end of August 2021, continued work on the project part-time.*

- Updating and utilizing Liam Mitchell's A-to-I editing nextflow pipeline on nanopore human brain tissue RNA sequence data, focusing on the identification of novel RNAs with a special interest in repetitive RNAs, ncRNAs, and SINE RNAs.
- Working remotely on high-memory high-performance CPU and GPU nodes.
- Using R to apply statistical analyses to the pipeline output.

### **HSIAO PUBLIC HEALTH BIOINFORMATICS LABORATORY //** RESEARCH ASSISTANT/CURATOR

FEB 2020 – SEP 2020 | DR. WILLIAM HSIAO | CENTER FOR DISEASE CONTROL, B.C.

- Collect and curate SARS-CoV-2 and COVID-19 related metadata for the Canadian COVID Genomics Network (CanCOGeN) initiative.
- Beta tester for the CanCOGeN DataHarmonizer; test guidelines and functions, meticulously explore possible usage scenarios, and provide ideas for improvement.
- Produce sample data and quality control information for validating CanCOGeN tools.
- Content creator for the CanCOGeN metadata wiki.
- Manual curation and term edits for the FoodOn and GenEpiO ontology databases using Protégé and GitHub.
- Generate curator training materials and perform curator demo webinars.
- Systematic literature review on the accessibility of public health genomics.

#### **VIRAL BIOINFORMATICS RESEARCH CENTRE (VBRC) // DIRECTED STUDIES STUDENT**

SEP 2017 – APR 2018 | DR. CHRIS UPTON | UNIVERSITY OF VICTORIA, B.C.

- Produced specifications for, and managed implementation of, bioinformatics tools and interfaces developed at Dr. Chris Upton's Viral Bioinformatics Research Centre (VBRC), while performing analyses of laboratory generated data and unprocessed published PubMed data.
- Conducted literature review and bioinformatic analysis of novel influenza A virus gene NEG8.
- Developed a theoretical phylogenetic Tree GUI for virus selection in Viral Orthologous Clusters (VOCs) database, and proposed solutions for tools that visualized data in a manner inaccessible to colour blind individuals.
- Studied and reviewed bioinformatics tools for the analysis of virus genomes.
- Coached VBRC programmers on the functions of the bioinformatics tools from the perspective of a researcher and regularly made optimization recommendations.
- Presented detailed reports on progress and results, as well as updated VBRC online guides and documentation.

#### **UNIVERSITY OF REGINA // RESEARCH ASSISTANT**

MAY 2014 – AUG 2014 | DR. ANDREW CAMERON | REGINA, S.K.

- Generated significant and well-controlled scientific research results on Sxy toxicity in *Salmonella enterica typhimurium* in a level 2 biosafety laboratory supervised by Dr. Andrew Cameron and Dr. Ebtihal Al-shabib. Research results added to a manuscript being prepared for [peer-reviewed publication](#).
- Performed laboratory tasks including but not limited to: aseptic pipette technique, PCR amplification and plasmid modification, cell separation, preparation of LB growth media, poured plates, inoculation of agar plates and broths, growth on selective media, colony isolation, serial dilution, plate counts, identification and characterizing of colonies, and gel electrophoresis preparation and application.
- Investigated and identified a source of contamination in the laboratory by testing all available laboratory equipment, surfaces, and media, while keeping thorough documentation of the process.
- Took accurate and comprehensive laboratory notes, now used as a positive example for future members of the laboratory, as well as provided regular slideshow presentations on progress and results.

## TEACHING ACTIVITIES

### **FORCE11 SCHOLARLY COMMUNICATIONS INSTITUTE // COURSE DESIGNER & CO-INSTRUCTOR**

JUL 26-28 2022 | VANCOUVER, B.C.

- Wrote the abstract, designed curriculum, coordinated co-instructor meetings/activities, prepared slide templates, reviewed contributions, prepared exercises, provided student feedback, presented slides/live demos, certificate design, and prepared and released Open Science Framework course page: <https://doi.org/10.17605/OSF.IO/FJ38V>

## OTHER EXPERIENCE

### **VANCOUVER BIOINFORMATICS USER GROUP // INTERNAL MANAGEMENT COORDINATOR**

JAN 2020 – PRESENT | VANCOUVER, B.C.

- Assist with general event/volunteer coordination activities and data management regarding webinars, seminars and special events.
- Live webinar setup, moderating, and acting as facilitator/moderator.
- Coordinator and host/moderator of the [2021 Three Minute Lightning Talks](#) (virtual) competition and the [2022 Career Panel](#) (in-person).
- Outreach, social media, webinar data management/video editing, and assisting in coordinating speakers' activities.

### **NEIL SQUIRE SOCIETY // COMPUTER COMFORT VOLUNTEER**

JUL 2019 – MAR 2020, MAY 2021 – PRESENT\* | BURNABY, B.C.

- Help adults with disabilities develop basic computer skills in weekly sessions.
- Recommend and develop resources for clients to study and reference based on their unique needs and interests.

### **COMMUNITY ENGAGEMENT ADVISORY NETWORK (CEAN) // PATIENT PARTNER**

#### **PATIENT VOICES NETWORK (PVN) // PATIENT PARTNER**

NOV 2021 – PRESENT | VANCOUVER, B.C.

- Volunteer with healthcare projects that aim to improve health care services, providing my perspective and experiences within the health care system in question.

### **SFU FHS GRADUATE STUDENT JOURNAL // CO-FOUNDER VOLUNTEER**

MAR 2022 – AUG 2022\* | BURNABY, B.C.

- Simon Fraser University (SFU) Faculty of Health Sciences (FHS) graduate student journal "Journal for Integrating Voices in Health" (JIVH) currently under development.
- Help organize meetings, prepare/review proposals, meet with faculty, attend relevant department meetings, meet with library / journal systems advisors, as well as brainstorm/draft journal organizational structure; special considerations; and graduate course integration.

\* on hiatus until early 2023 due to volunteer availability.

**INTEGRATED FOOD ONTOLOGY WORKSHOP // ORGANIZING COMMITTEE MEMBER**

FEB 2022 - AUG 2022 | REMOTE - JÖNKÖPING, SWEDEN

- Assisted in reviewing and discussing rules and abstracts, as well as helping prepare for and participating in event workshops; event date: July 17-20, Sept 18-20. <[Event Website](#)>

**FOIS CONFERENCE // VOLUNTEER GRAPHIC DESIGNER**

DEC 2022 - JAN 2023 | REMOTE - SHERBROOKE, QUÉBEC

- Designed, iterated, and provided posters (English, French, A4, A5) for the 13th International Conference on Formal Ontology in Information Systems (FOIS) 2023. <[Event Website](#)>

**CIDGOH // INTERN MANAGER & PROJECT SUPERVISOR**

MAY 2022 – AUG 2022 | VANCOUVER, B.C.

- Led the development of CIDGOH ontology training curriculum and standard operating procedures, guiding and mentoring a graduate student intern in applying and developing training material. Providing support in addition to constructive criticism.
- Met 2-4 hours weekly to coordinate tasks and provide ontology curation training and assist intern in converting their experience into scenario-driven training exercises.
- Provided additional resources and invitations to relevant meetings/workshops/conferences.

**INTEGRATED FOOD ONTOLOGY WORKSHOP // ORGANIZING COMMITTEE MEMBER**

FEB 2022 - AUG 2022 | REMOTE - JÖNKÖPING, SWEDEN

- Assisted in reviewing and discussing abstracts, as well as helped prepare for and participated in a FoodOn fermentation hackathon; event date: Aug 15-19. <[Event Website](#)>

**PRECISION HEALTH BOOTCAMP WORKSHOP // VIRTUAL TEACHING ASSISTANT**

AUG 8 2022 | VANCOUVER, B.C.

- Assisted with delivering the “Day 8: Genetic Association SNP Analysis” workshop by systems testing in advance of the workshop, being available for student questions, demonstrating accessing to SOCKEYE ARC workshop directories, and providing chat with links to additional resources referenced during lecture.

**BIG RESEARCH DAY 2022 // ORGANIZING COMMITTEE - PROMOTIONS CO-LEAD**

NOV 2021 – APR 2022 | VANCOUVER, B.C.

- Helping prepare for and execute the 2022 BIG Research Day, an annual event that explores the research areas of Bioinformatics Interdisciplinary Oncology Genome Science + Technology. [www.bigresearchday.com](http://www.bigresearchday.com)
- Managed and created promotional material graphics (online and print), ordering materials, website, auxiliary website/virtual experience, and email correspondence.

**INTERNATIONAL FAIR CONVERGENCE SYMPOSIUM // WORKSHOP PRESENTER**

DEC 2020 | VANCOUVER, B.C.

- DataHarmonizer tool explanation and demonstration.

**BIOCHEMISTRY AND MICROBIOLOGY STUDENT SOCIETY // CO-PRESIDENT (Elected Position)**

APR 2015 – DEC 2015 | UNIVERSITY OF VICTORIA, B.C.

- Directed and delegated to a group of my peers, developed and operated within budgets, managerial accounting, demonstrated communication and dispute resolution skills, and organized and managed BMSS events on and off-campus and conducted team building and training activities.

**UPCOMING ACTIVITIES**

**CANADIAN BIOINFORMATICS WORKSHOPS // TEACHERS ASSISTANT (TA)**

APR 2023 18 – 21 | VIRTUAL, CANADA

<https://bioinformatics.ca/workshops-all/2023-infectious-disease-genomic-epidemiology/>

**RELEVANT TRAINING & CERTIFICATIONS**

- 2023    **W3ID Community //** Inaugural Workshop on Change Languages in Ontologies
- 2022    **International Conference on Biomedical Ontology //** Workshop on Ontology Tools and Workflows <[Workshop](#)>
- International Conference on Biomedical Ontology //** FAIR ontology harmonization and TRUST data interoperability <[Workshop](#)>
- International Conference on Biomedical Ontology //** Food Process Ontology Hackathon <[Workshop](#)>
- FSCI 2022 Course //** Applying Strategic Doing, an Agile Strategy Discipline, to Build Collaborations Across Diverse Teams <[Details](#)>
- BC Core Health Training //** San'yas Anti-Racism Indigenous Cultural Safety Training – CORE ICS Health <[Credential Upon Request](#)>
- SFU Library //** Unlock your research impact: Using graphic novels to share research stories <[Workshop](#)>
- National Institutes of Health - National Humane Genome Research Institute //** Mini Hackathon: COVID-19 Ontology Harmonization <[Hackathon](#)>
- Ontology for Biomedical Investigations (OBI) //** How to represent specific elements in scientific investigations in OBI <[Workshop](#)>
- 2021    **CIHR IRSC //** Core Competency Module for Sex and Gender in Biomedical Research <[Credential Upon Request](#)>
- CIHR IRSC //** Core Competency Module for Sex and Gender in Primary Data Collection with Human Participants <[Credential Upon Request](#)>
- CIHR IRSC //** Core Competency Module for Sex and Gender in the Analysis of Secondary Data from Human Participants <[Credential Upon Request](#)>
- SAGSC & BioNet Alberta //** Introduction to Bioinformatics
- SFU Safety Training //** WHMIS 2015 v2 <[Credential](#) - Expires 2024-09>

**ISCB Student Council Symposium** // Attendee <[Credential Upon Request](#)>

**Student Biotechnology Network** // Industry Ready Workshop Series: Effective Communications

2020 **EPI-interactive** // R Shiny Masterclass Series <[Credential Upon Request](#)>

**TCPS 2: CORE** // Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans Course on Research Ethics <[Credential Upon Request](#)>

**FSCI 2020 Course** // Advancing FAIR Data Stewardship: Fostering Institutional Planning and Service Development <[Details](#)>

**FSCI 2020 Course** // Looking Beyond the Journal Article: A Guide to Building Your Biomedical Research Toolkit <[Details](#)>

2019 **MITx (edX) 6.00.1x** // Introduction to Computer Science and Programming Using Python <[Credential](#)>

**MITx (edX) 6.00.2x** // Introduction to Computational Thinking and Data Science <[Credential](#)>

**Ladies Learning Code** // JavaScript for Beginners: An Introduction to the Fundamentals of Web Programming <[Workshop](#)>

## PUBLICATIONS

- **Cameron, R.**, Savić Kallesøe, S., Griffiths, E.J., Dooley, D., Sridhar, A., Sehar, A., Tindale, L.C., Hsiao, W. (TBD). SARS-CoV-2 Genomic Contextual Data Harmonization: Recommendations from a Mixed Methods Analysis of COVID-19 Case Report Forms Across Canada. <[Manuscript under review, 2022](#)>
- Gill, I.S., Griffiths, E.J., Dooley, D., **Cameron, R.**, Savić Kallesøe, S., Gosal, G., *et al.* (2023). The DataHarmonizer: a tool for faster data harmonization, validation, aggregation, and analysis of pathogen genomics contextual information. *Microbial Genomics* 9:1, 2057-5858. Available from: <https://doi.org/10.1099/mgen.0.000908>
- Griffiths, E. J., Timme, R. E., Mendes, C. I., Page, A. J., Alikhan, N. F., Fornika, D., Maguire, F., Campos, J., Park, D., Olawoye, I.B., Anderson, D., Christoffels, A., Goncalves da Silva, A., **Cameron, R.**, *et al.* (2022). Future-proofing and maximizing the utility of metadata: The PHA4GE SARS-CoV-2 contextual data specification package. *GigaScience* 11, giac003. Available from: <https://doi.org/10.1093/gigascience/giac003>

## PREPRINTS

- Griffiths, E., Mendes, C.I., Maguire, F., Guthrie, J., Chindelevitch, L., Karsch-Mizrachi, I., Waheed, Z., **Cameron, R.**, *et al.* (2023) PHA4GE Quality Control Contextual Data Tags: Standardized annotations for sharing public health sequence datasets with known quality issues to facilitate testing and training. *Preprints*. Available from: <https://www.preprints.org/manuscript/202303.0037/v1> <*preprint of publication under review*>



- **Cameron, R.**, Savić Kallesøe, S., Griffiths, E.J., Dooley, D., Sridhar, A., Sehar, A., Tindale, L.C., Hsiao, W. (2022). SARS-CoV-2 Genomic Contextual Data Harmonization: Recommendations from a Mixed Methods Analysis of COVID-19 Case Report Forms Across Canada. *Research Square*. Available from: <https://doi.org/10.21203/rs.3.rs-1871614/v1> <preprint of publication under review>
- Alshabib, E.Y., Fitzgerald, S.F., Chao, T.C., **Cameron, R.**, Redfield, R.J., Sinha, S., Cameron, A.D.S. (2018). Finding reliable phenotypes and detecting artefacts among in vivo and in vitro assays to characterize the refractory transcriptional activator Sxy (TfoX) in *Escherichia coli*. *bioRxiv*. Available from: <https://www.biorxiv.org/content/10.1101/284836v1>

## PUBLISHED REPORTS

- **Cameron, R.**, Savić Kallesøe, S., Griffiths, E., Hsiao, W. CanCOGeN VirusSeq Comparison and analysis of Canadian public health SARS-CoV-2 case report forms. CanCOGeN VirusSeq, 2020. Available from: [https://genomecanada.ca/wp-content/uploads/2022/01/2020-12-10\\_crf\\_report\\_.pdf](https://genomecanada.ca/wp-content/uploads/2022/01/2020-12-10_crf_report_.pdf)

## POSTERS, PRESENTATIONS, AND ABSTRACTS

- **Cameron, R.** (presenter), Griffiths, E. (abstract), Dooley, D. FAIR public health pathogen genomics contextual data sharing during the COVID-19 pandemic: Using the DataHarmonizer for data curation, harmonization, validation, and transformation. **Talk** presented to: International Society for Biocuration (ISB) 15<sup>th</sup> Annual Conference; June 7, 2022. Virtual. Available from: <https://youtu.be/Rhk6yHziUDY?t=5618>
- Hsiao, W., Griffiths, E., Dooley, D., **Cameron, R.**, Savić Kallesøe, S., Rabbani, T. Infectious Disease Genomics in Public Health: Interdisciplinary approaches to investigating public health questions. **Talk** presented to Clinical Research Professionals of BC (CRPBC); May 18, 2022. Virtual.
- **Cameron, R.**, Dooley, D., Griffiths, E., Hsiao, W. Knowing your values - modeling fields and picklists for the PHA4GE SARS-CoV-2 data specification. **Poster** presented at: The B.I.G. Research Day Conference; Mar 23, 2022. Virtual. <Available Upon Request>
- **Cameron, R.**, Dooley, D., Griffiths, E., Savić Kallesøe, S., Hsiao, W. Putting standards into practice – ontologizing the Canadian COVID genomics network specification. **Poster** presented at: The Bioinformatics Open Source Conference (BOSC); Jul 27-29, 2021. Virtual. <Available Upon Request>
- **Cameron, R.**, Dooley, D. DataHarmonizer: a template-driven spreadsheet application utilizing ontologies to implement the Canadian COVID Genomics Network (CanCOGeN) specification. **Talk** presented at: The Canadian Research Software Conference (CRSC); Jul 7, 2021. Virtual. Available from: [https://www.youtube.com/watch?v=rdN2\\_Vhwb8E](https://www.youtube.com/watch?v=rdN2_Vhwb8E)



- Dooley, D., Griffiths, E., **Cameron, R.**, Gosal, G., Naravane, T., Walls, R.L., Buttigieg, P., Hsiao, W. FoodOn evolution in the food ontology ecosystem. **Abstract** for: The Integrated Food Ontology Workshop (IFOW); Sep-Oct, 2020. Virtual. Available from: [https://github.com/FoodOntology/joint-food-ontology-wg/blob/master/presentation/IFOW\\_2020sept\\_16\\_in\\_the\\_field/IFOW\\_2020\\_17\\_FoodOn\\_Evolution\\_in\\_the\\_Food\\_Ontology\\_Ecosystem.pdf](https://github.com/FoodOntology/joint-food-ontology-wg/blob/master/presentation/IFOW_2020sept_16_in_the_field/IFOW_2020_17_FoodOn_Evolution_in_the_Food_Ontology_Ecosystem.pdf)

## REFERENCES

**Dr. William Hsiao** | Principal Investigator & SFU Associate Professor  
The Centre for Infectious Disease Genomics and One Health  
Simon Fraser University  
Burnaby, B.C.

[Contact Information: Omitted]

**Dr. Damion Dooley** | Scientific Programmer  
The Centre for Infectious Disease Genomics and One Health  
Simon Fraser University  
Burnaby, B.C.

[Contact Information: Omitted]

**Dr. Emma Griffiths** | GenEpiO Project Coordinator, Curator and Research Associate  
The Centre for Infectious Disease Genomics and One Health  
Simon Fraser University  
Burnaby, B.C.

[Contact Information: Omitted]

**Dr. Athanasios Zovoilis** | Professor & SAGSC Principal Investigator  
Department of Chemistry & Biochemistry  
RNA Genomics Lab at the Southern Alberta Genome Science Centre  
University of Lethbridge  
Lethbridge, A.B.

[Contact Information: Omitted]

**Dr. Chris Upton** | Professor & VBRC Principal Investigator  
Department of Biochemistry and Microbiology  
Viral Bioinformatics Research Centre  
University of Victoria  
Victoria, B.C.

[Contact Information: Omitted]

**Dr. Perry Howard** | Professor and Department Chair  
Department of Biochemistry and Microbiology  
University of Victoria  
Victoria, B.C.

[Contact Information: Omitted]