Christopher Hughes

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Nationality: Canadian
Google Scholar Citations

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LinkedIn Profile

Relevant Skills

Research and Leadership Abilities

- Skilled in the conception, development, management, and execution of small and large scale research projects comprising individuals or collaborative teams of researchers working towards completion of set aims.
- Extensive experience transitioning project ideas and preliminary findings into applications for granting agencies and patent applications.
- Highly skilled in the application of proteomics, metabolomics, and DNA/RNA sequencing technologies towards the study of complex biological systems and clinical research questions.
- Extensive experience with bioinformatic languages such as R and Python for data analysis. Proficient with Adobe Illustrator for the creation of high quality figures and rich schematics.
- Direct exposure to all aspects of the management of a core facility that caters to a wide range of individuals, from researchers to clinicians.
- Strong leadership skills developed through management of numerous undergraduate, graduate student, and technician research projects.

Current Role

2018-present | **Staff Scientist and Mass Spectrometry Service Specialist**
British Columbia Cancer Research Centre

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

- Independent conception, development, funding acquisition, execution, and supervision of studies examining the dynamics of protein translation at a sub-cellular level in cancer, with specific substudies focused on elucidating the mechanistic roles of targets using a wide variety of techniques.
- Participation in pan-Canada and global research projects involving the Sorensen lab (e.g. PROFYLE), including experimental conception and design, data acquisition and analysis, grant acquisition, and student supervision.

Education and Professional Experience

2014–2018	Group Leader, **British Columbia Genome Sciences Centre** 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.
2012–2014	Post-Doctoral Researcher, **European Molecular Biology Laboratory** Performed integrative studies that utilize genomics, transcriptomics, and proteomics to study dynamic molecular systems.
2007–2012	PhD in Biochemistry, **Western University, Canada** Thesis title: Proteomics of Human Stem Cell Derived Matrices
2006–2006	Research Technician, **Merck Frosst Canada** Worked with the drug metabolism team to test and validate of a new mass spectrometer ion source based on thermal desorption.
2006–2006	Research Technician, **Radient Technologies Inc.** Worked in the drug purification team utilizing large-scale strategies to purify active compounds from natural products.
2004–2005	Research Technician, **MDS Sciex** Worked within the Demo and Projects Laboratories on projects related to profiling carcinogenic food dyes and excipient analysis of analgesic drugs.
2002–2007	Honors Bachelor of Science in Biology, **University of Waterloo, Canada**

Funded Grants and Awards

2016	**Title:** Fixed tissue proteomics (FTP) applied to create a pragmatic clinical decision aid for endometrial cancer, **Agency:** CCSRI, **Role:** co-applicant
2016	**Title:** Breast cancer classification and marker identification by comprehensive proteomic analysis, **Agency:** CBCF, **Role:** co-applicant
2016	**Title:** High-resolution analysis of phenotypic fitness using genome-wide CRISPR editing coupled to quantitative mass spectrometry, **Agency:** BCPN, **Role:** co-applicant
2014	European Interdisciplinary Post-Doctoral Fellowship
2009	NSERC Canadian Graduate Scholarship - Doctoral
2008	NSERC Canadian Graduate Scholarship - Masters

Selected Presentations

Poster	CCRC 2019 **Title:** A subcellular atlas of translation machinery reveals novel roles for the RNA binding protein YB-1
Oral	Personalized Oncogenomics Clinical Research Session 2016 **Title:** Proteomics and Metabolomics in Personalized Oncogenomics
Oral	BCPN 2016 **Title:** High Resolution Proteomic Analysis of Ovarian FFPE Tumour Tissues using TMT-MS3 on an Orbitrap Fusion for Clinical Research
Poster	ASMS 2015 **Title:** Enhanced processing of FFPE tissue for clinical proteomics using SP3
Poster	ASMS 2014 **Title:** Single-tube sample preparation workflows for Ultra-sensitive Proteomics
Oral	Nordic Proteomics Meeting 2014 **Title:** Single-tube sample preparation workflows for Ultra-sensitive Proteomics
Poster	Proteostasis Discussion 2013 **Title:** Studying the dynamics of proteome homeostasis using Hyperplexed mass spectrometry
Poster	HUPO 2011 **Title:** Analysis of the Human Embryonic Stem Cell Depositome
Poster	ISSCR 2011 **Title:** Proteomic Analysis of the Human Embryonic Stem Cell Depositome
Poster	HUPO 2010 **Title:** Matrigel: A complex mixture required for optimal growth of cell culture
Poster	HUPO 2010 **Title:** Analysis and quantitation of a glycogen synthase kinase-3 knockout embryonic stem cell line to a depth of 3500 proteins
Poster	ASMS 2009 **Title:** Analysis and quantitation of a glycogen synthase kinase-3 knockout embryonic stem cell line to a depth of 3500 proteins
Oral	ASMS 2008 **Title:** Prevention of amino acid conversion in SILAC experiments with embryonic stem cells

Patents

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

Selected Publications

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.**$^{\diamond}$, RawTools: Rapid and Dynamic Interrogration 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.**$^{\diamond}$ 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

2011 **Hughes, C.S.** *et al.* Proteomic analysis of extracellular matrices used in stem cell culture. *Proteomics*. PMID: 21834137

2010 **Hughes, C.S.** *et al.* Matrigel: A complex protein mixture required for optimal growth of cell culture. *Proteomics*. PMID: 20162561

$\diamond$ - denotes senior authorship.

References

Additional references available upon request.

Dr. Poul Sorensen
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Relationship: Current supervisor

Dr. Gregg Morin
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Relationship: Previous supervisor

Dr. Jeroen Krijgsveld
German Cancer Research Centre, Heidelberg, Germany
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Relationship: Post-doctoral supervisor

Dr. Gilles Lajoie
Western University, London, Canada
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Relationship: Ph.D. supervisor