

Jennifer Geddes-McAlister, PhD

I recently joined the University of Guelph as an Assistant Professor in the Molecular and Cellular Biology Department. My research interests include applying state-of-the-art mass spectrometry-based quantitative proteomics to investigate host-pathogen interactions in diverse biological systems. Presently, my lab focuses on the systems interaction among the fungal pathogen *Cryptococcus neoformans*, the bacterial pathogen *Klebsiella pneumoniae*, and host immune cells to understand how microbial defenses change under competitive conditions and how the host modifies its response to multiple invading pathogens. During my postdoctoral work at the Max Planck Institute of Biochemistry in Munich, Germany, under the direction of Prof. Dr. Matthias Mann, I developed a sensitive and robust quantitative proteomics workflow to define the interplay between *Salmonella* Typhimurium and primary macrophage cells. This work resulted in the deepest cellular proteome of *Salmonella* to date, along with a method for identifying and characterizing novel infection-associated proteins. During my time in Germany, I was awarded post-doctoral fellowships from the Alexander von Humboldt Foundation, the Carl Friedrich Siemens Foundation, and NSERC. In addition, I was nominated to attend the 68th annual Lindau Nobel Laureate Meeting in 2018. Moreover, during my NSERC-funded graduate work, I profiled the Protein Kinase A-regulated cellular proteome and secretome of *C. neoformans* to reveal a novel drug repurposing strategy for the treatment of cryptococcosis, as well as identification of the first cryptococcal biomarkers. I am an active member in the mass spectrometry and microbiology communities across Canada and internationally, and I am passionate about promoting technological advances and the diverse array of applications in proteomics to the broader scientific community.



Proteomics-related publications:

Geddes-McAlister, J., Vogt, S., Rowland, J., Woodward, S., Finlay, B., Mann, M., Meissner, F. Quantitative Proteomics of the Host-Pathogen Interplay during *Salmonella* Typhimurium Infection. (*Submitted*).

Geddes-McAlister, J., Meissner, F., Mann, M., Bantscheff, M. The emerging role of mass spectrometry-based proteomics in drug discovery. *Nature Reviews Drug Discovery*. (*In Revision*).

Geddes, J.M.H., Caza, M., Croll, D., Stoykov, N., Foster, L.J., Kronstad, J.W. (2016) Analysis of the protein kinase A-regulated proteome of *Cryptococcus neoformans* identifies a role for the ubiquitin-proteasome pathway in capsule formation. *MBio*. 7: e01862-15.

Geddes, J.M.H., Croll, D., Caza, M., Stoykov, N., Foster, L.J., Kronstad, J.W. (2015) Secretome profiling of *Cryptococcus neoformans* reveals regulation of a subset of virulence-associated proteins and potential biomarkers by Protein Kinase A. *BMC Microbiol*. 15: 206. DOI 10.1186/s12866-015- 0532-3.

Geddes, J.M.H., Eudes, F., Laroche, A., Selinger, L. B. (2008) Differential expression of proteins in response to the interaction between the pathogen *Fusarium graminearum* and its host, *Hordeum vulgare*. *Proteomics*. 8: 545-554.

Websites:

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