

**Food and Environmental Parasitology Network  
(FEPN)**

**2011  
Directory of Members**

**Food and Environmental Parasitology Network  
Members (as of Oct. 12, 2011)**

**RESEARCH MEMBERS**

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Natalie Prystajecy	BCCDC, Vancouver	Prov. Government	BC
Muhammad Morshed	BCCDC, Vancouver	Prov. Government	BC
Jane Pritchard	BC Ministry of Agriculture, Abbotsford	Prov. Government	BC
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Bonnie Buntain	University of Calgary	University	AB
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Laura Lalonde	CFIA, Saskatoon	Fed. Government	SK
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Vlad Lobanov	CFIA, Saskatoon	Fed. Government	SK
Emily Jenkins	University of Saskatchewan	University	SK
Sarah Parker	University of Saskatchewan	University	SK
Tasha Epp	University of Saskatchewan	University	SK
Neil Chilton	University of Saskatchewan	University	SK
Michael Pietrock	University of Saskatchewan	University	SK
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Matt Gilmour	NML, Winnipeg	Fed. Government	MB
Tom Edge	Environment Canada, Burlington	Fed. Government	ON
Pia Muchaal	PHAC, Guelph	Fed. Government	ON
Katarina Pintar	PHAC, Guelph	Fed. Government	ON
Jeanine Boulter-Bitzer	OMAFRA, Guelph	Prov. Government	ON
Corinne Ong	Ryerson University, Toronto	University	ON
Janet Yee	Trent University, Peterborough	University	ON
Brent Dixon	Health Canada, Ottawa	Fed. Government	ON
Makonnen Abebe	Health Canada, Ottawa	Fed. Government	ON
Peter Buck	PHAC, Ottawa	Fed. Government	ON
Erin Leonard	PHAC, Ottawa	Fed. Government	ON
Nicolas Gilbert	PHAC, Ottawa	Fed. Government	ON
Manisha Kulkarni	PHAC, Ottawa	Fed. Government	ON
Syed Sattar	CREM, Univ. of Ottawa	University	ON
Jason Tetro	CREM, Univ. of Ottawa	University	ON
Susan Springthorpe	CREM, Univ. of Ottawa	University	ON
Rich Kibbee	CREM, Univ. of Ottawa	University	ON

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Rasha Maal-Bared	CREM, Univ. of Ottawa	University	ON
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Dele Ogunremi	CFIA, Ottawa	Fed. Government	ON
Evelyne Kokoskin	Public Health Laboratories, Ottawa	Prov. Government	ON
Rebecca Guy	PHAC, Saint-Hyacinthe	Fed. Government	QC
Louise Trudel	Public Health, Ste.-Anne-de-Bellevue	Prov. Government	QC
Florence Dzierszinski	McGill Univ., Ste.-Anne-de-Bellevue	University	QC
Armando Jardim	McGill Univ., Ste.-Anne-de-Bellevue	University	QC
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Theresa Gyorkos	McGill University, Montreal	University	QC
David Marcogliese	Environment Canada, Montreal	Fed. Government	QC
Christine Barthe	MAPAQ, Québec	Prov. Government	QC
Isabelle Côté	MAPAQ, Québec	Prov. Government	QC
Lena Measures	DFO, Mont-Joli	Fed. Government	QC
Manon Simard	Nunavik Research Centre, Kuujjuaq	NGO	QC
Spencer Greenwood	University of PEI, Charlottetown	University	PE
J. Trenton McClure	University of PEI, Charlottetown	University	PE
Nicole Guselle	University of PEI, Charlottetown	University	PE

**NON-RESEARCH MEMBERS**

<b>Name</b>	<b>Organization</b>	<b>Representation</b>	<b>Province</b>
Lai-king Ng	NML, Winnipeg	Fed. Government	MB
Jean-Robert Bisailon	CFIA, Ottawa	Fed. Government	ON
Jeffrey Farber	Health Canada, Ottawa	Fed. Government	ON
Sabah Bidawid	Health Canada, Ottawa	Fed. Government	ON
Paul Sockett	Health Canada, Ottawa (FNIHB)	Fed. Government	ON

**Makonnen Abebe**, Ph.D.

Research Scientist  
Environmental Health Science and Research Bureau  
Hazard Identification Division  
Health Canada

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**Research Interests:**

I am interested in the in vitro culture of *Cryptosporidium* and *Cyclospora*. I would also like to provide services in monoclonal antibody (MAb) production to food-borne parasites. Members who are either interested in acquiring MAbs or get in vitro works done can initiate collaborative works with me.

**Recent Publications:**

Abebe M, Kumar V, Rajan S, Thaker A, and Vijay H. 2006. Detection of recombinant *Alt a1* in a two-site, IgM based, sandwich ELISA opens up possibilities of developing alternative assays for the allergen. *Journal of Immunological Methods* 312: 111-117.

Abebe M, Nguyen K, Decker W, Tayabali A, Kumar V, Sevinc S, and Vijay H. 2009. The application of IgM in an xMAP suspension assay using recombinant *Alt a1* as a model target protein. *Int. J. Immunological Studies* 1: 1-12.

**Batol Al-Adhami, Ph.D.**

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Centre for Foodborne and Animal Parasitology, Saskatoon Laboratory,  
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Saskatoon SK S7N 2R3

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**Research Interests:**

My research focuses on the development of methods for detecting and isolating coccidian parasites (*Toxoplasma*, *Cyclospora* and *Cryptosporidium*) in food, water and environmental samples.

**Keywords:** *Toxoplasma*, *Cyclospora*, *Cryptosporidium*

**Recent Publications:**

Al-Adhami, B., Huby-Chilton, F., Chilton, N., Martinez-Perez, A., Blais, B. and Gajadhar, A. 2008. Non-isotopic single strand conformation polymorphism analysis for the rapid discrimination of Salmonella strains. J. Food. Prot. 71, 1960-1966.

Sato, H., Al-Adhami, B.H., Une, Y. and Kamiya, H. 2007. Trypanosoma (Herpetosoma) kuseli sp. n. (Protozoa: Kinetoplastida) in Siberian flying squirrels (*Pteromys volans*). Parasitol. Res. 101, 453-461.

Smith, H.V., Al-Adhami, B.H., Nichols, R.A.B., Kusel, J.R. and O'Grady, J. 2007. Towards methods for detecting UV-induced damage in individual *Cryptosporidium parvum* and *Cryptosporidium hominis* oocysts by immunofluorescence microscopy (Review). In *Giardia and Cryptosporidium: Molecules, Genes and Disease*. Published by CABI International.

Kusel, J.R., Al-Adhami, B.H. & Doenhoff, M.J. 2007. The schistosome in the mammalian host: Understanding the mechanisms of adaptation (Review). Parasitology 134, 1477-1562.

Al-Adhami, B.H., Nichols, R.A.B, Kusel, J. R. O'Grady, J. & Smith, H.V. 2007. Detection of UV-induced thymine dimers in individual *Cryptosporidium parvum* and *Cryptosporidium hominis* oocysts by immunofluorescence microscopy. Applied and Environmental Microbiology 73, 947-955.

**Christine Barthe**, M.Sc. microbiologie médicale

Coordonnatrice provinciale à l'évaluation des risques alimentaires  
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**Mike Belosevic, Ph.D., FRSC**

Distinguished University Professor  
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**Research Interests:**

My primary research interest is the immunobiology of host-parasite associations and my research goals have been to: (a) Describe and analyze the mechanisms of innate immunity to obligate intracellular and extracellular protozoan parasites in animals and humans; (b) Study the regulation of macrophage anti-microbial mechanisms in mammals and fish; and (c) Develop methods for detection and inactivation of protozoan parasites, prions and chemical pollutants in environmental samples.

**Recent Publications:**

Grayfer L, Belosevic M. Comparison of macrophage antimicrobial responses induced by type II interferons of the goldfish (*Carassius auratus* L.). *Journal of Biological Chemistry* 2010; 285:23537-23547.

Oladiran A, Belosevic M. *Trypanosoma carassii* calreticulin binds host complement component C1q and inhibits classical complement pathway-mediated lysis. *Developmental and Comparative Immunology* 2010; 34:396-405.

Hitchen SJ, Shostak AW, Belosevic M. *Hymenolepis diminuta* (Cestoda) induces changes expression of select genes of *Tribolium confusum* (Coleoptera). *Parasitology Research* 2009; 105:875-879.

Oladiran A, Belosevic M. *Trypanosoma carassii* hsp70 increases the expression of inflammatory cytokines and chemokines in macrophages of the goldfish (*Carassius auratus* L.). *Developmental and Comparative Immunology* 2009; 33: 1128-1136.

Li D, Craik SA, Smith DW, Belosevic M. Infectivity of *Giardia lamblia* cysts obtained from wastewater treated with ultraviolet light. *Water Research* 2009; 43:3037-3046.

Hanington PC, Tam J, Katzenback BA, Hitchen SJ, Barreda DR, Belosevic M. Development of macrophages of bony fish. *Developmental and Comparative Immunology* 2009; 33:411-429.

Li D, Craik SA, Smith DW, Belosevic M. The assessment of particle association and UV disinfection of wastewater using indigenous spore-forming bacteria. *Water Research* 2009; 43:481-489.

Wang T, Hanington PC, Belosevic M, Secombes CJ. Fish macrophage colony stimulating factor genes: diversified gene organizations and novel functions. *Journal of Immunology* 2008; 181:3310-3322.

Oladiran A, Hitchen SJ, Katzeback BA, Belosevic M. Biology of select zoonotic protozoan infections of domestic animals. *UNESCO Encyclopedia of Life Support Systems* 2008; (<http://greenplanet.eolss.net/EolssLogn/InsLogin.aspx>)

Katzenback BA, Plouffe DA, Haddad G, Belosevic M. Immunization with recombinant parasite beta-tubulin increases resistance of goldfish *Carassius auratus* (L.) to infection with *Trypanosoma danilewskyi* Laveran and Mesnil, 1904. *Veterinary Parasitology* 2008; 151:36-45.

Li D, Craik SA, Smith DW, Belosevic M. Survival of *Giardia lamblia* trophozoites after exposure to ultraviolet light. *FEMS Microbiology Letters* 2008; 278:56-61.

**Sabah Bidawid, Ph.D.**

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**Research Interests:**

My research has focused on developing rapid and sensitive molecular techniques to detect viruses in foods, conducting studies on virus survival and inactivation in foods, as well as investigating virus transfer from the fingerpads of human volunteers to foods and surfaces, and the interruption of this transfer by various means. Current research aims at developing DNA microarray chip and microfluidics technologies for the detection of Norovirus, as well as other microbial pathogens in foods. Since 2003, I have assumed the position as the Chief of the Microbiology Research Division in Health Canada, overseeing research by a number of scientists in various fields of foodborne bacterial, viral and parasitic diseases. The different research programs in this Division focus on developing molecular technologies for the rapid detection of microbial pathogens in foods, as well as projects to generate needed data in support of risk assessment and for the development of guidelines, policies and regulations. I am co-founder and past President of the Food and Environmental Virology Network established in Canada in 2003, and past Chairman of the Viral and Parasitic Foodborne Disease Professional Development Group of the International Association for Food Protection.

**Keywords:** Norovirus, zoonotic, hepatitis A virus, foodborne enteric viruses

**Jean-Robert Bisailon**, DVM, M.Sc.

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**Burton W. Blais, Ph.D.**

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**Jeanine Boulter-Bitzer, Ph.D.**

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**Research Interests:**

Testing, surveillance and research in food- and water-borne human and zoonotic pathogens and indicators in the food continuum, primarily during and following processing, including some on-farm and retail.

**Keywords:** microbiology, bacteriology, parasitology, virology, food-borne pathogens, water-borne pathogens

**Recent Publications:**

Boulter-Bitzer, J. I., Lee, H., and Trevors, J.T. 2010. Selection of single-chain variable fragment (scFv) from a phage display library against S16 of *Cryptosporidium parvum*. *Experimental Parasitology*, 125(2):124-9.

Boulter-Bitzer, J. I., Lee, H., and Trevors, J.T. 2009. Selection of single-chain variable fragment (scFv) from a phage display library against P23 of *Cryptosporidium parvum*. *Journal of Parasitology*, 95(1):75-81.

Pokorny, N.J., Boulter-Bitzer, J. I., Hall, C., Trevors, J.T., and Lee, H. 2008. Inhibition of *Cryptosporidium parvum* infection of a mammalian cell culture by recombinant scFv antibodies. *Antonie van Leeuwenhoek*, 94(3): 353-364.

Boulter-Bitzer, J. Single-chain variable-fragment (scFv) antibodies produced by phage display against S16 and P23 glycoproteins of *Cryptosporidium parvum*. January 2007. Doctoral Thesis.

Boulter-Bitzer, J. I., Lee, H., and Trevors, J.T. 2007. Molecular targets for detection and immunotherapy in *Cryptosporidium parvum*. *Biotechnology Advances*, 25(1): 13-44.

Pokorny, N.J., Boulter-Bitzer, J. I., Hall, C., Trevors, J.T., and Lee, H. 2007. Recombinant antibodies for pathogen detection and immunotherapy. *Handbook of Pharmaceutical Biotechnology*, S.C. Gad, ed., 851-881.

**Peter A. Buck**, B.Sc., DVM, M.Sc.

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**Andre G. Buret, Ph.D.**

Professor, Director of Research – Associate Head  
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Inflammation Research Network  
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**Research interests:**

Similar events characterize disease processes at mucosal sites, such as the intestine and the lungs. Diseases at these sites represent the most common cause of death in humans and other animal species world-wide. The overall aim of my research is to define microbial-host cell interactions in these systems, and how such interactions may affect gastrointestinal and pulmonary physiology, responsiveness, and inflammation, in an attempt to develop novel therapeutic strategies. Particular emphasis is given to research on the pathophysiology of intestinal *Giardia* infections.

**Recent Publications:**

FISHER C, BEATTY JK, ZVAIGNE, CG, MORCK DW, LUCAS ML, BURET AG. (2011) Tulathromycin inhibits NFkB signaling via the induction of caspase-3-dependent apoptosis in bovine neutrophils. *Antimicrob. Agents Chemother.* (in press, January issue)

LAPOINTE, T.K., O'CONNOR, P.M., JONES, N.L., MENARD, D., BURET, A.G. (2010) Interleukin-1 receptor phosphorylation activates Rho kinase to disrupt human gastric tight junctional claudin-4 during *Helicobacter pylori* infection. *Cell. Micro.* 12(5): 692-703.

KALISCHUK, L.D., BURET, A.G. (2010) A role for *Campylobacter-jejuni* induced enteritis in inflammatory bowel disease? *Am. J. Physiol.* 298:G1-G9

LAMB-ROSTESKI, J.M., KALISCHUK, L.D., INGLIS, G.D., BURET, A.G. (2008) Epidermal growth factor inhibits *Campylobacter jejuni*-induced claudin-4 disruption, loss of epithelial barrier function, and *Escherichia coli* translocation. *Infect. Immun.* 76(8): 3390-3398

YU, L.C.H., HUANG, C-Y, KUO, W-T, SAYER, H., TURNER, J.R., BURET, A.G. (2008) SGLT-1 –mediated glucose uptake protects human intestinal epithelial cells against *Giardia duodenalis* –induced apoptosis. *Int. J. Parasitol.* 38: 923-934

BURET A.G. (2008) Pathophysiology of enteric infections with *Giardia duodenalis*. *Parasite* 15:261-266

**Recent Book Chapters:**

BURET, A.G., COTTON, J. (2011) Pathophysiological processes and clinical manifestations of giardiasis, In: LUJAN, H.D., SVARD, S., *Giardia* and giardiasis, Springer-Verlag, Wien and New York (in press).

BURET, A.G. (2011) The effects of microbes on enterocyte apoptosis, (in press); In: Life and death of the intestinal epithelial cell (P.H. Vachon, Ed.) (in press)

**Sylvia Checkley, Ph.D., DVM**

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**Neil B. Chilton, Ph.D.**

Professor and Assistant Head, Department of Biology  
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**Research Interests:**

My research interests in parasitology involve several inter-related disciplines (e.g. evolutionary ecology, systematics, population genetics, and molecular biology) and span from the molecular level (e.g., mutational and structural changes in DNA genes) to whole organisms (e.g., detection of cryptic species, mechanisms maintaining species distributions, mechanisms of speciation, life history strategies, host-parasite co-evolution and co-speciation, phylogeography and the population genetics of vector-borne diseases). My approach has been to use traditional and molecular techniques to examine applied problems (e.g., the identification of parasites of medical and/or veterinary importance), and fundamental questions relating to the evolutionary ecology and systematics of parasites. Although the main parasite groups of interest are nematodes and ixodid ticks, I have been involved in collaborative projects on cestodes, trematodes, protozoa and bacteria.

**Keywords:** Evolutionary ecology, population genetics, systematics, ticks, helminths.

**Susan Cork**, BVSc, BPhil(vet), Ph.D., MRCVS, Dip. Public Policy, CBiol, MIBiol

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**Research Interests:**

My current focus is on bacterial zoonoses and protozoal diseases but is likely to expand in the future to cover other parasitic zoonoses.

**Isabelle Côté**, DMV, Ph.D., Dipl. ACVM

Laboratoire d'expertise en pathologie animale du Québec,  
Ministère de l'Agriculture, des Pêcheries et de l'Alimentation du Québec  
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**Research Interests:**

laboratoire de pathologie vétérinaire, parasitologie diagnostique

**Oluwayemisi Dare, M.Sc., Ph.D.**

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**Primary areas of interest and expertise:**

- Host-Parasite interactions- causes and consequences of variation in patterns of parasite recruitment and establishment success;
- Transmission dynamics (exposure, immune and behavioural components) of parasitic infection in populations;
- Relationships between investment in development and investment in immunity, sex-linkages in investment trajectories;
- Public policy issues related to foodborne, environmental and zoonotic infectious diseases.

**Recent Publications:**

Dare, O.K. and Forbes, M.R. 2009. Patterns of trematode and nematode lungworm infections in two ranid hosts, Northern leopard frogs (*Lithobates pipiens*) and Wood frogs (*Lithobates sylvaticus*). *Journal of Helminthology* 83: 339-343.

Dare, O.K. and Forbes, M.R. 2008. Patterns of infection by lungworms, *Rhabdias ranae* and *Haematoloechus* spp. in Northern leopard frogs: a relationship between sex and parasitism. *Journal of Parasitology* 95(2): 275-280.

Dare, O.K., S. Nadler and Forbes, M.R. 2008. Nematode lungworms of two anuran amphibians: evidence for coadaptation. *International Journal for Parasitology* 38:1729-1736.

Dare, O.K., and Forbes, M.R. 2008. Rates of development in male and female Wood frogs and patterns of parasitism by lung nematodes. *Parasitology* 135(3): 385-393.

Dare, O.K., Rutherford, P.L., and Forbes, M.R. 2006. Rearing density and susceptibility of *Rana pipiens* metamorphs to cercariae of a digenetic trematode. *Journal of Parasitology* 92(3):543-547.

**Brent Dixon, Ph.D.**

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**Research Interests:**

My research is focused mainly on the detection, characterization and control of foodborne protozoan parasites including *Giardia*, *Cryptosporidium* and *Cyclospora*. Specifically, I am involved in the development of methods for the elution, concentration, and detection of these pathogens in foods and clinical samples, using microscopy, flow cytometry, and PCR-based molecular methods. I am also very interested in the molecular characterization of species, genotypes and sub-types of these parasites for the purposes of source tracking and studying transmission patterns. I am currently involved in long term surveillance studies on protozoan parasites in food and environmental samples. I am also involved in collaborative studies looking at the survivability and disinfection of protozoan parasites. I am the co-founder and chair of the Food and Environmental Parasitology Network established at Health Canada in 2009.

**Keywords:** *Giardia*, *Cryptosporidium*, *Cyclospora*, zoonotic, foodborne

**Recent Publications:**

Dixon, B. R., R. Fayer, M. Santin, D. E. Hill, and J. P. Dubey. 2011. Protozoan Parasites, Chapter 24. *In* Rapid Detection, Characterization and Enumeration of Food-Borne Pathogens. Hoorfar, J. (ed.). ASM Press, Washington, USA (In Press).

Dixon, B., L. Parrington, A. Cook, K. Pintar, F. Pollari, D. Kelton, and J. Farber. 2011. The potential for zoonotic transmission of *Giardia duodenalis* and *Cryptosporidium* spp. from beef and dairy cattle in Ontario, Canada. *Vet. Parasitol.* 175: 20-26.

Levesque, B., C. Barthe, B. R. Dixon, L. J. Parrington, D. Martin, B. Doidge, J.-F. Proulx, and D. Murphy. 2010. Microbiological quality of blue mussels (*Mytilus edulis*) in Nunavik, Quebec: a pilot study. *Can. J. Microbiol.* 56: 968-977.

Messier, V., B. Lévesque, J.-F. Proulx, L. Rochette, M. D. Libman, B. J. Ward, B. Serhir, M. Couillard, N. H. Ogden, E. Dewailly, B. Hubert, S. Déry, C. Barthe, D. Murphy, and B. Dixon. 2009. Seroprevalence of *Toxoplasma gondii* among Nunavik Inuit (Canada). *Zoonoses and Public Health* 56: 188-197.

Dixon, B. R. 2009. The role of livestock in the foodborne transmission of *Giardia duodenalis* and *Cryptosporidium* spp. to humans, Chapter 9, pp. 107-122. In *Giardia and Cryptosporidium: From Molecules to Disease*. Ortega-Pierres, M. G., Cacciò, S., Fayer, R., Mank, T., Smith, H., and Thompson, R. C. A. (eds.). CAB International, Wallingford, U.K.

Dixon, B., L. Parrington, M. Parenteau, D. Leclair, M. Santin, and R. Fayer. 2008. *Giardia duodenalis* and *Cryptosporidium* spp. in the intestinal contents of ringed seals (*Phoca hispida*) and bearded seals (*Erignathus barbatus*) in Nunavik, Quebec, Canada. *J. Parasitol.* 94: 1161-1163.

**Florence S. Dzierszinski, Ph.D.**

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[www.chairs-chaire.gc.ca/chairholders-titulaires/profile-eng.aspx?profileID=2337](http://www.chairs-chaire.gc.ca/chairholders-titulaires/profile-eng.aspx?profileID=2337)

[www.toxomeeting.org](http://www.toxomeeting.org)

### **Research Interests:**

With the re-emergence of infectious diseases caused by intracellular pathogens such as viruses and certain parasites and bacteria, many of which are food- and waterborne, it is important to decipher the mechanisms that are involved in T-cell priming with the goal to progress toward rational vaccine design.

My primary research interests are the interactions between intracellular pathogens and their hosts. This includes understanding how intracellular organisms manipulate the host immune response in order to persist, and how they are “managed” by the immune response.

*Toxoplasma gondii* is an important food- and waterborne zoonotic pathogen and an outstanding model of intracellular parasitism. Because most (if not all) intracellular pathogens have evolved mechanisms to subvert the process of antigen presentation to lymphocytes, we study the interplay between *Toxoplasma* and the host cell MHC-I, MHC-II and CD1d antigen presentation pathways.

My group is also interested in the discovery of biomarkers during parasite reactivation in immunosuppressed patients, and in the development of new methods of detection for diagnostic of waterborne and foodborne pathogens.

**Keywords:** Intracellular pathogens, Antigen presentation, Food- and waterborne pathogens, *Toxoplasma gondii*.

**Recent Publications:**

Dzierszinski F, Pepper M, Stumhofer JS, LaRosa DF, Wilson EH, Turka LA, Halonen SK, Hunter CA, Roos DS. 2007. Presentation of *Toxoplasma gondii* antigens via the endogenous major histocompatibility complex class I pathway in nonprofessional and professional antigen-presenting cells. *Infect Immun.* 75: 5200-5209.

Dzierszinski F & Knoll LJ. 2007. Chapter 17. Biology of bradyzoites. In: *Toxoplasma: Molecular and Cellular Biology*. Eds: Soldati & Ajioka, pp 303-319. Horizon Bioscience. ISBN: 978-1-904933-34-2.

Dzierszinski FS, Hunter CA. 2008. Advances in the use of genetically engineered parasites to study immunity to *Toxoplasma gondii*. *Parasite Immunol.* 30: 235-244.

Dzierszinski F. *Parasites ! . Le Guide des tendances 2009*. Isabelle Quentin éditeur inc./IQ Press. Montréal, Canada.

Wilson EH, Harris TH, Mrass P, John B, Tait ED, Wu GF, Pepper M, Wherry EJ, Dzierszinski F, Roos DS, Haydon PG, Laufer TM, Weninger W, Hunter CA. 2009. Behavior of Parasite-Specific Effector CD8+ T Cells in the Brain and Visualization of a Kinesin-Associated System of Reticular Fibers. *Immunity.* 30: 300-311.

Jordan K, Wilson E, Tait E, Fox B, Roos DS, Bzik D, Dzierszinski F, Hunter CA. Kinetics and phenotype of vaccine-induced CD8+ T cell responses to *Toxoplasma gondii*. 2009. *Infect Immun.* 77:3894-3901.

John B, Harris TH, Tait ED, Wilson EH, Gregg B, Ng LG, Mrass P, Roos DS, Dzierszinski F, Weninger W, Hunter CA. Dynamic Imaging of CD8+ T cells and dendritic cells during infection with *Toxoplasma gondii*. 2009. *PLoS Pathogens.* 5(7): e1000505.

Heaslip AT, Dzierszinski F, Stein B and Hu K. TgMORN1 is a key organizer for the basal complex of *Toxoplasma gondii*. 2010. *PLoS Pathogens.* 6(2):e1000754.

Tait ED, Jordan KA, Harris TH, Wilson EH, Pepper M, Dzierszinski F, Roos DS, Hunter CA. Virulence of *Toxoplasma gondii* is associated with distinct dendritic cell responses and reduced activation of CD8+ T cells. 2010. *J Immunol.* 185: 1502-1512.

Bahl A, Davis PH, Behnke M, Dzierszinski F, Jagalur M, Chen F, Shanmugam D, White M, Kulp D, Roos DS. A novel multifunctional oligonucleotide microarray for *Toxoplasma gondii*. 2010. *BMC Genomics.* 11: 603.

Odiere MR, Koski KG, Leroux LP, Dzierszinski F, Scott ME. Protein deficiency impairs maternal immunity to *Heligmosomoides bakeri* (Nematoda) infection and modifies the development of the neonatal immune system in mice. *Journal of Nutrition*. In revision.

Nishi M, Harb OS, Fox B, Bzik D, Roos DS, Dzierszinski F. Autophagic TgATG8 associates with the plastid in the Apicomplexan parasite *Toxoplasma gondii*. In preparation.

Leroux LP, Nishi M, Dzierszynski F. Modulation of major histocompatibility complex class II and invariant chain in murine and human professional antigen presenting cells by *Toxoplasma gondii* secreted proteins. In preparation.

**Tom Edge**, Ph.D.

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Environment Canada  
Burlington, ON

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**Tasha Epp, DVM, Ph.D.**

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Western College of Veterinary Medicine  
Associate Professor; School of Public Health

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**Degrees Earned:**

- Doctor of Veterinary Medicine (DVM), UNIVERSITY of SK, 2000
- Doctor of Philosophy (Ph.D.) , UNIVERSITY of SK, 2007

**Research Interests:**

- Epidemiology of West Nile virus in the prairies. This research has evolved to include landscape epidemiology and modelling and human aspects relating to implementation of vaccine, with specific involvement with Saskatchewan Health and the Public Health Agency of Canada.
- Companion animal zoonoses. In the process of developing research program in this area. The goal is to look at zoonotic diseases from companion animals (particularly dogs and cats). Specific populations of interest: aboriginal populations, rural/small town and inner city/low income neighbourhoods. Specific diseases of interest: *Giardia*, *Echinococcus*, and *Toxocara*.

**Keywords:** Zoonotic diseases, Public health, Epidemiology

**Jeffrey Farber, Ph.D.**

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**Research Interests:**

My research interests and expertise focus on *Listeria monocytogenes*, *Enterobacter sakazakii*, fresh-cut produce, and molecular typing of foodborne pathogens. In addition, I am well-versed in the both the risk assessment and policy areas, and play a key role in developing the policy approaches that are currently in place in the Food Directorate.

**Keywords:** *Cronobacter*, *Listeria monocytogenes*

**Recent Publications:**

Miled-Bennour, R., T.C. Ells, F.J. Pagotto, J.M. Farber, A. Kerouanton, T. Meheut, P. Colin, H. Joosten, A. Leclercq, N.G. Besse. 2010. Genotypic and phenotypic characterisation of a collection of *Cronobacter* (*Enterobacter sakazakii*) isolates. *International Journal of Food Microbiology* 139 (1, 2): 116-125.

Clark, C.G., J. Farber, F. Pagotto, N. Ciampa, K. Doré, C. Nadon, K. Bernard, L.-K. Ng and the CPHLN. 2010. Surveillance for *Listeria monocytogenes* and listeriosis, 1995-2004. *Epidemiology Infection* 138(4): 559-72.

MacLean, Leann L., Franco Pagotto, Jeffrey M. Farber and Malcolm B. Perry. 2009. The structure of the O-antigen in the endotoxin of the emerging food pathogen *Cronobacter* (*Enterobacter*) *muytjensii* strain 3270. *Carbohydrate Research*, 344(5): 667-71.

Banerjee, Swapan K. and Jeffrey M. Farber. 2009. Susceptibility of *Vibrio parahaemolyticus* to Tris-Dependent DNA Degradation during Pulsed-Field Gel Electrophoresis. *Journal of Clinical Microbiology*. 47(3): 870-871.

Coklin, Tatjana, Fabienne D. Uehlinger, Jeffrey M. Farber, Herman W. Barkema, Ryan M. O'Handley and Brent R. Dixon. 2009. Prevalence and molecular characterization of *Cryptosporidium* spp. in dairy calves from 11 farms in Prince Edward Island, Canada. *Veterinary Parasitology*. 160: 323-326.

Ruzante Martins, Juliana, Valerie J. Davidson, Julie Caswell, Aamir Fazil, John A.L. Cranfield, Spencer J. Henson, Sven M. Anders, Claudia Schmidt and Jeffrey M. Farber. 2009. A Multifactorial Risk Prioritization Framework for Foodborne Pathogens. *Risk Analysis*.

**Lorry Forbes, M.Sc., DVM**

Research Scientist  
Centre for Food-borne and Animal Parasitology  
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**Alvin A. Gajadhar**, M.Sc., Ph.D.

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**Research Interests:**

Interests are related to expertise and CFIA's mandate of food safety and reportable animal health diseases due to parasitic infections. Areas include the biology, epidemiology, and detection and characterization of parasites. Specific activities include experimental research, method development and validation, surveys, diagnostics, analyst training, laboratory certification and reference laboratory. Work involve mostly *Trichinella*, *Taenia saginata*, *Toxoplasma gondii*, *Cyclospora cayetanensis*, *Cryptosporidium* spp., *Sarcocystis* spp., *Babesia*, *Theileria*, trichomonads, protostrongylids, and *Dermacentor* ticks.

**Keywords:** *Trichinella*, *Toxoplasma*, *Cyclospora*, *Taenia*, *Dermacentor*

**Nicolas L. Gilbert, M.Sc.**

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**Research interests:**

Risk factors and adverse outcomes in pregnancy, at birth, and during the first year of life. Parasites of interest include *Toxoplasma gondii* and soil-transmitted helminths

**Recent publications:**

Gyorkos TW, Gilbert NL, Larocque R, Casapía M. *Trichuris* and hookworm infections associated with anaemia during pregnancy. *Tropical Medicine & International Health* 2011 (in press). <http://dx.doi.org/10.1111/j.1365-3156.2011.02727.x>.

**Matthew W. Gilmour, Ph.D.**

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**Spencer J. Greenwood, Ph.D., DVM**

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AVCLSC: [www.LobsterScience.ca](http://www.LobsterScience.ca)

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**Research interests:**

I work collaboratively on a number of protistan parasites, specifically on projects for the detection, characterization, transmission and pathogenesis of *Cryptosporidium*, *Giardia*, *Neospora* and *Trichomonas* as well as some helminths. A major thrust of my research within the AVC Lobster Science Centre is on genomic and proteomic approaches to understanding host-pathogen interactions in crustaceans (lobster, crabs and shrimp).

**Keywords:** zoonoses, crustaceans, veterinary, livestock, wildlife

**Nicole J. Guselle**, B.Sc., Ph.D.

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**Research Interests:**

Prior to doing my Ph.D., I worked as a research technician at the University of Calgary on a wide array of *Giardia* and *Cryptosporidium* projects. My dissertation focused on prevalence *Giardia* and *Cryptosporidium* in Alberta swine and survival in the farm setting. I am now at the Atlantic Veterinary College as a senior research associate and have been working with a microsporidian of salmonids, *Loma salmonae*. The current research foci are on alternative treatments, vaccine development and evaluating parasite persistence in the environment via biomarkers. I also have an interest in anisakid roundworms in commercially produced fish and I maintain an interest in *Giardia* and *Cryptosporidium* research.

**Keywords:** microsporidians, fish, vaccine, alternative treatment, *Giardia*, *Cryptosporidium*

**Recent Publications:**

Guselle NJ, Speare DJ and Markham RJF. 2010. Efficacy of ProVale™, a yeast  $\beta$ -1, 3/1, 6-D-glucan product, administered intraperitoneally and orally, in inhibiting xenoma formation by the microsporidian, *Loma salmonae* on rainbow trout gills. *North American Journal of Aquaculture*. 72: 65-72.

Speare DJ, Markham RJF and Guselle NJ. 2007. Development of an effective whole-spore antimicrosporidial vaccine: protection of rainbow trout (*Oncorhynchus mykiss*) from xenoma formation during Microsporidial Gill Disease using a low-virulence strain of *Loma salmonae*. *Clinical and Vaccine Immunology*. 14: 1652-1654.

Uehlinger FD, O'Handley RM, Greenwood SJ, Guselle NJ, Gabor L.J., Van Velsen CM, Steuart RF and Barkema HW. 2007. Efficacy of vaccination in preventing giardiasis in calves. *Journal of Veterinary Parasitology*. 146: 182-188.

Guselle NJ, Markham RJF and Speare DJ. 2007. Timing of intraperitoneal administration  $\beta$ -1,3 / 1,6 glucan to rainbow trout, *Oncorhynchus mykiss* (Walbaum), affects protection against the microsporidian *Loma salmonae*. *Journal of Fish Diseases*. 30:111-116.

Guselle NJ, Markham RJF and Speare DJ. 2006. Intraperitoneal administration of  $\beta$ -1, 3 / 1, 6 glucan to rainbow trout, *Oncorhynchus mykiss* (Walbaum), protects against *Loma salmonae*. *Journal of Fish Diseases*. 29:375-381.

Van Herk FH, McAllister TA, Cockwill CL, Guselle N, Larney FJ, Miller JJ, and Olson ME. 2004. Inactivation of *Giardia* cysts and *Cryptosporidium* oocysts in beef feedlot manure by thermophilic windrow composting. *Compost Science & Utilization* 12:235-241

Guselle NJ, Appelbee AJ and Olson ME. 2003. Biology of *Cryptosporidium parvum* in pigs: from weaning to market. *Veterinary Parasitology*. 113:7-18.

**Rebecca A. Guy, Ph.D.**

Research Scientist  
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**Research Interests:**

My current research interests include development and application of molecular biological tools to study the transmission and survival of zoonotic pathogens in the environment, to improve the understanding of the risks of human illness arising from the interface between humans, animals, and the environment. Other research interests include comparative genomics of *Cryptosporidium* as well as elucidating host/pathogen interactions with this protozoan for identification of pathotypes important in human illness.

**Keywords:** Zoonotic pathogens, genotyping, quantification, pathogenicity, *Cryptosporidium*

**Theresa W. Gyorkos, Ph.D.**

Professor

Department of Epidemiology, Biostatistics and Occupational Health, McGill University;  
and Division of Clinical Epidemiology, Research Institute of the McGill University Health  
Centre; Director, Evaluative Research, Research Institute of the McGill University  
Health Centre; Leader, Axe en santé mondiale, Réseau de recherche sur la santé des  
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**Research Interests:**

Parasite epidemiology and global health are my two primary research foci. My current global health research program is population-based and mostly conducted in Peru. It focuses on local health priorities such as infant malnutrition, parasite infection (especially soil-transmitted helminths) in preschool and school-aged children and their families, anemia in pregnant women, malaria in rural communities, adverse outcomes of pregnancy, gender and parasites, equity, and evidence-informed health policy. Research capacity-building activities include multidisciplinary and participatory workshops and short courses on epidemiological and biostatistical methodology.

**Keywords:** Global health, helminths, gender, equity, capacity-building

**Recent Publications:**

Gyorkos TW, Gilbert NL, Larocque R, Casapia M. *Trichuris* and hookworm infections associated with anemia during pregnancy. *Trop Med Int Health* 2011;16 (4):531-537. (published on-line doi:10.1111/j.1365-3156.2011.02727.x). Editor's Pick for the month of April 2011.

Gyorkos TW, Maheu-Giroux M, Creed-Kanashiro H, Casapia M, Joseph SA, Penny ME. Stunting and early helminth infection in preschool-age children in the Amazon lowlands

of Peru. Trans R Soc Trop Med Hyg 2011 published online 23-FEB-2011 DOI:  
10.1016/j.trstmh.2010.12.003

**Judy Isaac-Renton, MD, DPH, FRCP(C)**

Professor, Department of Pathology & Laboratory Medicine, UBC  
Director, Laboratory Services, BCCDC  
Medical Head, Environmental Services, BCCDC

Faculty of Medicine, UBC Centre for Disease Control  
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**Armando Jardim, Ph.D.**

Associate Professor,  
Director, Centre for Host-Parasite Interactions

Institute of Parasitology  
McGill University  
21 111 Lakeshore Road  
Ste Anne de Bellevue, QC, H9X 3V9

Email: Armando.jardim@mcgill.ca

**Research Interests:**

The research program in my laboratory focuses primarily on understanding membrane-protein interactions and the importance of these molecular events in organelle biogenesis in *Leishmania* and in virulence in enteropathogenic/enterohemorrhagic *E. coli*. Specific projects include; a) characterization of the sorting and import systems that are essential for the assembly of the glycosomal organelle in kinetoplastid parasites, b) development of antigen based assays for the diagnosis of leishmaniasis and Chagas' disease, c) structure-function analysis of the *E. coli* type III secretion system and exploitation of this system as a potential drug target.

**Keywords:** Diagnostics, enterohemorrhagic *E. coli* (EHEC), *Leishmania*, Chagas disease

**Recent Publications:**

Dasanayake, D., Richaud, M., Cyr, N., Caballero-Franco, C., Pittroff, S., Finn, R.M., Ausió, J., Luo, W., Donnenberg, M.S. and Jardim, A. (2011). The N-Terminal Amphipathic Region Of The *Escherichia coli* Type III Secretion System Protein EspD Is Required For Membrane Insertion And Function. *Mol. Micro* (in press).

Hassani, K., Antoniak, E., Jardim, A., and Olivier, M. (2011) Temperature-Induced Protein Secretion by *Leishmania mexicana* Modulates Macrophage Signalling and Function. *PLOS ONE*.6, e18724.

Feng, X., Feistel, T., Buffalo, C., McCormack, A., Kruvand, E., Rodriguez-Contreras, D., Akopyants, N.S., Umasankar, P.K., David, L., Jardim, A., Beverley, S.M., Landfear, S.M. (2010) Remodeling of protein and mRNA expression in *Leishmania mexicana* induced by deletion of glucose transporter genes *Mol. Biochem. Parasitol.* 175, 39-48.

Chavda, S., Babu, B., Yanow, S. K., Jardim, A., Spithill, T. W., Kiakos, K., Kluza, J., Hartley, J. A., Lee, M.,(2010) A Novel Achiral seco-cyclopropylpyridoindolone (CPyl)

Analog of CC-1065 and the Duocarmycins: Synthesis, DNA Interactions, In Vivo Anticancer and Anti-parasitic Evaluation. *Bioorg. & Med. Chem* 18, 5016-24.

Sethadavit, M., Meemon, K., Jardim, A., Spithill, T. and Sobhon, P. (2009) Identification, expression and immunolocalization of Cathepsin B3, a stage specific antigen expressed by juvenile *Fasciola gigantica*. *Acta Tropica* 112, 164-173.

El Fadili, K., Drummelsmith, J., Roy, G., Jardim, A. and Ouellette, M. (2009) Down regulation of KMP-11 in *Leishmania infantum* axenic antimony resistant amastigotes as revealed by a proteomic screen. *Exptl Parasitol.* 123, 51-57.

Cyr, N., Madrid, K.P., Strasser, R., Aurousseau, M., Finn, R., Ausio, J., and Jardim, A. (2008) The *Leishmania donovani* Peroxin 14 undergoes a marked conformational change following association with Peroxin 5. *J. Biol. Chem.* 283, 31488-31499.

Pilar, A.V., Madrid, K.P., and Jardim, A. (2008) Interaction of *Leishmania* PTS2 receptor peroxin 7 with the glycosomal protein import machinery. *Mol Biochem Parasitol.* 158, 72-81.

**Emily Jenkins**, PhD, DVM, BSc Hon

Assistant Professor, Veterinary Public Health and Food Safety

Department of Veterinary Microbiology  
University of Saskatchewan  
52 Campus Drive  
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**Research interests:**

- 1) to detect, characterize (using microbiological and molecular techniques), and understand the local ecology of parasitic zoonoses with wildlife reservoirs in northwestern Canada
- 2) to determine current environmental drivers of and project future effects of climate change and land use on the distribution and transmission ecology of parasitic zoonoses with wildlife reservoirs in northwestern Canada
- 3) to provide the scientific basis to assess and mitigate effects of climate change on country food safety and security in Canada's North

Climate change will result in alterations in severity, frequency, and spatial and temporal heterogeneity of outbreaks of currently established diseases, the northward movement of vectors and pathogens, and the emergence of diseases at altered interfaces between wildlife, domestic animals and people. Wildlife-reservoired diseases are particularly vulnerable to the effects of climate change, and wildlife are the most important source of emerging pathogens for public health worldwide. Therefore, my research program focuses on the distribution and transmission ecology of parasitic zoonoses with wildlife reservoirs in northwestern Canada, including environmentally-transmitted (i.e. *Echinococcus*, *Baylisascaris*, and *Giardia*) and food-borne parasites (i.e. *Toxoplasma*).

**Keywords:** Wildlife, disease ecology, zoonoses, climate change, indigenous health

**Recent Publications:**

Himsworth, C.G., E.J. Jenkins, J. Hill, M. Nsungu, M. Ndao, R.C. Andrew Thompson, C. Covacin, A. McConnell, F.A. Leighton, and S. Skinner. Emergence of sylvatic *Echinococcus granulosus* as a parasitic zoonosis of public health concern in an indigenous Canadian community. Submitted to American Journal of Tropical Medicine and Hygiene, Oct 2009.

Kutz, S.J., E.J. Jenkins, A.M. Veitch, J. Ducrocq, L. Polley, B. Elkin, and S. Lair. 2009. The Arctic as a model for anticipating, preventing, and mitigating climate change impacts on host–parasite interactions. *Veterinary Parasitology* 163: 217–228.

Hoberg, E.P., L. Polley, E.J. Jenkins, S.J. Kutz, A.M. Veitch, and B.T. Elkin. 2008. Integrated approaches and empirical models for investigation of parasitic diseases in northern wildlife. *Emerging Infectious Diseases* 14: 10-17.

Jenkins, E.J., A.M. Veitch, S.J. Kutz, E.P. Hoberg, and L. Polley. 2006. Climate change and the epidemiology of protostrongylid nematodes in northern ecosystems: *Parelaphostrongylus odocoilei* and *Protostrongylus stilesi* in Dall's sheep (*Ovis d. dalli*). *Parasitology* 132: 387-401.

Jenkins, E.J., G.D. Appleyard, E.P. Hoberg, B.M. Rosenthal, S.J. Kutz, A.M. Veitch, H.M. Schwantje, B.T. Elkin, and L. Polley. 2005. Geographic distribution of the muscle-dwelling nematode *Parelaphostrongylus odocoilei* in North America, using molecular identification of first-stage larvae. *Journal of Parasitology* 91: 574-584.

**Richard Kibbee, MLT**

Applications Technologist/  
Environmental Microbiologist  
CREM, University of Ottawa  
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**Research Interests:**

Currently investigating techniques for the isolation and identification of environmental amoebae from source and drinking water with a focus on amoeba resisting bacteria.

**Evelyne Kokoskin, M.Sc., ART, FCSMLS (D)**

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Ottawa Public Health Laboratory  
Ontario Agency for Health Protection and Promotion

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**Research Interests:**

1. Setting up the laboratory operation for the McGill University Centre for Tropical Diseases including blood and tissue parasites, and intestinal parasites.
2. Developing innovative staining techniques
3. Co-ordinating the blood and tissue parasite QA program in Quebec.
4. Customizing and teaching numerous courses in malaria and general parasitology at all levels, nationally and internationally.

My current interests include environmental parasitology, and techniques to isolate parasites from various samples.

**Recent Publications:**

Kokoskin, E. 2005. Dépistage du Paludisme, Manuel Pour le Laboratoire D'aujourd'hui, ISBN 0-7717-0626-X

Kokoskin, E. 2001. The Malaria Manual for Today's Laboratory, ISBN 0-7717-0559

Libman, M.D., Gyorkos, T.W., Kokoskin, E., MacLean J.D., Detection of Pathogenic Protozoa in the Diagnostic Laboratory: Result Reproducibility, Specimen Pooling, and Competency Assessment. *Journal of Clinical Microbiology* 47 (7), 2008: 2200-2205, July

Ndao, M., Bandyayera, E., Kokoskin, E., Diemart, D., Gyorkos, T., MacLean, J.D., St John, R., Ward, B. Malaria "epidemic" in Quebec: diagnosis and response to imported malaria. *CMAJ* 172(1):46-50, 2005 Jan 4.

Ndao, M., Kokoskin, E., Bandyayera, E., Gyorkos, T., MacLean, J.D., Aubin, S., Ward, B. Malaria outbreak in Quebec, Canada in 2000: Comparison of blood smear, antigen detection and nested PCR for screening refugees from malaria endemic regions. *Journal of Clinical Microbiology* 42(6):2694-2700 2004, Jun.

MacLean, J.D., Demers A.-M., Ndao, M., Kokoskin, E., Ward, B., Gyorkos, T. Malaria Epidemics and Surveillance Systems in Canada, *Emerging Infectious Diseases* Vol. 10, No 7, July 2004

Ndao, M., Kelly, N., Normandin, D., MacLean, J.D., Whiteman, A., Kokoskin, E., Arevalo, I., and Ward, B. *Trypanosoma cruzi* Infection of Squirrel Monkeys: Comparison of Blood Smear Examination, Commercial Enzyme Linked Immunosorbent Assay, and polymerase Chain Reaction Analysis as Screening Tests for Evaluation-Related Injuries. *Comparative Medicine* December 2000; (4): 658-665.

**Manisha Kulkarni, Ph.D.**

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**Research Interests:**

My research focuses on the ecology, epidemiology and control of zoonotic and vector-borne diseases, with an emphasis on (1) malaria in sub-Saharan Africa and the Amazon basin, (2) global change and emerging infectious diseases, and (3) non-enteric zoonoses in the Arctic. I currently serve as co-organizer of the PHAC Arctic Zoonoses Sub-issue Group.

**Keywords:** vector-borne, zoonoses, global health, Arctic, emerging pathogens

**Recent Publications:**

Kulkarni, M.A., Desrochers, R.E. and Kerr, J. (2010) High resolution niche models of malaria vectors in northern Tanzania: A new capacity to predict malaria risk? *PLoS ONE* 5(2): e9396.

Kulkarni, M.A., Vanden Eng, J., Desrochers, R.E., Cotte, A., Goodson, J.G., Johnston, A., Wolkon, A., Erskine, M., Berti, P., Rakotoarisoa, A., Ranaivo, L. and Peat, J. (2010) Contribution of integrated campaign distribution of long-lasting insecticidal nets to coverage of target groups and total populations in malaria-endemic areas of Madagascar. *American Journal of Tropical Medicine and Hygiene* 82(3): 420-425.

Vanden Eng, J., Thwing, J., Wolkon, A., Kulkarni, M.A., Erskine, M. and Hightower, A. (2010) Assessing bed net use and non-use after long-lasting insecticidal net distribution: a simple framework to guide programmatic strategies. *Malaria Journal* 9: 133.

Matowo, J., Kulkarni, M.A., Mosha, F.W., Oxborough, R., Kitau, J., Tenu, F. and Rowland, M. (2010) Biochemical basis of permethrin resistance in *Anopheles arabiensis* from Lower Moshi, North-Eastern Tanzania. *Malaria Journal* 9: 193.

**Susan Kutz, DVM, Ph.D.**

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Ecosystem and Public Health,

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**Laura F. Lalonde, M.Sc.**

Molecular Biologist  
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**Research Interests:**

My research activities involve the development of molecular methods to isolate and detect coccidian parasites (*Cyclospora*, *Toxoplasma*, *Cryptosporidium*) of public and veterinary health importance in food, clinical and environmental samples. My work specifically focuses on isolation and detection of *Cyclospora* in leafy greens and berries.

**Recent Publications:**

Lalonde, L. and A. Gajadhar. 2008. Highly sensitive and specific PCR assay for reliable detection of *Cyclospora cayentanensis* oocysts. *Appl. Environ. Microbiol.* 74:4354-4358.

Lalonde, L. and A. Gajadhar. 2009. Effect of storage media, temperature, and time on preservation of *Cryptosporidium parvum* oocysts for PCR analysis. *Vet. Parasitol.* 160: 185-189.

**Erin Leonard**, DVM, Ph.D. Candidate

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Environmental Issues Division  
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**Research Interests:**

I am interested in small animal and food-borne zoonoses. My PhD research focused on *Salmonella*, *Campylobacter* and *Giardia* in pet dogs. In my current position at PHAC, I am involved in several projects linking the environment and food-borne diseases, as well as climate change and zoonoses.

**Recent Publications:**

E. K. Leonard, D. L. Pearl, R. Finley, N. Janecko, A. S. Peregrine, R. Reid-Smith, and J. S. Weese. Evaluation of pet-related management factors and the risk of *Salmonella* spp. carriage in pet dogs from volunteer households in Ontario (2005-2006). *Zoonoses and Public Health* (In Press - ePub Ahead of Print).

E. K. Leonard, D. L. Pearl, N. Janecko, A. S. Peregrine, J. S. Weese, R. Reid-Smith, and R. Finley. Pet-related management factors and the risk of *Campylobacter* spp. carriage in client-owned dogs visiting veterinary clinics in Ontario (2008-2009). (Accepted for publication by *Epidemiology and Infection*).

J. M. Sargeant, A. M. O'Connor, D. G. Renter, D. F. Kelton, K. Snedeker, L. V. Wisener, E. K. Leonard, A. Guthrie, and M. Faires. Reporting of methodological features in observational studies of pre-harvest food safety. (Accepted for publication by *Preventive Veterinary Medicine*).

**Vlad Lobanov, Ph.D.**

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**Research interests:**

Research interests are primarily focused on developing PCR-based diagnostic tests for the detection of different coccidian parasites of public and livestock health concern in animal tissues and food matrices.

**Keywords:** food safety, coccidian protozoa, molecular diagnostics, method development

**Rasha Maal-Bared, Ph.D.**

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**David J. Marcogliese, Ph.D.**

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Aquatic Ecosystem Protection Research Division  
Water Science and Technology Directorate  
Science and Technology Branch  
Environment Canada  
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**Research Interests:**

My own research focuses studying impacts of environmental stressors on parasites and aquatic animal health. In terms of this network, I am interested in helminth zoonoses transmitted via fish or other aquatic organisms, and also on protozoans (e.g. *Cryptosporidium*, *Giardia*) transmitted via contaminated water sources.

**Recent Publications:**

Johnson, P.T.J., A. Dobson, K.D. Lafferty, D.J. Marcogliese, J. Memmott, S.A. Orlofske, R. Poulin, and D.W. Thielgtes. 2010. When parasites become prey: Ecological and epidemiological significance of eating parasites. *Trends Ecol. Evol.* 25: 362-371.

Blanar, C.A., K.R. Munkittrick, J. Houlahan, D.L. MacLatchy, and D J. Marcogliese. 2009. Pollution and parasitism in aquatic animals: a meta-analysis of effect size. *Aquat. Toxicol.* 93 : 18-28.

King, K.C., J.D. McLaughlin, M. Boily, and D.J. Marcogliese. 2010. Effects of agricultural landscape and pesticides on parasitism in native bullfrogs. *Biol. Cons.* 143: 302-310.

Marcogliese, D.J., A.D. Gendron, and D.K. Cone. 2009. Impact of municipal effluents and hydrological regime on myxozoan parasite communities of fish. *Int. J. Parasitol.* 39: 1345-1351.

Marcogliese, D.J. 2008. The impact of climate change on the parasites and diseases of aquatic animals. *Rev. sci. tech. Off. int. Épiz.* 27: 467-484.

**Alessandro Massolo, PhD**

Assistant Professor, Wildlife Health Ecology  
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**Research Interests:**

My research focuses on ecology issues related to animal health assessment and population responses following environmental and climatic changes, on strategic impact assessment, and on methodologies of data investigations and analysis through an interdisciplinary approach. I am leading a Wildlife Ecology and Spatial Epidemiology Lab (WEASEL) with 3 main focuses:

1. climate change effects on arthropod (both vectors and ectoparasites) distribution in North-western Canada and potential consequences on wildlife populations.
2. climate change effects on bird reproduction (rock sparrow) and migration (common crane)
3. the effects of landscape on urban coyote ecology and genetics, and on the maintenance and distribution of gastro-intestinal parasites in coyotes and dogs.

**Tim McAllister, Ph.D.**

Research Scientist  
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Sustainable Production Systems  
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**Research Interests:**

I have an interest in zoonotic parasites in beef cattle in particular, *Giardia* and *Cryptosporidium*.

**J Trenton McClure** DVM, MS, DACVIM

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Canada

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**Research Interests:**

*Cryptosporidium* and *Giardia* in livestock, the environment and shellfish are our areas of interest. I am a member of the Centre of Veterinary Epidemiologic Research (CVER) here at AVC.

**Lena Measures, Ph.D.**

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Fisheries and Oceans Canada  
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**Research interests:**

Fisheries and Oceans Canada (DFO) is responsible for the management, protection and conservation of marine mammals and their habitats. The Canadian harp seal hunt depends on developing domestic and international markets for various seal products. Subsistence hunting by aboriginal peoples is still important in Labrador, Nunavik, Nunavut, and the Northwest Territories as a source of country food. There are concerns about the quality and safety of marine mammal products for consumers, hunters, the public and DFO personnel working with marine mammals. The recovery of marine mammal species at risk is a significant priority within DFO and the role of disease in the health of marine mammal populations has been of management and research interest since the early 1980s. Zoonotic food-borne parasites of concern include *Anisakis simplex s.l.*, *Pseudoterranova decipiens s.l.*, *Toxoplasma gondii*, *Giardia intestinalis*, and *Trichinella nativa*. The lungworms, *Otostrongylus circumlitius*, *Parafilaroides spp.*, various pseudaliids and the heartworm, *Acanthocheilonema spirocauda*, can have significant pathologic effects on pinnipeds and cetaceans. Field and laboratory data on these parasites are used in developing management and protective measures for human and animal health and in conservation of healthy and productive marine ecosystems. Bacteria and viruses of concern are also subject to research.

**Keywords:** zoonoses, marine mammals, fish, nematodes

**Muhammad Morshed, Ph.D., SCCM**

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Provincial Health Services Authority  
Clinical Professor  
Department of Pathology & Laboratory Medicine  
University of British Columbia

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Website: <http://www.phsa.ca/bccdcpublichealthlab>

**Research Interests:**

Dr. Muhammad Morshed is a Clinical Microbiologist and Program Head of Zoonotic Diseases and Emerging Pathogens Section of BCCDC Public Health Microbiology and Reference Laboratory, Provincial Health Services Authority. His laboratory is responsible for specialized serology testing, molecular testing and microbial fingerprinting, program evaluation and research. His research focuses on surveillance of zoonotic and emerging pathogens. Organisms of interest are *Borrelia burgdorferi*, *Treponema pallidum*, *Cryptococcus gattii*, *Toxoplasma gondii*, *Helicobacter pylori* and West Nile virus. His laboratory is also involved with field studies on zoonotic and vector-borne disease (mice, ticks and mosquitoes) across BC. For *Toxoplasma*, his specific interests include:

1. Work on molecular diagnosis and fingerprinting of *Toxoplasma* isolates from different sources (human and wild and domestic mammals etc)
2. Sero surveillance in human and wild and domestic mammals across Canada
3. Study on congenital toxoplasmosis in Canada
4. Develop and evaluate new tests to confirm acute infection in human (prenatal)

**Pia K. Muchaal, M.Sc.**

Epidemiologist,  
Antimicrobial Resistance, Surveillance Division  
Centre for Foodborne, Zoonotic and Infectious Diseases (CFEZID)  
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**Primary areas of interest and expertise:**

- Syndromic surveillance of enteric diseases
- Occurrence of parasitic infections in recently arrived Canadian immigrants and First Nations communities
- Dynamics of parasite transmission in different livestock production systems and risks of transmission at the human and wildlife interfaces
- Intensification of agricultural practices and emerging parasitic infections

**Momar Ndao**, DVM, Ph.D.

Laboratory Director, National Reference Centre for Parasitology  
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**Lai-king Ng, Ph.D.**

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Winnipeg, Manitoba R3E 3R2

c/o Jeff Bukowski  
Executive Assistant to Dr. Lai-king Ng  
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**Research Interests:**

My role will be an observer and perhaps contribute to integrated surveillance or etiology studies.

**Dele Ogunremi**, DVM, MVetSc, Ph.D.

Research scientist  
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**Research Interests:**

My two areas of interests are: molecular typing/sequencing of foodborne pathogens and immunoparasitology. Past work includes broad and specific research on protozoan (*Babesia*, *Theileria*, Trypanosomes) and helminth parasites of animals (*Parelaphostrongylus*), including those found in meat (*Taenia saginata*). My expertise includes Bioinformatics, PCR, Pulse Field Gel Electrophoresis, gene cloning and expression, monoclonal antibody production, and various parasitological (microscopy) and immunological techniques (various). A current research area is the use of molecular techniques to generate information for use in risk assessment of foodborne pathogens.

**Keywords:** molecular, immuno-parasitology, typing, risk assessment, bioinformatics

**Corinne S.L. Ong**, Ph.D., CChem, MRSC, CSci, SCCM (Env)

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Website: [http://www.ryerson.ca/sophe/facultystaff/Corinne\\_Ong.html](http://www.ryerson.ca/sophe/facultystaff/Corinne_Ong.html)

**Research Interests:**

I am interested in the molecular epidemiology of food and waterborne cryptosporidiosis and cyclosporiasis. I have developed and used various genotyping techniques to determine the genetic characteristics of different parasite populations and have tried to infer linkages between human clinical cases and sources of contamination in the environment. I am particularly interested in a novel zoonotic cervine genotype of *Cryptosporidium* that is pathogenic to humans and has been reported not only in deer but in sheep and other animals such as laboratory-reared lemurs. Although my research focused mainly on drinking water in the past, I have also participated in studies on parasite contamination in agricultural areas and in fresh produce. One recent project was located in Vietnam. I would like to study the contamination of recreational water, aquatic environments and shellfish as well and hope to start new collaborative projects with members of this network.

**Keywords:** *Cryptosporidium*, *Cyclospora*, molecular epidemiology, genomics, environmental

**Sarah Parker**, DVM, MVetSc

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On Farm Food Safety Research Chair  
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**Michael Pietrock, Ph.D.**

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**Research Interests:**

For many years I have been working in the area of environmental parasitology. I am particularly interested in the effects of environmental contaminants on host-parasite relationships. At present we investigate the effects of parasitism on the kinetics of selenium in rainbow trout. I furthermore collaborate with two Indigenous communities in northern Saskatchewan where we study seasonal occurrence of fish parasites in different fish species and assess human health risks related to fish consumption.

**Keywords:**

environmental pollution, fish parasitism, health risk assessment

**Katarina Pintar**, M.Sc., Ph.D.

Epidemiologist  
Water Lead, C-EnterNet Surveillance  
Laboratory for Foodborne Zoonoses,  
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**Research Interests:**

I am interested in the surveillance of *Cryptosporidium*, *Giardia* and *Cyclospora* in the environment (water, farms) and in food, as well as in humans. I am involved in an integrated enteric disease surveillance system, with access to human disease and exposure data (and a sampling frame) in two sentinel sites (ON and BC), with plans for additional expansion to other communities in Canada

**Recent Publications:**

Roche, S., Jones, A.Q.J., Majowicz, S., Pintar, K.D.M. Drinking water consumption patterns in Canadian communities (2001-2007). Submitted to Journal of Water and Health, January 2011

Dixon, B., Parrington, L., Cook, A., Pintar, K.D.M., Pollari, F., Kelton, D., Farber, J. 2011 The potential for zoonotic transmission of *Giardia duodenalis* and *Cryptosporidium* spp. from beef and dairy cattle in Ontario, Canada Veterinary Parasitology;175;20-26

Pintar, K.D.M., Fazil, A., Pollari, F., Waltner-Toews, D., Charron, D., McEwen, S.A., Fazil, A., Nesbitt, A. (Submitted 2010, under revision) Assessing the risk of infection by *Cryptosporidium* via consumption of municipally treated drinking water from a surface water source in a South-western Ontario community. Risk Analysis.

Pintar, K.D.M., Pollari, F., Waltner-Toews, D., Charron, D., McEwen, S.A., Fazil, A., Nesbitt, A. 2010 A risk assessment model to evaluate the role of fecal contamination in recreational water on the incidence of cryptosporidiosis at the community level in Ontario Risk Analysis; 30(1); 49-64.

Pintar, K.D.M., Pollari, F., Waltner-Toews, D., Charron, D., McEwen, S.A., Fazil, A., Nesbitt, A. 2009 A modified case-control study of cryptosporidiosis (using non-*Cryptosporidium* infected enteric cases as controls) in a Southwestern Ontario community. Epidemiology and Infection; 137; 1789-1799

**Jane Pritchard, DVM, MVetSc**

Manager, Livestock Health Management and Regulation Unit,  
Deputy Chief Veterinarian for the Province of BC.  
Plant and Animal Health Branch  
British Columbia Ministry of Agriculture

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**Research Interests:**

1. Public Health
2. Zoonotic Disease – MRSA, *Campylobacter* and *Salmonella*
3. Antimicrobial Resistance in Agriculture
4. Regulation of Animal Disease provincially
5. Regulation of on farm production of milk
6. Anatomic Pathology

**Key words:**

Public Health, zoonotic, AMR, provincial regulation, pathology

**Recent publications:**

Diarra MS, Rempel H, Champagne J, Masson L, Pritchard J, Topp E.  
Distribution of antimicrobial resistance and virulence genes in *Enterococcus* spp. and  
characterization of isolates from broiler chickens. *Appl. Environ. Microbiol.* 2010  
Dec;76(24):8033-43. Epub 2010 Oct 22.

Furtula V, Farrell EG, Diarrassouba F, Rempel H, Pritchard J, Diarra MS. Veterinary  
pharmaceuticals and antibiotic resistance of *Escherichia coli* isolates in poultry litter  
from commercial farms and controlled feeding trials. *Poult. Sci.* 2010 Jan;89(1):180-8.

Wagenaar JA, Yue H, Pritchard J, Broekhuizen-Stins M, Huijsdens X, Mevius DJ, Bosch  
T, Van Duijkeren E. Unexpected sequence types in livestock associated methicillin-  
resistant *Staphylococcus aureus* (MRSA): MRSA ST9 and a single locus variant of ST9  
in pig farming in China. *Vet Microbiol.* 2009 Nov 18;139(3-4):405-9. Epub 2009 Jun 21.

**Natalie Prystajeky, Ph.D.**

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**Brenda Ralston**, B.Sc., M.Sc., Ph.D., P.Ag.

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**Research Interests:**

1. LAMP – I am collaborating in a project developing primers for the detection of *Salmonella* and *E. coli* in food.
2. Pathogen Control on Meat – I have collaborated in the planning, funding and execution of several studies dealing with the decontamination of food processing facilities through the use of novel disinfectants.
3. Ruminant Nutrition – I have collaborated in several studies that involve the use of the GrowSafe system, which allows for the collection of individual animal intakes, duration and feeding times under natural range or pen conditions. These studies have measured intakes of creepfeed, mineral, protein supplements and drugs.
4. Prevalence and Pathogenesis of *Giardia* and *Cryptosporidium* in Beef Cattle – Prevalence and infection patterns of these parasites in feedlot and range cattle, as well as their effects on performance in feedlot steers.
5. Effects of H<sub>2</sub>S on Short Term Memory and Learning in Cattle – I assisted in two studies that evaluated the effects of chronic low level exposure to H<sub>2</sub>S on short-term memory and learning in cattle.
6. Pharmaceutical Products for Cattle – I collaborate with pharmaceutical companies and scientists that have developed new products such as vaccines for cattle to assist in their field trial testing and commercialization.

**Keywords:** *Giardia*, *Cryptosporidium*, Cattle, Food-borne pathogens

**Syed A. Sattar**, Ph.D.

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**Research Interests:**

While much of our focus in the past few years has been on waterborne protozoan parasites such as *Cryptosporidium* and *Giardia*, we know that they and several other species of waterborne protozoa can spread through contaminated foods as well. Moreover, we continue to be interested in the survival and inactivation of protozoa on food contact surfaces, and more recently, we have become actively involved in studying removal/inactivation of protozoan parasites on hands with particular focus on foodhandlers.

**Brad Scandrett, M.Sc., DVM**

Veterinary Diagnostic Parasitologist  
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**Manon Simard, M.Sc.**

Wildlife Parasitologist / Parasitologiste de la Faune  
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**Research Interests:**

Research at the Nunavik Research Center (NRC) is focused on any diseases of zoonotic importance as well as wildlife diseases that may impact wildlife populations that are traditionally harvested by Inuit of Nunavik. Zoonoses of interest are Trichinellosis, Toxoplasmosis, Giardiasis, Cryptosporidiosis, Diphyllbothriasis, Rabies and Botulism, Leptospirosis, Brucellosis, Q-fever, Tularemia and Anisakiasis.

Ongoing projects are :

1) Nunavik Trichinellosis Program: This occurs every year since 1994. A 24h service is provided for testing walrus tongues for *Trichinella nativa*.

2) General wildlife disease: Service of diagnostic for any wildlife diseases. This is a collaboration of the CQSAS in Ste-Hyacinth, University of Montreal.

3) Bowhead whale harvest in Nunavik: Sampling during the bowhead whale harvest in Nunavik. Diseases of interests are: *Trichinella nativa*, *Toxoplasma gondii*, Brucellosis, Anisakidae nematodes. We are also looking for any external or internal lesions or pathologies and collecting sample for nutrition, reproduction, and contaminants.

4) Study the distribution and abundance of *Trichinella nativa*, *Toxoplasma gondii*, Anisakidae nematodes, *E. coli* O157:H7 and *Salmonella* in Inuit traditional foods. This project is an International Polar Year project that will end in March 2011. The bacteria project ended in March this year, but the other parasites collection samples will end March 31, 2010.

5) Muskox experimental hunt: This project will last 5 years (2006-2011). The goal is to verify if the muskox herd in Nunavik is in good health and whether there are any zoonotic diseases or contaminants of concern.

Communications of results and training are also an important part of the mandate.

**Keywords:** Zoonosis, Arctic, Helminths, Protozoans, Inuit

**Dr. Paul Sockett, Ph.D.**

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**Susan Springthorpe, M.Sc.**

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**Research Interests:**

Our interest of course goes beyond the parasitic protozoans but the interactions between the free living amoebae and protozoan parasites are only just beginning to be explored. I am also interested in biological antagonisms and protection in situ.

**Jason A. Tetro, B.Sc.**

Specialist in Technology Design  
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Website: <http://www.intermed.med.uottawa.ca/crem/>

**Research Interests:**

There has been much focus on the fate of pathogens in the environment including methods by which this spread may be interrupted. Work at CREM thus focuses on developing novel means to study this phenomenon in the laboratory setting. Jason also focuses on public dissemination of science in the media.

**Keywords:** Standard methods, disinfection, antisepsis, infection control

**Louise Trudel, M.Sc.**

Head of the Parasitology laboratory  
Institut national de santé publique du Québec - Laboratoire de santé publique du  
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**Research Interests:**

The Parasitology laboratory of the *Laboratoire de santé publique du Québec* (LSPQ) offers reference services for the identification of intestinal parasites and arthropods of medical importance. Within these activities, I give regular teaching sessions to the personnel of the Quebec hospital laboratories and I prepare and comment annual external quality control specimens in intestinal and blood parasitology, offered to these laboratories. I also initiated the Quebec surveillance program on *Ixodes scapularis* ticks that is currently offered since 1990. I participate in research projects in cooperation with physicians and public health workers. I am particularly implicated with research and public health groups on surveillance of Lyme disease in Quebec, in cooperation with the National Microbiology Laboratory of the Public Health Agency of Canada. I initiated two comparative studies that led to the development of PCR analyses for 1) the detection of *Toxoplasma gondii* in various types of specimens, and 2) the differentiation of *Entamoeba histolytica* and *Entamoeba dispar*; those analyses are now currently offered to Quebec hospital laboratories. Furthermore, I collaborate actively with the Tropical Diseases Centre (TDC) of McGill University as a lecturer for the malaria workshops and a member of the steering committee of the *Centre de référence en parasitologie du Québec*, grouping the TDC, the National Reference Centre in Parasitology and the LSPQ.

**Keywords:** intestinal parasites, PCR detection of *Toxoplasma gondii*, PCR differentiation of *Entamoeba histolytica*/*E. dispar*, *Ixodes scapularis*, Lyme disease, external quality control in Parasitology.

**Recent Publications:**

Gonin, P. and Trudel, L. 2003. Detection and differentiation of *Entamoeba histolytica* and *Entamoeba dispar* isolates in clinical samples by PCR and enzyme-linked immunosorbent assay. *J. Clin. Microb.* 41 (1): 237-241.

Ogden, N. H., Trudel, L., Artsob, H., Barker, I. K., Beauchamp, G., Charron, D. F., Drebot, M. A., Galloway, T. D., O'Handley, R., Thompson, R. A. and Lindsay L. R. 2006. *Ixodes scapularis* ticks collected by passive surveillance in Canada: Analysis of geographic distribution and infection with Lyme borreliosis agent *Borrelia burgdorferi*. *J. Med. Entomol.* 43(3): 600-609.

Nguon, S., Milord, F., Ogden, N., Trudel, L., Lindsay, R. et Bouchard, C. Étude épidémiologique sur les zoonoses transmises par les tiques dans le sud-ouest du Québec - 2007. INSPQ. ISBN : 978-2-550-59613-4. 3<sup>e</sup> trimestre 2010.

[http://www.inspq.qc.ca/pdf/publications/1139\\_EtudeZoonoses2007.pdf](http://www.inspq.qc.ca/pdf/publications/1139_EtudeZoonoses2007.pdf)

Nguon, S, Milord, F, Trudel, L, Ogden, N, Lindsay, R, Bouchard, C., Fournier, S. Étude épidémiologique sur les zoonoses transmises par les tiques dans le sud-ouest du Québec – 2008. INSPQ. ISBN : 978-2-550-59615-8. 3<sup>e</sup> trimestre 2010.

[http://www.inspq.qc.ca/pdf/publications/1140\\_EtudesZoonoses2008.pdf](http://www.inspq.qc.ca/pdf/publications/1140_EtudesZoonoses2008.pdf)

Ogden, N. H., St-Onge, L., Barker, I.K., Brazeau, S, Bigras-Poulin, M., Charron, D.F., Francis, C.M., Heagy, A., Lindsay, L.R., Maarouf, A., Michel, P., Milord, F., O’Callaghan, C.J., Trudel, L. and Thompson, R.A. 2008. Risk maps for range expansion of the Lyme disease vector, *Ixodes scapularis*, in Canada now and with climate change. International Journal of Health Geographics 7: 24-38.

Ogden NH, Bouchard C, Kurtenbach K, Margos G, Lindsay LR, Trudel L, Nguon S, Milord F. 2010. Active and passive surveillance, and phylogenetic analysis of *Borrelia burgdorferi* elucidate the process of Lyme disease risk emergence in Canada. Environ. Health Perspect. 118 : 909-914 .

**Peter Wallis, Ph.D.**

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**Research Interests:**

My interest is *Giardia* and *Cryptosporidium* in water, wastewater and soil from the point of view of detection and transmission. Genotyping, culturing, propagation, zoonotic potential and methods development are also of concern to me.

**James Wasmuth, Ph.D.**

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Website: <http://www.compsysbio.org/lab/?q=james>

**Research Interests:**

My work focuses on using genome sequences to better understand the evolution of parasitism. My current foci are: 1) the evolution of large gene families, in particular surface antigens, and 2) using population genomics to understand species diversity. My background includes working with both helminths and apicomplexans (e.g. *Toxoplasma* & *Plasmodium*).

**Keywords:** Nematodes, *Toxoplasma*, genomics, bioinformatics.

**Recent Publications:**

Elsworth B, Wasmuth J & Blaxter M. 2011. NEMBASE4: the nematode transcriptome resource. *Int J Parasitol* *in press*.

Hung S, Wasmuth J, Sanford C & Parkinson J. 2010. DETECT - A Density Estimation Tool for Enzyme Classification and its application to *Plasmodium falciparum*. *Bioinformatics*, 26:1690-1698.

Wasmuth J, Daub J, Peregrín-Alvarez J-M, Finney C & Parkinson J. 2009. The origins of apicomplexan sequence innovation. *Genome Research*, 19(7):1202-13.

Wasmuth J, Schmid R, Hedley A & Blaxter M. 2008. On the extent and origins of genic novelty in the Phylum Nematoda. *PLoS Neglected Tropical Disease*, 2(7): e258

**Janet Yee, Ph.D.**

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Departments of Biology and Chemistry  
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**Research Interests:**

The focus in our laboratory is to study the biology of the protozoan parasite, *Giardia lamblia*, by using molecular and biochemical approaches. We have expertise in: gene cloning; purification of DNA, RNA and proteins; genetic transformation by the electroporation method; luciferase gene reporter assay; gel mobility shift assay; quantitative PCR; RT-PCR; real-time PCR; microarray; recombinant protein expression; analysis of enzymatic activities; high and low-pressure column chromatography. Our research includes the study of this parasite's developmental stages, its regulation of gene expression and its cell cycle. The ultimate goal is to identify unique biological aspects of this parasite that can be exploited to develop improved and more effective treatments for giardiasis and to decrease its transmission. Currently, we are using microarray analysis to construct gene expression profiles of *Giardia* isolates, and we are seeking collaborators who can provide laboratory cultures of environmental and clinical isolates of *Giardia* trophozoites. We are also interested in establishing collaborations to develop and test molecular tools to genotype and track *Giardia* and other microbial pathogens, such as *Cryptosporidium*.

**Keywords:** *Giardia*, *Cryptosporidium*, zoonotic, foodborne, waterborne

## INDEX OF PARASITES / AREAS OF INTEREST

**Amoebae** – Dixon, Kibbee, Springthorpe, Trudel

**Anisakidae** – Dixon, Guselle, Marcogliese, Measures, Simard

**Companion Animals** – Epp, Jenkins

***Cryptosporidium*** – Abebe, Belosevic, Al-Adhami, Dixon, Edge, Gajadhar, Greenwood, Guselle, Guy, Lobanov, Marcogliese, McAllister, McClure, Ndao, Ong, Ralston, Sattar, Simard, Springthorpe, Wallis, Yee

***Cyclospora*** – Abebe, Al-Adhami, Dixon, Gajadhar, Isaac-Renton, Lobanov, Ong

**Detection / Diagnostics** – Al-Adhami, Belosevic, Dixon, Edge, Forbes, Gajadhar, Kokoskin, Lobanov, Ndao, Trudel, Wallis

***Diphyllobothrium*** – Dixon, Simard

***Echinococcus*** – Epp, Jenkins

**Epidemiology** – Epp, Gajadhar, Gilbert, Gyorkos, Kokoskin, Kulkarni, Leonard, Massolo, Muchaal, Ndao, Ong

**Fishes** – Dixon, Guselle, Marcogliese, Measures, Simard

**Food** – Al-Adhami, Dixon, Forbes, Gajadhar, Jenkins, Lobanov, Ogunremi, Ong, Ralston, Sattar, Scandrett, Simard, Yee

**Genomics** – Chilton, Dixon, Gajadhar, Guy, Marcogliese, Ogunremi, Ong, Wasmuth, Yee

***Giardia*** – Belosevic, Buret, Dixon, Edge, Epp, Greenwood, Guselle, Jenkins, Kutz, Leonard, Marcogliese, McAllister, McClure, Measures, Ralston, Sattar, Simard, Springthorpe, Wallis, Yee

**Host-Parasite Interactions** – Belosevic, Buret, Dare, Guy, Jardim

**Immunology** – Abebe, Belosevic, Buret, Marcogliese, Ogunremi

**Inactivation / Disinfection** – Belosevic, Dixon, Ralston, Sattar, Tetro

**Livestock** – Dixon, Greenwood, Guselle, Lobanov, McAllister, McClure, Muchaal, Ralston

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**Pathology** – Buret, Guy

**Public Health** – Al-Adhami, Dixon, Epp, Dare, Forbes, Gajadhar, Gilbert, Guy, Gyorkos, Jenkins, Kokoskin, Kulkarni, Lobanov, Ndao, Ong, Pietrock, Simard, Sockett, Tetro, Trudel

**Shellfish** – Dixon, Greenwood, McClure, Ong

**Surveillance** – Dare, Dixon, Gajadhar, Gilbert, Kokoskin, Muchaal, Ndao, Pintar, Trudel

**Systematics** – Chilton, Marcogliese

**Taenia** – Gajadhar, Ogunremi, Scandrett

**Ticks** – Chilton, Gajadhar, Trudel

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**Toxoplasma** – Al-Adhami, Dzierszynski, Gajadhar, Gilbert, Gyorkos, Measures, Ndao, Simard, Trudel, Wasmuth

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**Water** – Belosevic, Edge, Isaac-Renton, Kibbee, Marcogliese, Ong, Pietrock, Sattar, Springthorpe, Tetro, Wallis, Yee

**Wildlife** – Forbes, Gajadhar, Greenwood, Jenkins, Kutz, Marcogliese, Massolo, Muchaal, Ong, Simard

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