

**CURRICULUM VITAE: John Rohde, PhD**

Associate Professor  
 Department of Microbiology and Immunology  
 Dalhousie University  
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**Employment History:**

2015-present Associate Professor, Department of Microbiology and Immunology  
 2008- 2015 Assistant Professor, Department of Microbiology and Immunology

**Education:**

1994-2000 PhD Biochemistry. University of British Columbia (lab of Ivan Sadowski)  
 1991-1993 MSc Bacteriology University of Idaho (lab of Scott Minnich)  
 1991-1995 B.Sc. Bacteriology University of Idaho

**Research Experience:**

2007-2009 Post-Doctoral training  
 Characterization of IpaH family members and identification of novel therapeutics for bacterial infection. Laboratory of Mike Tyers  
 Samuel Lunenfeld Research Institute, Toronto  
 2003-2007 Post-Doctoral training (Anne Cox-Chambers Pasteur Foundation Fellow)  
 Elucidation of function of virulence proteins produced by *Shigella*  
 Laboratory of Philippe Sansonetti  
 Institut Pasteur, Paris  
 2000-2003 Post-Doctoral training  
 Elucidation of mechanisms of TOR signaling in yeast *Saccharomyces cerevisiae*.  
 Laboratory of Joe Heitman and Maria Cardenas,  
 Duke University Medical Center, Durham, NC

**Research Focus**

The primary focus of my research has been to understand the molecular basis by which the intracellular pathogen *Shigella flexneri* causes disease. We are particularly interested in how this bacterium hijacks signaling programs used by the host cell in order to favor its own survival and replication. My extensive training in both prokaryotic and eukaryotic systems allows my lab to tackle difficult problems to better understand host-pathogen communication. More recently my laboratory has begun to elucidate mechanisms by which microbes accelerate weathering of volcanic rock with the goal of developing tools to combat global warming and promote food security.

**Contributions to Science**

*Discovery of a novel class of E3 ubiquitin ligases.* The ubiquitin program is a eukaryotic-specific process that targets proteins for destruction. I discovered that a family of bacterial proteins known as the IpaHs are used by many pathogens to destroy specific proteins within the human cells that they infect. More broadly, these studies brought about an appreciation for the importance of the bacterial pathogen-human ubiquitin interface, an important aspect of immune function and a possible area for the development of new therapeutics.

**Contributions to Science (continued)**

*New tools for the study of Shigella.* My laboratory has developed a large collection of precise mutants in the bacterium *Shigella flexneri*. We freely share these reagents with the research community to advance the field of molecular pathogenesis.

**Publications**

Chang YY, Valenzuela C, Lensen A, Lopez-Montero N, Sidik S, Salogiannis J, Enninga J, **Rohde J**. Microtubules provide force to promote membrane uncoating in vacuolar escape for a cyto-invasive bacterial pathogen. *Nat Commun*. 2024 Feb 5;15(1):1065

Comparative study of GBP recruitment on two cytosol-dwelling pathogens, *Francisella novicida* and *Shigella flexneri* highlights differences in GBP repertoire and in GBP1 motif requirements. Valeva SV, Degabriel M, Michal F, Gay G, **Rohde JR**, Randow F, Lagrange B, Henry T. *Pathog Dis*. 2023

Valenzuela-Valderas KN, Farrashzadeh E, Chang YY, Shi Y, Raudonis R, Leung BM, **Rohde JR**, Enninga J, Cheng Z. RACK1 promotes *Shigella flexneri* actin-mediated invasion, motility, and cell-to-cell spreading. *iScience*. 2023 Oct 14;26(11)

Crouse A, Schramm C, Emond-Rheault JG, Herod A, Kerhoas M, **Rohde J**, Gruenheid S, Kukavica-Ibrulj I, Boyle B, Greenwood CMT, Goodridge LD, Garduno R, Levesque RC, Malo D, Daigle. Combining Whole-Genome Sequencing and Multimodel Phenotyping To Identify Genetic Predictors of *Salmonella* Virulence. *F. mSphere*. 2020 5(3):e00293-20. doi: 10.1128/mSphere.00293-20.

Herod A, Goodridge L, **Rohde J**. (2019). Recalls of Foods due to Microbial Contamination Classified by the Canadian Food Inspection Agency, 2000 to 2017. *Journal of Food Protection*. 82(11): 1901-1908.

Ferrari ML, Malardé V, Grassart A, Salavessa L, Nigro G, Descorps-Declere S, **Rohde JR**, Schnupf P, Masson V, Arras G, Loew D, Sansonetti PJ, Sauvonnet N. (2019). *Shigella* promotes major alteration of gut epithelial physiology and tissue invasion by shutting off host intracellular transport.. *Proc Natl Acad Sci U S A*. 116(27): 13582-13591.

Michal P, Wandel Bae-Hoon Kim Eui-Soon Park Keith B. Boyle Komal Nayak Brice Lagrange Adrian Herod Thomas Henry Matthias Zilbauer **John Rohde** John D. MacMicking Felix Randow. (2020). Guanylatebinding proteins convert cytosolic bacteria into caspase-4 signaling platforms. *Nature Immunology*. 21:741-745.

Sorbara MT, Foerster EG, Tsalikis J, Abdel-Nour M, Mangiapane J, Sirluck-Schroeder I, Tattoli I, van Dalen R, Isenman DE, **Rohde JR**, Girardin SE, Philpott DJ. “Complement C3 Drives Autophagy-Dependent Restriction of Cyto-invasive Bacteria”. *Cell Host Microbe*. 2018 May 9;23(5):644-652.

Wandel MP, Pathe C, Werner EI, Ellison CJ, Boyle KB, von der Malsburg A, **Rohde J**, Randow F. “GBPs Inhibit Motility of *Shigella flexneri* but Are Targeted for Degradation by the Bacterial Ubiquitin Ligase IpaH9.8.” *Cell Host Microbe*. 2017 Oct 11;22(4): 507-518.

Gaudet RG, Guo CX, Molinaro R, Kottwitz H, **Rohde JR**, Dangeard AS, Arrieumerlou C, Girardin SE, Gray-Owen SD. “Innate Recognition of Intracellular Bacterial Growth Is Driven by the TIFA-Dependent Cytosolic Surveillance Pathway”. *Cell Rep*. 2017 **Tanner K**, Brzovic P, and **Rohde JR**. 2015. “The bacterial pathogen-ubiquitin interface: lessons learned from *Shigella*.” *Cell Microbiol*. 17(1):35-44.

**Sidik S**, Salsman, J, Dellaire, G and **Rohde JR**. 2015. “*Shigella* Infection Interferes with SUMOylation and Increases PML-NB Number.” *PLoS One*. 10(4):e0122585..

Hu B, Margolin W, **Rohde JR**, Picking WL, Picking WD, J Liu. 2015. “Visualizing a novel sorting platform in the *Shigella flexneri* type III secretion machine in situ”. *Proc. Natl. Acad. Sci*. 112(4):1047-52.

**Sidik S**, Kottwitz H, Benjamin J, Ryu J, Jarrar A, Garduno R, **Rohde JR**. 2014. A *Shigella flexneri* virulence plasmid encoded factor controls production of outer membrane vesicles. *G3 (Bethesda)*. 4(12):2493-503.

Huibrigtse, J and **Rohde JR**. 2014. Hell’s BELs: bacterial pathogens encode Bacterial E3 Ubiquitin Ligases that exploit the host ubiquitin system. *PLoS Pathogens* 14:10(8).

Pruneda JN, Smith FD, **Daurie A**, Swaney DL, Villén J, Scott JD, Stadnyk AW, Le Trong I, Stenkamp RE, Klevit RE, **Rohde JR**, Brzovic PS. 2014. E2~Ub conjugates regulate the kinase activity of *Shigella* effector OspG during pathogenesis. *EMBO J*. 33(5):437-49.

Keszei AF, Tang X, McCormick C, Zeqiraj E, **Rohde JR**, Tyers M, Sicheri F., 2014. Structure of an SspH1-PKN1 complex reveals the basis for host substrate recognition and mechanism of activation for a bacterial E3 ubiquitin ligase. *Mol Cell Biol*. 34(3):362-73.

## Scientific Mentoring

### Postdoctoral Fellow

Jeremy Benjamin 2011-2012

### Graduate Students

Maggie Hosmer MSc	Microbiology and Immunology	2021-present
Lucas Jarche, MSc	Microbiology and Immunology	2016-2019
Adrian Herod, PhD	Microbiology and Immunology	2013- 2020
Saima Sidik, MSc	Microbiology and Immunology	2009-2011
Angela Daurie ,MSc	Microbiology and Immunology	2012-2016
Kaitlin Tanner MSc	Microbiology and Immunology	2012- 2014
Jessica Pickrem, MSc	Microbiology and Immunology	2013- 2015
Haila Kottwitz, MSc	Microbiology and Immunology	2014- 2016

### Undergraduates

Adrian Rogers	Summer Student, Biology	2011 and 2012
Patrick Lakner	Summer Student, Microbiology and Immunology	2010

Matthew Gaetz	Honours, Microbiology and Immunology	2010-2011
Dooroo Kim	Honours, Microbiology and Immunology	2011-2012
Amit Mishra	Honours, Microbiology and Immunology	2011-2012
Angela Daurie	Honours, Microbiology and Immunology	2011-2012
Jessica Pickrem	Honours, Microbiology and Immunology	2012-2013
Haila Kottwitz	Honours, Microbiology and Immunology	2012-2013
Rory O'Neill	Honours, Microbiology and Immunology	2013-2014
Alexander Porter	Honours, Microbiology and Immunology	2014-2015
Leah Johnston	Honours, Microbiology and Immunology	2014-2015
Lucas Jarche	Honours, Microbiology and Immunology	2014-2015
Katelyn MacNeil	Honours, Microbiology and Immunology	2018-2019
Phoebe Pharcheron	Honours, Microbiology and Immunology	2020-2021
Maggie Hosmer	Honours, Microbiology and Immunology	2020-2021
Hannah Burton	Honours, Microbiology and Immunology	2022-2023
Kailyn Hanke	Honours, Microbiology and Immunology	2022-2023
Hannah Burton	Honours, Microbiology and Immunology	2022-2023
Nicole Jones	Experiential learning, Microbiology	2023-present