

# Christopher Hughes

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Nationality: Canadian

[Google Scholar Citations](#)

[GitHub](#)

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## Relevant Skills

### Research and Leadership Abilities

- Extensive experience with all aspects of the development of a mass spectrometry core facility from a basal level, including: instrument acquisition, maintenance, repair, and optimization; protocol optimization and SOP development; day-to-day project management for a large and diverse customer base; construction of cost models and financial management; preparation of applications to pursue funding initiatives.
- Skilled in the application of proteomics, metabolomics, DNA/RNA sequencing, and other technologies (e.g. microscopy, flow cytometry, mass cytometry, molecular biology methods) towards the study of complex biological systems.
- Expertise in the use bioinformatic languages, such as R, Python, and C#, for the analysis of NGS, proteomics, and metabolomics data, and software development. Proficient with Adobe Illustrator for the creation of high quality figures and rich schematics.
- Extensive experience transitioning project ideas and preliminary findings into complete applications for granting agencies, such as CIHR, CFI, NSERC, CRS, and NIH.

## Current Role

2018-present

**Staff Scientist and Mass Spectrometry Service Specialist**  
BC Cancer

In this role with Dr. Poul Sorensen, my primary responsibilities include:

- Independent conception, development, funding acquisition, execution, and supervision of studies examining mechanisms of cancer cell adaptation mediated by modification of mRNA translation, specifically targeting the RNA-binding protein YB-1. Studying the oncogenic properties of Ewing sarcoma with a specific focus on patterns in the expression of transcript and protein isoforms specific to this cancer type, with additional effort focused on the putative tumour suppressor, DLG2.

## Selected Publications

- 2021 Zhang, H., **Hughes, C.S.** *et al.*, Proteomic screens for suppressors of anoikis identify IL1RAP as a promising surface target in Ewing sarcoma *Cancer Discovery*. PMID: 34021002
- 2019 **Hughes, C.S.**, Sorensen, P.H., Morin, G.B. A Standardized and Reproducible Proteomics Protocol for Bottom-up Quantitative Analysis of Protein Samples using SP3 and Mass Spectrometry *Methods in Mol. Biol.* PMID: 30852816
- 2019 **Hughes, C.S.**, Moggridge, S., Mueller, T., Sorensen, P.H., Morin, G.B., Krijgsveld, J. Single-pot, Solid-phase-enhanced Sample Preparation for Proteomics Experiments *Nature Protocols*. PMID: 30464214
- 2019 Kovalchik, K.A., Colborne, S., Spencer, S., Sorensen, P.H., Chen, D.D.Y., Morin, G.B., **Hughes, C.S.**<sup>◇</sup>, RawTools: Rapid and Dynamic Interrogation of Orbitrap Data Files for Mass Spectrometer System Management *J. Prot. Res.* PMID: 30462513
- 2018 Moggridge, S., Sorensen, P.H., Morin, G.B., **Hughes, C.S.**<sup>◇</sup> Extending the Compatibility of the SP3 Paramagnetic Processing Approach for Proteomics *J. Prot. Res.* PMID: 29565595
- 2018 **Hughes, C.S.**, Morin, G. Using Public Data for Comparative Proteome Analysis in Precision Medicine Studies *Proteomics*. PMID: 28887829
- 2017 **Hughes, C.S.**, Spicer, V., Krokhin, O.V., Morin, G.B., Investigating Acquisition Performance on the Orbitrap Fusion When Using Tandem MS/MS/MS Scanning with Isobaric Tags *J. Prot. Res.* PMID: 28418257
- 2017 **Hughes, C.S.**, Zhu, C., Spicer, V., Krokhin, O.V., Morin, G. Evaluating the Characteristics of Reporter Ion Signal Acquired in the Orbitrap Analyzer for Isobaric Mass Tag Proteome Quantification Experiments *J. Prot. Res.* PMID: 28418254
- 2016 **Hughes, C.S.**, McConechy, M., Cochrane, D., Nazeran, T., Karnezis, A., Huntsman, D., Morin, G. Biomarker Discovery from High Resolution Proteomic Analysis of Fixed Ovarian Tumor Tissue Samples. *Scientific Reports*. PMID: 27713570
- 2014 **Hughes, C.S.**, Foehr, S., Garfield, D., Furlong, E.E., Steinmetz, L.M., Krijgsveld, J. Ultrasensitive proteome analysis using paramagnetic bead technology. *Molecular Systems Biology*. PMID: 25358341
- 2012 **Hughes, C.S.** and Krijgsveld, J. Developments in quantitative mass spectrometry for the analysis of proteome dynamics. *Trends in Biotechnology*. PMID: 23107010
- 2012 **Hughes, C.S.** *et al.* Mass spectrometry-based proteomic analysis of the matrix microenvironment in pluripotent stem cell culture. *Mol. Cell. Prot.* PMID: 23023296

◇ - denotes senior authorship.

## Selected Education and Professional Experience

2014–2018	<p>Group Leader, <b>British Columbia Genome Sciences Centre</b></p> <p>Managed the mass spectrometry Proteomics Platform. Involved the development, execution, analysis, and management of research projects utilizing proteomics in a diverse array of clinical experimental models, from large-scale patient cohort profiling to precision medicine clinical cancer trials. Development and optimization of protocols and SOPs for a wide variety of sample analysis types that cater to the facility user base. Management of administrative and financial aspects of the core facility. Preparation of grant applications for funding to acquire new equipment, support research, and other technical development projects.</p>
2012–2014	<p>Post-Doctoral Researcher, <b>European Molecular Biology Laboratory</b></p> <p>Performed integrative studies that utilize genomics, transcriptomics, and proteomics to study dynamic molecular systems.</p>

## Selected Grants and Awards

2022	<p><b>Title:</b> Examining onco-fusion-driven expression of transcript and protein isoforms that underpin fitness relationships essential for Ewing sarcoma tumor formation, <b>Agency:</b> Sarcoma Foundation of America, <b>Role:</b> co-applicant</p>
2021	<p><b>Title:</b> Ewing sarcoma progression and spreading are controlled by selected protein production events that are regulated by modified forms of the YB-1 oncoprotein, <b>Agency:</b> MGI, <b>Role:</b> co-applicant</p>
2016	<p><b>Title:</b> Fixed tissue proteomics (FTP) applied to create a pragmatic clinical decision aid for endometrial cancer, <b>Agency:</b> CCSRI, <b>Role:</b> co-applicant</p>
2016	<p><b>Title:</b> Breast cancer classification and marker identification by comprehensive proteomic analysis, <b>Agency:</b> CBCF, <b>Role:</b> co-applicant</p>
2016	<p><b>Title:</b> High-resolution analysis of phenotypic fitness using genome-wide CRISPR editing coupled to quantitative mass spectrometry, <b>Agency:</b> BCPN, <b>Role:</b> co-applicant</p>

## Patents

2014	<p><b>Title:</b> Proteomic sample preparation using paramagnetic beads</p> <p><b>Inventors:</b> Hughes, C.S.*, Krijgsveld, J., Steinmetz, L.</p> <p><b>Publication number:</b> WO2015118152A1, US20170074869A1, CA2938907A1, EP3102612A1</p> <p><b>Filing date:</b> 2015-02-09</p> <p>* - denotes majority inventor</p>
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## Selected Presentations

Poster	CCRC 2019 <b>Title:</b> A subcellular atlas of translation machinery reveals novel roles for the RNA binding protein YB-1
Oral	Personalized Oncogenomics Clinical Research Session 2016 <b>Title:</b> Proteomics and Metabolomics in Personalized Oncogenomics
Oral	BCPN 2016 <b>Title:</b> High Resolution Proteomic Analysis of Ovarian FFPE Tumour Tissues using TMT-MS3 on an Orbitrap Fusion for Clinical Research
Poster	ASMS 2015 <b>Title:</b> Enhanced processing of FFPE tissue for clinical proteomics using SP3
Poster	ASMS 2014 <b>Title:</b> Single-tube sample preparation workflows for Ultra-sensitive Proteomics
Oral	Nordic Proteomics Meeting 2014 <b>Title:</b> Single-tube sample preparation workflows for Ultra-sensitive Proteomics
Poster	Proteostasis Discussion 2013 <b>Title:</b> Studying the dynamics of proteome homeostasis using Hyperplexed mass spectrometry

## References

Additional references available upon request.

### **Dr. Poul Sorensen**

*British Columbia Cancer Agency, Vancouver, Canada*

Role: Senior Scientist

Email: psorensen@bccrc.ca

Phone: +1 604-675-8202

Relationship: Current supervisor

### **Dr. Jeroen Krijgsveld**

*German Cancer Research Centre, Heidelberg, Germany*

Role: Group leader, Proteomics of Stem Cells and Cancer

Email: j.krijgsveld@dkfz-heidelberg.de

Phone: +49 06221 421720

Relationship: Post-doctoral supervisor

### **Dr. Gilles Lajoie**

*Western University, London, Canada*

Role: Group leader and head of Proteomics Core Facility

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Relationship: Ph.D. supervisor