

Curriculum vitae

NIKHIL THOMAS Ph.D.

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EDUCATION

- Queen's University
Kingston, Ontario years attended: 1995-2001
degree: Ph.D. Microbiology and Immunology
- Queen's University
Kingston, Ontario years attended: 1991- 1995
degree: B.Sc. Honours (Biology)
- CEGEP John Abbott (College)
Ste Anne-de-Bellevue, Québec years attended: 1990-1991

PROFESSIONAL EXPERIENCE

- A) Professor 2023-current
Department of Microbiology and Immunology
Department of Medicine (Division of Infectious Diseases)
Dalhousie University
Halifax, Nova Scotia, Canada
- B) Associate Professor 2013-2023
Department of Microbiology and Immunology
Department of Medicine (Division of Infectious Diseases)
Dalhousie University
Halifax, Nova Scotia, Canada
- C) Assistant Professor 2006-2013
Department of Microbiology and Immunology
Department of Medicine (Division of Infectious Diseases)
Dalhousie University
Halifax, Nova Scotia, Canada
- D) Postdoctoral Research Associate 2001-2006
Michael Smith Laboratories
University of British Columbia
Vancouver, BC, Canada

HONOURS

CIHR/NSHRF New Investigator Salary Award (2007-2012)

Michael Smith Foundation for Health Research Postdoctoral Award (2002-2005)

NSERC Postdoctoral Associate (2002-2004)

REFEREED JOURNAL PUBLICATIONS: (trainees at Dalhousie are underlined)

**Asterisk indicates corresponding author, H index=25, i10 index=36, 2243 citations.*

Getz LJ, Brown J, Sobot L, Chow A, Mahendrarajah J, Thomas NA 2023. Attenuation of a DNA Cruciform by a Conserved Regulator Directs T3SS-1 mediated virulence in *Vibrio parahaemolyticus*. (Accepted May 9/23), *Nucleic Acids Research*, gkad370, <https://doi.org/10.1093/nar/gkad370>

Ontiveros CC, Sweeney CL, Smith C, MacIsaac S, Munoz S, Davidson R, McCormick C, Thomas NA, Davis I, Stoddart AK and Gagnon GA. 2020. Characterization of a commercially available, low pressure UV lamp as a disinfection system for decontamination of common nosocomial pathogens on N95 Filtering Facepiece Respirator (FFR) material. *Environmental Science: Water Research & Technology*, **6**, 2089-2102

Getz LJ, Runte C, Rainey JK, Thomas NA*. 2019. Tyrosine phosphorylation as a widespread regulatory mechanism in prokaryotes. *Journal of Bacteriology*. Sep 6;201(19). pii: e00205-19. doi: 10.1128/JB.00205-19.

Runte C, Jain U, Getz LJ, Secord S, Kuwae A, Abe A, LeBlanc J, Stadnyk A, Hansen A-M, Kaper JB, Thomas NA*. 2018. Tandem tyrosine phosphosites in the enteropathogenic *Escherichia coli* chaperone CesT are required for differential type III effector translocation and virulence. *Molecular Microbiology* Jun;108(5):536-550. doi: 10.1111/mmi.13948.

Getz LJ, and Thomas NA*. 2018. The Transcriptional Regulator HlyU Positively Regulates *exsA* Expression Leading to Type III Secretion System-1 Activation in *Vibrio parahaemolyticus*. *Journal of Bacteriology* Jul 10;200(15). pii: e00653-17. doi: 10.1128/JB.00653-17

Dunn KA, Moore-Connors J, MacIntyre B, Stadnyk AW, **Thomas NA**, Noble A, Mahdi G, Rashid M, Otley AR, Bielawski JP, Van Limbergen J. 2016. Early Changes in Microbial Community Structure Are Associated with Sustained Remission After Nutritional Treatment of Pediatric Crohn's Disease. **Inflamm Bowel Dis**. 2016 Dec;22(12):2853-2862.

Dunn KA, Moore-Connors J, MacIntyre B, Stadnyk A, **Thomas NA**, Noble A, Mahdi G, Rashid M, Otley AR, Bielawski JP, Van Limbergen J. 2016. The Gut Microbiome of Pediatric Crohn's Disease Patients Differs from Healthy Controls in Genes That Can Influence the Balance Between a Healthy and Dysregulated Immune Response. **Inflamm Bowel Dis**. 2016 Nov;22(11):2607-2618.

Kulshreshtha G, Borza T, Rathgeber B, Stratton GS, Thomas NA, Critchley A, Hafting J, Prithiviraj B. 2016. Red Seaweeds *Sarcodiotheca gaudichaudii* and *Chondrus crispus* down regulate virulence factors of *Salmonella* Enteritidis and induce immune responses in *Caenorhabditis elegans*. **Frontiers in Microbiology**. 2016 Mar 31;7:421. doi: 10.3389/fmicb.2016.00421. eCollection 2016.

Liu AC, Thomas NA*. 2015. Transcriptional profiling of *Vibrio parahaemolyticus exsA* reveals a complex activation network for type III secretion. **Frontiers in Microbiology** 2015. Oct 20;6:1089. doi: 10.3389/fmicb.2015.01089.

Jain U, Cao Q, Thomas NA, Woodruff TM, Schwaeble WJ, Stover CM, Stadnyk AW. 2015. Properdin Provides Protection from *Citrobacter rodentium*-Induced Intestinal Inflammation in a C5a/IL-6-Dependent Manner. **Journal of Immunology** 2015 Apr 1;194(7):3414-21.

Kulshreshtha G, Rathgeber B, Stratton G, Thomas NA, Stone S, Critchley A, Hafting J, Prithiviraj B. 2014. Feed supplementation with red seaweeds, *Chondrus crispus* and *Sarcodiotheca gaudichaudii*, affect performance, egg quality and gut microbiota of layer hens. **Poultry Science** 2014 Dec;93(12):2991-3001.

Orton DJ, Arsenault DJ, Thomas NA*, Doucette AA. 2013. GELFrEE fractionation combined with mass spectrometry for proteome analysis of secreted toxins from Enteropathogenic *Escherichia coli* (EPEC). **Mol Cell Probes**. 2013 Oct-Dec;27(5-6):200-7.

Ramu T, Prasad M, Connors, E, Mishra A, Thomassin J-L, Leblanc, J, Rainey J, Thomas NA*. 2013. A novel C-terminal region within the multicargo type III secretion chaperone CesT contributes to effector secretion. **Journal of Bacteriology** 195:740-56.

Sarty D, Baker NT, Thomson E, Rafuse C, Ebanks R, Graham L, Thomas NA*. 2012. Functional characterization of the type III secretion associated low calcium response genes of *Vibrio parahaemolyticus* RIMD2210633. **Can. J. Microbiol.** 58(11):1306-15.

Brouwers E, Ma I, Thomas NA*. 2012. Dual temporal transcription activation mechanisms control *cesT* expression in Enteropathogenic *Escherichia coli*. **Microbiology (SGM)** 158: 2246-2261.

Thomas NA*, Ma I, Prasad M, Rafuse C. 2012. Expanded roles for multicargo and class 1B chaperones in type III secretion. **Journal of Bacteriology** 194: 3767-73.
Highlighted in ASM Microbe

Thomassin J-L, He X, **Thomas NA***. 2011. Role of EscU auto-cleavage in promoting type III effector translocation into host cells by Enteropathogenic *Escherichia coli*. 2011. **BMC Microbiology** 11:205 -listed as 'Highly Accessed' based on BMC website statistics.

Deng W, de Hoog CL, Yu HB, Li Y, Croxen MA, **Thomas NA**, Puente JL, Foster LJ, Finlay BB. 2010. A comprehensive proteomic analysis of the type III secretome of *Citrobacter rodentium*. **J Biological Chemistry** 285(9):6790-6800.

García-Angulo VA, Deng W, **Thomas NA**, Finlay BB, Puente JL. 2008. Regulation of expression and secretion of NleH, a new non-LEE-encoded effector in *Citrobacter rodentium*. **Journal of Bacteriology** 190: 2388-99.

Kim J, Thanabalasurari A, Chaworth-Musters T, Fromme JC, Frey EA, Lario PI, Metalnikov P, Rizg K, **Thomas NA**, Lee SF, Hartland EL, Hardwidge PR, Pawson T, Strynadka NC, Finlay BB, Schekman R, Gruenheid S. 2007. The bacterial virulence factor NleA inhibits cellular protein secretion by disrupting mammalian COPII function. **Cell Microbe and Host** 2: 160-171.

Thomas NA*, Deng W, **Baker NT**, Puente JL, Finlay BB. 2007. A multivalent type III effector chaperone coordinates the hierarchical delivery of an essential host colonization factor in enteropathogenic *Escherichia coli*. **Journal of Biological Chemistry** 282: 29634-29645.

Thomas NA, Deng W, Puente JL, Frey EA, Yip C, Strynadka N, Finlay BB. 2005. CesT is a multi-effector chaperone and recruitment factor required for the efficient type III secretion of both LEE and non-LEE encoded effectors of enteropathogenic *Escherichia coli*. **Molecular Microbiology** 57: 1762-1779.
Highlighted by Faculty of 1000

Yip CK, Kimbrough TG, Felise HB, Vuckovic M, **Thomas NA**, Pfuetzner RA, Frey EA, Finlay BB, Miller SI, Strynadka NCJ. 2005. Structural characterization of the molecular platform for type III secretion system assembly. **Nature** 435: 702-707.
An influential structural biology paper characterizing the type III secretion system of pathogens

Thomas NA, Finlay BB. 2004. Pathogens: Bacterial Needles Ruled to Length and Specificity. **Current Biology** 14: R192-194.

Gruenheid S, Sekirov I, **Thomas NA**, Deng W, O'Donnell P, Goode D, Li Y, Frey EA, Brown NF, Metalnikov P, Pawson T, Ashman K, Finlay BB. 2004. Identification and characterization of NleA, a non-LEE-encoded type III translocated virulence factor of enterohaemorrhagic *Escherichia coli* O157:H7. **Molecular Microbiology** 51: 1233-1249. *Among the top 50 most frequently targeted papers in Molecular Microbiology on-line via Synergy in 2004.*

Thomas NA, Finlay BB. 2003. Establishing order for type III secretion substrates: a hierarchical process. **Trends in Microbiology** 11: 398-403.

Gauthier A, **Thomas NA**, Finlay BB. 2003. Bacterial injection machines. **Journal of Biological Chemistry** 278: 25273-25276.

Thomas NA, Mueller S, Klein A, Jarrell KF. 2002. Mutants in *flaI* and *flaJ* of the archaeon *Methanococcus voltae* are deficient in flagellum assembly. **Molecular Microbiology** 46: 879-887.

Thomas NA, Jarrell KF. 2001. Characterization of Flagella Gene Families from Methanogenic Archaea and Localization of Novel Flagella Accessory Proteins. **Journal of Bacteriology** 183: 7154-7164.

Thomas NA, Pawson CT, Jarrell KF. 2001 Insertional Inactivation of the *flaH* Gene of the Archaeon *Methanococcus voltae* Results in Nonflagellated Cells. **Molecular Genetics and Genomics** 265: 596-603.

Thomas NA, Chao E, Jarrell KF. 2001 Identification of Amino Acids in the Leader Sequence of *M. voltae* Preflagellin Involved in Post-translational Modification by a Preflagellin Peptidase. **Archives of Microbiology** 175: 263-269.

Thomas NA, Bardy S, Jarrell KF. 2001. The Archaeal Flagellum, a Different Motility Structure. **FEMS Microbiology Reviews** 25: 147-174.

Thomas NA, Faguy DM, Jarrell KF. 2000. Archaeal Chromosome, in Embryonic Encyclopedia of Life Sciences. **Nature Publishing Group**, London, www.els.net.

Jarrell KF, Bayley DP, Correia JD, **Thomas NA** (October 1999) Archaeal Flagella. In Embryonic Encyclopedia of Life Sciences, **Nature Publishing Group**, London, www.els.net.

Jarrell KF, Correia JD, **Thomas NA**. 1999. Is the processing and translocation system used by flagellins also used by membrane-anchored secretory proteins in archaea? **Molecular Microbiology** 34: 395-398.

Jarrell KF, Bayley DP, Correia JD and **Thomas NA**. 1999. Recent Excitement about the Archaea. **Bioscience** 49: 530-541.

Jarrell KF, Vidykhan T, Lee P, Agnew D, **Thomas NA**. 1997. Isolation and Characterization of Bacteriophage BCJ α 1, a Novel Temperate Bacteriophage Active Against the Alkaliphilic Bacterium, *Bacillus clarkii*. **Extremophiles** 1: 199-206.

Faguy DM, Bayley DP, Kostyukova AS, **Thomas NA**, Jarrell KF. 1996. Isolation and Characterization of Flagella and Flagellin Proteins From the Thermoacidophilic Archaea *Thermoplasma volcanium* and *Sulfolobus shibatae*. **Journal of Bacteriology** 178: 902-905.

INVITED LECTURES

Attenuation of an unusual DNA superstructure regulates virulence in pathogenic *Vibrio* species. **University of Waterloo, Department of Biology**, November 28, 2023. Host Andrew Doxey.

A High-throughput PCR Molecular Test for COVID-19 to support massive community surveillance. **Department of Medicine Research Day**, April 21, 2022, Podium presentation.

Pathogenicity Islands integrate into host cell biology to optimize virulence strategies. **Department of Microbiology, University of Manitoba**. January 14, 2022. Host: Ann Karen Brassinga.

Novel DNA superstructures contribute to virulence gene regulation in pathogenic *Vibrio* species. **Vibrio-Online International Virtual (Zoom) Meeting**. May 29, 2020. Host: Dor Saloman.

A DNA cruciform regulates virulence gene expression in pandemic *Vibrio* species. Department of Biomedical Sciences, **Queen's University Kingston**, ON. Nov. 21, 2019. Host: Ken Jarrell.

Novel insights and approaches in microbial pathogenomics. Comparative Genomics and Evolutionary Biology Meeting, **Dalhousie University**. November 14, 2019. Host: John Archibald

Bacterial tyrosine phosphorylation regulates type III secretion chaperone function during infection. Michael Smith Laboratories, **University of British Columbia**, Vancouver Aug 2-6, 2019. Host: Brett Finlay.

Bacterial modulation of virulence gene expression: flipping the switch towards pathogenesis. Department of Biochemistry & Molecular Biology, **Dalhousie University**, Oct 17, 2018. Host: Steve Bearne

Site-specific protein phosphorylation intricately regulates bacterial secretion system function during enteric pathogenesis. **University of New Brunswick**, Fredericton. Jan 27, 2017. Host: Sean McClellan

Dual regulatory control of *exsA* expression regulates T3SS expression in *Vibrio parahaemolyticus*. 2015. **Osaka University RIMD**. Oct 19, 2015. Host: Tetsuya Iida

A functional screen for T3 chaperone activity in pathogenic *E. coli*. 2015. **Osaka University Graduate School of Molecular Biosciences**. Oct 20, 2015. Host: Tohru Minamino and Keiichi Namba.

Development of an innovative high throughput assay to functionally assess type III secretion in pathogenic *Escherichia coli*. 2014. **International Union of Microbiological Sciences (IUMS)**. Montreal, QC. July 29, 2014.

Pathogenesis of food and water borne infections associated with epidemics. 2012. **Department of Medicine, Grand Rounds**. Dalhousie University. Halifax, NS. Host: Dr. John Hanly. January 10, 2012.

Quality control of type III effector injection in Enteropathogenic *E. coli*. 2010. **Banff Conference on Infectious Disease**. Banff, Alberta Hosts: Jon Dennis and Rebecca Devinney

Chaperone-effector interactions involved in effector injection into host cells. 2009. **University of Alberta**. January 24, 2009. Host: Tracy Raivio

Bacterial type III effector mediated pathogenesis: Is there order to the chaos? 2008. **University of Florida**. March 3, 2008, Host: Dr. J. Brady.

The complexities of chaperone-effector interactions associated with type III secretion. 2007. **Gordon Research Conference: Protein Traffic**. Barga, Italy June 10-15, 2007 Conference organizers: Tassos Economou and Carla Koehler.

Enteric bacterial pathogens - using needles to subvert host immunity. 2007. **Dalhousie Infectious Disease Research Alliance (DIDRA)**. March 2007.

'Bacterial needles inject toxins into host cells - subversive mechanisms leading to human disease'. Jan 25, 2007. **Department of Medicine Faculty Research Evening**.

E. coli enteric pathogenesis: a hierarchical process mediated by CesT function. 2006. **St. FX visiting speaker series**. Host: Dr. L. Graham.

CesT is a multivalent EPEC chaperone that coordinates the hierarchical delivery of an essential host colonization factor. **ASM meeting on Prokaryotic Traffic**: Crete, Greece May 6-10, 2006. Session Chairs: Tony Pugsley/Tracy Palmer

Chaperone-effector interactions involved in type III virulence factor injection to host cells. **International Union of Microbiological Sciences (IUMS)** joint meeting: San Francisco July 23-28, 2005. Session chairs: Dr. Jose Puente/Dr. John Leong.

Protein interactions involved in EPEC type III translocation of virulence factors into host cells. **Institute for Systems Biology (ISB)**, Seattle. September 3/2004. Host: Dr. Nitin Baliga

REFEREED ABSTRACTS AND CONFERENCE PRESENTATIONS (trainees underlined)

Robinson, O, Getz, LJ, Thomas NA. Transposon sequencing identifies a genetic paradigm for chitin utilization in *Vibrio parahaemolyticus*. Canadian Society of Microbiologists, Annual Conference, Halifax, NS, June 2023.

Chow, A, Thomas NA. Type III effector expression is regulated by serine metabolism in Enteropathogenic *Escherichia coli*. Canadian Society of Microbiologists, Annual Conference, Guelph, ON, June 2022.

Getz LJ, Thomas NA. Tn-seq for probing bacterial pathogenesis. Genomics in Medicine, Dalhousie University WAVE1 meeting. (Platform presentation). December 6, 2019.

Getz, LJ, Brown, J, Thomas NA. A DNA superstructure regulated T3SS-I gene expression in pathogenic *Vibrio* species. CSM Annual Meeting, Sherbrooke QC. Canada. June 2019.

Getz, LJ, Thomas NA. HlyU and H-NS act as a genetic switch for transcriptional control of type III secretion-I master regulator ExsA. ASM Vibrio 2017, Chicago, United States Conference Date: November 2017

Runte C, Leblanc J, Thomas NA. Bacterial tyrosine phosphorylation of a multicargo chaperone regulates hierarchical type III effector secretion and supports enteric disease. Canadian Society of Microbiologists Annual Conference, Waterloo, ON. June 2017.

Runte C, Thomas NA. Differential bacterial tyrosine phosphorylation regulates type III effector secretion in pathogenic *Escherichia coli*. Protein Secretion in Bacteria, Tampa, Fla., USA November 2016. Poster presentation.

Dunn KA, Connors J, MacIntyre B, Stadnyk A, Bielawski JP, **Thomas NA**, Otley AR, Van Limbergen J. The dysbiosis index does not distinguish children with Crohn's disease from healthy siblings. United European Gastroenterology Week, Barcelona, Spain. Oct 2015.

Dunn KA, Connors J, MacIntyre B, Stadnyk A, Bielawski JP, **Thomas NA**, Otley AR, Van Limbergen J. Clinical remission induced by exclusive enteral nutrition (EEN) in pediatric Crohn's disease is associated with microbiome metabolic changes toward increased xenobiotic biodegradation and metabolism. United European Gastroenterology Week, Barcelona, Spain. Oct 2015.

Liu AC, Thomas NA. Temporal real-time profiling of *exsA* gene expression in *Vibrio parahaemolyticus*. Cold Spring Harbor Microbial Pathogenesis. Cold Spring Harbor, NY., USA. September 2015. Poster presentation.

Rooney B-L, LeBlanc JG, Thomas NA, LeBlanc J. On the hunt for peptide antagonists targeting *Clostridium difficile* toxins. Infectious Disease and Canadian Center for Vaccinology Research Day, Halifax, NS. April 2015. Poster presentation.

Connors J, Dunn KA, Bielawski JP, Stadnyk A, **Thomas NA**, Otley AR, Van Limbergen J. Clinical remission induced by exclusive enteral nutrition (EEN) in pediatric Crohn's disease is associated with microbiome metabolic changes toward altered xenobiotic biodegradation and metabolism. 10th Congress of ECCO - Inflammatory Bowel Diseases 2015, Barcelona, Spain. February 2015.

Campbell L, Thomas NA Calcium Sensing Influences Transcriptional Activation of Type III Secretion Genes in *Vibrio parahaemolyticus*. ASM 2014 Boston, USA. June 2014. Poster presentation

Ramu T, Mishra A, Prasad M, Thomas NA. Targeting of chaperone-effector complexes to the EPEC type III secretion system is mediated by a novel C-terminal domain within CesT. Cold Spring Harbor Conference Microbial Pathogenesis and Host Response. Cold Spring Harbor, NY, USA. September 2011, Poster presentation.

Brouwers, E, Thomas NA. Early activation of a virulence promoter in Enteropathogenic *E. coli*. Canadian Society for Microbiology AGM. McMaster University, Hamilton, ON. June 2010. Poster presentation.

Thomassin JL, Thomas NA. Quality control of type III effector injection mediated by a critical inner membrane protein of Enteropathogenic *Escherichia coli*. ASM 2010 San Diego, USA May 2010. Poster presentation.

Thomassin JL, Thomas NA. Evidence for a molecular docking platform in type III secretion. Gordon Research Conference – Protein Traffic. Galveston, TX, USA. March 2010. Poster presentation.

Thomassin JL, Thomas NA. Functional Characterization of EscU, an auto-cleaving protein required for type III secretion in Enteropathogenic *Escherichia coli*. EMBO meeting on Protein transport across membranes. Nice, France 2008. Poster presentation.

Thomassin JL, Thomas NA. Characterization of the type III secretion protein EscU of Enteropathogenic *E. coli*. Canadian Society for Microbiology, Annual General Meeting, Calgary, Alberta June 2008. Poster presentation.

Van Dyke D, Baker NT, Thomas NA. Development of a host cell reporter system for novel EPEC/EHEC effector characterization. Canadian Society for Microbiology, Annual General Meeting, Calgary, Alberta June 2008. Poster presentation.

Baker NT, Thomas NA. Plug and play pathogenesis: Characterization of a mobile type III effector associated with human enteric disease 2007. Infectious Disease Research Day, Dalhousie University.

Thomas NA, Frey E., Strynadka N, Finlay BB. CesT of Enteropathogenic *Escherichia coli* is a Chaperone that Targets Tir for Secretion by Interacting with the Type III Secretion System ATPase EscN. Presented at the ASM Annual General Meeting, New Orleans, LA USA, 2004.

Thomas NA, Finlay BB. Characterization of the type III secretion apparatus of Enteropathogenic *Escherichia coli* (EPEC). Presented at the 3rd International Symposium on Enteropathogenic *E. coli*. Puerto Vallarta, Mexico. 2002.

Thomas NA, Mueller S, Klein A, Jarrell KF. Identification of two flagella accessory genes *flaI* and *flaJ* of *Methanococcus voltae* that are required for flagellation. Presented at the ASM Annual General Meeting, Orlando, Florida, USA, 2001.

Thomas NA, Pawson CT, Jarrell KF. Insertional Inactivation of *flaH* of the Archaeon *Methanococcus voltae* Results in Nonflagellated Cells. Presented at the ASM Annual General Meeting, Los Angeles, USA, 2000.

Thomas NA, Chao E, Jarrell KF. Critical Amino Acids in the Leader Sequence of *Methanococcus voltae* Preflagellin Involved in Cleavage by a Preflagellin Peptidase. Presented at the ASM Annual General Meeting, Los Angeles, USA, 2000.

Thomas NA, Jarrell KF. Characterization of Flagellin Gene Families from Methanogenic Archaea. Presented at the Gordon Research Conference: Archaea; Molecular Biology, Biochemistry and Ecology, Andover, New Hampshire 1999.

Thomas NA, Jarrell KF. Flagellin Gene Families of Methanogenic Archaea. Presentation in the Student Award Competition at the CSM Annual General Meeting, Montreal, PQ. 1999.

Thomas NA, Jarrell KF. Characterization and Localization of Flagella Accessory Proteins of *Methanococcus voltae*. Presented at the ASM Annual General Meeting, Atlanta, USA, 1998.

Thomas NA, Jarrell KF. Localization of Flagella Accessory Proteins of *Methanococcus voltae*. Presented at The First Annual Meeting of Clinical and Basic Research at Queen's University. (Awarded Honourable Mention for poster). 1998.

Thomas NA, Correia JD, Jarrell KF. Localization of Flagella Accessory Proteins of *Methanococcus voltae*. Presented at the CSM Annual General Meeting, Guelph, ON, 1998.

Thomas NA, Bayley DP, Jarrell KF. 1997. Identification of Methanococcal flagellin genes using degenerate primers corresponding to the N-terminal region of archaeal flagellins. Presented at the Wind River Conference on Prokaryotic Biology, Allenspark, Colorado, USA 1997

Thomas NA, Jarrell KF. Characterization of the Flagella and Flagellins from the Thermoacidophilic Archaea *Thermoplasma acidophilum* and *Thermoplasma volcanium*. Presented at the Gordon Research Conference: Archaea; Molecular Biology, Biochemistry and Ecology. Plymouth, New Hampshire. 1996.

EXTERNAL GRANTS AND SALARY AWARDS (within last ten years)

CIHR Operating grant	2008-2013	\$103,000/annum
CIHR New Investigator Salary Award (5 years, for a total of \$300,000)	2007-2012	\$60,000/annum
NSHRF Development and Innovation Grant Co-Investigator: Dr. Tony Otley	2012-2013	\$15,000
NSERC Discovery Grant	2013-2018	\$30,000/annum
NSERC Discovery Grant	2019-2024	\$32,000/annum
GENOME CANADA (ATLANTIC) (partner: Research Nova Scotia) COVID-19 Rapid Response	2020-2021	\$180,000

PROFESSIONAL SERVICE

Reviewer for Journals: (manuscript review)

Review Editor: Frontiers in Cellular and Infection Microbiology
Canadian Journal of Microbiology
Proceedings of the National Academy of Sciences (PNAS)
Journal of Cellular and Molecular Medicine
Molecular Microbiology
Nature
Nature Communications
PLoS Pathogens
PLoS One
Scientific Reports
Virulence
Journal of Bacteriology
Infection and Immunity
Applied and Environmental Microbiology
Frontiers in Microbiology

Grant Panels, Grant Reviews, Chair Activities

External grant reviewer for CIHR	2007
Canadian Institute for Health Research (CIHR) (Microbiology and Infectious Diseases, MI panel)	2008
Reviewer for NSERC Discovery Grants	2015, 2016, 2019, 2021-23
Nova Scotia Health Research Foundation Biomedical Grant Panel -Vice Chair of the Biomedical Panel 2011	2008, 2009, 2010, 2011
International Union of Microbiological Sciences (IUMS) Meeting -Session Chair, Genetic screens in biotechnology	2014

Chair of CCfV Infectious Research Day Oral Colloquium Session	2011, 2015
NSERC Industrial Research Chair, Site Visit Committee	2015
New Frontiers Research Fund (NFRF) Committee	2019, 2020, 2021, 2023

UNIVERSITY COMMITTEES (Faculty and Department)

University Biosafety Committee 2017-present

Faculty of Medicine

Research Advisory Committee 2013-2016
Department Survey/Head Search Committee 2011, 2016, 2017, 2022
-[Chair for 2017](#)
Academic, Tenure and Promotion Committee 2008-2010, 2012
-[Co-chair 2012](#)
Awards Committee 2021-present

Faculty of Graduate Studies

FGS Tri-council and Harmonized Graduate Scholarship Committee 2016-2019
FGS Doctoral Thesis Chair Committee 2018-present

Department Microbiology and Immunology Committees:

Chair Search Committee 2014-2015
Executive 2008-2009, 2014-2015, 2018-present
Undergraduate 2007-present (Chair as of 2019)
Graduate 2007-2009
Resource and Infrastructure 2007
Academic, Tenure and Promotion 2006-2007
Biosafety 2016-2021

Department of Medicine Committees:

Research 2007-2010, 2010-2014
Faculty Search Committee (Div. Infect. Dis) 2013
Internal Survey Committee 2018-present

Judging Role in Academia (Conferences)

Judge- Canadian Society for Microbiology Student Competition June 2008, 2013, 2019
Judge - Faculty of Medicine Graduate Research Day, 2007, 2009, 2012, 2015, 2016, 2017, 2019
Judge – Infectious Disease Research Day May 2007, 2008, 2012, 2013, 2014, 2015, 2017, 2019