

CURRICULUM VITAE

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Qualifications: ~DVM (Zhejiang University, China, 1982); MPhil Vet Sci (Massey University, NZ, 1987); PhD Vet Pathol (Massey, 1990)
Current Position: Principal Research Officer
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Education and Experience:

July 2011 – current: Principal Research Officer, National Research Council Canada (NRC), Institute for Biological Sciences (IBS), Ottawa, ON, Canada

January 2004 – June 2011: Senior Research Officer, NRC-IBS, Ottawa, ON, Canada

January 2002 – December 2003: Research Officer, NRC-IBS, Ottawa, ON, Canada

August 2001 – December 2001: Associate Research Professor, Veterinary Molecular Biology, Montana State University, Bozeman, MT59717, USA

June 2001–July 2001: Research Assistant Member, Trudeau Institute, Saranac Lake, New York, USA.

June 1994-May 2001: Senior research scientist, Wakefield Gastroenterology Centre and Research Institute, Wellington, New Zealand.

Nov. 1993-May 1994: Research scientist, VIDO, University of Saskatchewan, Canada.

Dec. 1990-Oct. 1993: Postdoctoral research fellow, Trudeau Institute, Inc., Saranac Lake, New York, USA.

1988-1990: Postgraduate (PhD), Department of Veterinary Pathology and Public Health, Massey University, Palmerston North, NZ.

1986-1987: Postgraduate (M Phil), Department of Veterinary Pathology and Public Health, Massey University, Palmerston North, NZ.

1982-1985: Junior lecturer in Veterinary Pathology, Department of Veterinary Science, Zhejiang

Agricultural University (now Zhejiang University), Hangzhou, China.

1978-1982: Undergraduate in Department of Veterinary Science, Zhejiang Agricultural University (now Zhejiang University), Hangzhou, China.

Major Research Interests:

Mucosal infection, inflammation and immunity
 Cellular and molecular pathogenesis of respiratory and digestive infections
 Vaccine and immunotherapeutic development and preclinical evaluations

Awards and Prizes:

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| 1985 | 1986 Visiting Scientist Scholarship of Chinese Ministry of Education (now State Education Commission) |
| 1986 | Massey University Graduate Study Award |
| 1986 | 1987 Bank of New Zealand Postgraduate Bursary in Veterinary Science |
| 1987 | 1988-1990 University Grants Committee (UGC) of New Zealand Postgraduate Scholarship |
| 1987 | W & R Fletcher (NZ) Limited Post-graduate Fellowship |
| 1988 | Commonwealth Bureau of Animal (CBA) Health Prize |
| 2003 | NRC-IBS Group Achievement and Teamwork Award |
| 2004 | NRC-IBS Entrepreneurship and Innovation Award |
| 2009 | NRC-IBS Individual Outstanding Achievement Award |

Publication list (2007- current)

1. Huang D, Pereboev AV, Korokhov N, He R, Larocque L, Gravel C, Jaentschke B, Tocchi M, Casley WL, Lemieux M, Curiel DT, **Chen W**, Li X. Significant alterations of biodistribution and immune responses in Balb/c mice administered with adenovirus targeted to CD40(+) cells. *Gene Ther* 2007 Nov 29.
2. KuoLee R, **Chen W**. Vaccines and therapeutic agents for tularemia. *Expert Opinion on Therapeutic Patents* 2007;17(3):267-75.
3. KuoLee R, Harris G, Conlan JW, **Chen W**. Oral immunization of mice with the live vaccine strain (LVS) of *Francisella tularensis* protects mice against respiratory challenge with virulent type A *F. tularensis*. *Vaccine* 2007;25(19):3781-91.
4. KuoLee R, Zhao X, Austin J, Harris G, Conlan JW, **Chen W**. Mouse Model of Oral Infection with Virulent Type A *Francisella tularensis*. *Infect Immun* 2007 Apr;75(4):1651-60.
5. Miller H, Zhang J, KuoLee R, Patel GB, **Chen W**. Intestinal M cells: the fallible sentinels? *World J Gastroenterol* 2007 Mar 14;13(10):1477-86.
6. Patel GB, Zhou H, Ponce A, **Chen W**. Mucosal and systemic immune responses by intranasal immunization using archaeal lipid-adjuvanted vaccines. *Vaccine* 2007 Dec 12;25(51):8622-36.

7. Stone E, Hirama T, **Chen W**, Soltyk AL, Brunton J, Mackenzie CR, Zhang J. A novel pentamer versus pentamer approach to generating neutralizers of verotoxin 1. *Molecular immunology* 2007 Mar;44(9):2487-91.
8. van Faassen H, KuoLee R, Harris G, Zhao X, Conlan JW, **Chen W**. Neutrophils play an important role in host resistance to respiratory infection with *Acinetobacter baumannii* in mice. *Infect Immun* 2007 Dec;75(12):5597-608.
9. Conlan JW, Zhao X, Harris G, Shen H, Bolanowski M, Rietz C, Sjostedt A, **Chen W**. Molecular immunology of experimental primary tularemia in mice infected by respiratory or intradermal routes with type A *Francisella tularensis*. *Molecular immunology* 2008 May;45(10):2962-9.
10. Kuolee R, **Chen W**. Cambridge Healthtech Institute.... 2008.
11. Kuolee R, **Chen W**. M cell-targeted delivery of vaccines and therapeutics. *Expert opinion on drug delivery* 2008 Jun;5(6):693-702.
12. Kuolee R, **Chen W**. Non-antibiotic strategies for the prevention/treatment of *Clostridium difficile* infection. *Expert Opin Therap Patent* 2008;in press.
13. KuoLee R, Zhou H, Harris G, Zhao X, Qiu H, Patel GB, **Chen W**. Inhibition of airway eosinophilia and pulmonary pathology in a mouse model of allergic asthma by the live vaccine strain of *Francisella tularensis*. *Clin Exp Allergy* 2008 Jun;38(6):1003-15.
14. Patel GB, Ponce A, Zhou H, **Chen W**. Structural characterization of archaeal lipid mucosal vaccine adjuvant and delivery (AMVAD) formulations prepared by different protocols and their efficacy upon intranasal immunization of mice. *Journal of liposome research* 2008;18(2):127-43.
15. Patel GB, Ponce A, Zhou H, **Chen W**. Safety of intranasally administered archaeal lipid mucosal vaccine adjuvant and delivery (AMVAD) vaccine in mice. *International journal of toxicology* 2008 Jul-Aug;27(4):329-39.
16. Yan H, Wang X, KuoLee R, **Chen W**. Synthesis and immunostimulatory properties of the phosphorothioate analogues of cdiGMP. *Bioorg Med Chem Lett* 2008 Oct 15;18(20):5631-4.
17. Zhang D, Kuolee R, Harris G, Zhang Q, Conlan JW, **Chen W**. Lymphotoxin-alpha Plays Only a Minor Role in Host Resistance to Respiratory Infection with Virulent Type A *Francisella tularensis* in Mice. *Mediators Inflamm* 2008; 2008:239740.
18. **Chen W**, Kuolee R. 6th Annual Vaccines: all things considered. *Expert Rev Vaccines* 2009 Mar;8(3):281-4.
19. Couper KN, Lanthier PA, Perona-Wright G, Kummer LW, **Chen W**, Smiley ST, Mohrs M, Johnson LL. Anti-CD25 antibody-mediated depletion of effector T cell populations enhances susceptibility of mice to acute but not chronic *Toxoplasma gondii* infection. *J Immunol* 2009 Apr 1;182(7):3985-94.
20. Li S, Zheng W, Kuolee R, Hirma T, Henry M, Makvandi-Nejad S, Fjallman T, **Chen W**, Zhang J. Pentabody-mediated antigen delivery induces antigen-specific mucosal immune response. *Molecular immunology* 2009 May;46(8-9):1718-26.
21. MacLean LL, Perry MB, **Chen W**, Vinogradov E. The structure of the polysaccharide O-chain of the LPS from *Acinetobacter baumannii* strain ATCC 17961. *Carbohydrate research* 2009 Mar 10;344(4):474-8.
22. Patel GB, Zhou H, Ponce A, **Chen W**. Safety evaluation of calcium administered intranasally to mice. *International journal of toxicology* 2009 Nov-Dec;28(6):510-8.

23. Qiu H, KuoLee R, Harris G, **Chen W**. Role of NADPH phagocyte oxidase in host defense against acute respiratory *Acinetobacter baumannii* infection in mice. *Infect Immun* 2009 Mar;77(3):1015-21.
24. Qiu H, KuoLee R, Harris G, **Chen W**. High susceptibility to respiratory *Acinetobacter baumannii* infection in A/J mice is associated with a delay in early pulmonary recruitment of neutrophils. *Microbes and Infection* 2009;11(12):946-55.
25. Yan H, KuoLee R, Tram K, Qiu H, Zhang J, Patel GB, **Chen W**. 3',5'-Cyclic diguanylic acid elicits mucosal immunity against bacterial infection. *Biochemical and Biophysical Research Communications* 2009;387(3):581-4.
26. **Chen W**, KuoLee R, Yan H. The potential of 3',5'-cyclic diguanylic acid (c-di-GMP) as an effective vaccine adjuvant. *Vaccine* 2010 Apr 19;28(18):3080-5.
27. **Chen W**, Patel GB, Yan H, Zhang J. Advances in the development of novel mucosal adjuvants and antigen delivery systems. *Human Vaccines* 2010;6(9):706-14.
28. Conlan JW, **Chen W**, Bosio C, Cowley S, Elkins K. Infections of mice with *Francisella* as an immunological model. *Current Protocol in Immunology*: Wiley; 2010.
29. Conlan JW, Shen H, Golovliov I, Zingmark C, Oyston PCF, **Chen W**, House RV, Sjöstedt A. Differential ability of novel attenuated targeted deletion mutants of *Francisella tularensis* subspecies *tularensis* strain SCHU S4 to protect mice against aerosol challenge with virulent bacteria: Effects of host background and route of immunization. *Vaccine* 2010;28(7):1824-31.
30. Liu X, Qiu H, Lee RK, **Chen W**, Li J. Methylamidation for Sialoglycomics by MALDI-MS: A Facile Derivatization Strategy for Both α 2,3- and α 2,6-Linked Sialic Acids. *Analytical Chemistry* 2010;82(19):8300-6.
31. Patel GB, **Chen W**. Archaeal lipid mucosal vaccine adjuvant and delivery system. *Expert Rev Vaccines* 2010 Apr;9(4):431-40.
32. Patel GB, Zhou H, Ponce A, Harris G, **Chen W**. Intranasal Immunization with an Archaeal Lipid Mucosal Vaccine Adjuvant and Delivery Formulation Protects against a Respiratory Pathogen Challenge. *PLoS One* 2010;5(12):e15574.
33. Shen H, Harris G, **Chen W**, Sjöstedt A, Ryden P, Conlan W. Molecular Immune Responses to Aerosol Challenge with *Francisella tularensis* in Mice Inoculated with Live Vaccine Candidates of Varying Efficacy. *PLoS One* 2010;5(10):e13349.
34. Yan H, **Chen W**. 3',5'-Cyclic diguanylic acid: a small nucleotide that makes big impacts. *Chem Soc Rev* 2010 Aug;39(8):2914-24.
35. Altmana E, Chandana V, Harrisona B, Veloso-Pitab R, Li J, KuoLee R, **Chen W**, V V-B, groupc RHps. Design and immunological properties of *Helicobacter pylori* glycoconjugates based on a truncated lipopolysaccharide lacking Lewis antigen and comprising an α 1,6-glucan chain. *Vaccine* 2011; In revision.
36. de Leseleuc L, **Chen W**. Recent advances in the immunopathogenesis of *Acinetobacter baumannii* infection. In: Amer A, editor. *Pulmonary Infection*. Rijeka: In-Tech; 2011; in press.
37. KuoLee R, Harris G, Conlan JW, **Chen W**. Role of neutrophils and NADPH phagocyte oxidase in host defense against respiratory infection with virulent *Francisella tularensis* in mice. *Microbes and Infection* 2011;13(5):447-56.

38. Qiu H, KuoLee R, Harris G, van Rooijen N, Patel GB, **Chen W**. Role of macrophages in early host resistance to respiratory *Acinetobacter baumannii* infection. *PLoS One* 2011;In revision.
39. Qiu H, KuoLee R, Harris G, Zhou H, Miller H, Patel GB, **Chen W**. *Acinetobacter baumannii* Infection Inhibits Airway Eosinophilia and Lung Pathology in a Mouse Model of Allergic Asthma. *PLoS One* 2011;6(7):e22004.
40. Zhao L, KuoLee R, Harris G, Tram K, Yan H, **Chen W**. c-di-GMP protects against intranasal *Acinetobacter baumannii* infection in mice by chemokine induction and enhanced neutrophil recruitment. *International Immunopharmacology* 2011;11(9):1378-83.
41. Zhou P, Hu R, Chandana V, KuoLee R, Liu X, **Chen W**, Liu B, Altman E, Li J. Simultaneous analysis of cardiolipin and lipid A from *Helicobacter pylori* by matrix-assisted laser desorption/ionization time-of-flight mass spectrometry. *Molecular BioSystems* 2011;In press.

Peer-Reviewed Publications

- [1] **Chen W**, Shu D. Swine kidney-worm diseases. . Hubei Vet J 1981;3:33-6.
- [2] **Chen W**. Gastric ulcer in pigs. Hubei Vet J 1982;2:50-2.
- [3] Zhang D, Li J, **Chen W**. Studies of the normal electrocardiograph on Chinese rabbits. Liaolin Vet J 1983;3:7-10.
- [4] Chen J, Yu Z, **Chen W**. Duck aspergillosis. Zhejiang J Ani Husband Vet Med 1985;10:15-6.
- [5] Xu Z, **Chen W**, Chen J, Yu Z. Studies on the control and prevention of a new rabbit disease. Zhejiang J Ani Husband Vet Med 1985;10:12-3.
- [6] Chen J, Yu Z, **Chen W**. Preliminary studies on avian osteoporosis. Acta Zhejiang Agri Uni 1987.
- [7] **Chen W**, Alley MR. Lesions of toxoplasmosis in the perirenal adipose tissue of aborted kids. N Z Vet J 1987 Oct;35(10):176.
- [8] **Chen W**, Alley MR, Manktelow BW. Pneumonia in lambs inoculated with Bordetella parapertussis: clinical and pathological studies. N Z Vet J 1988 Sep;36(3):138-42.
- [9] **Chen W**, Alley MR, Manktelow BW, Hopcroft D, Bennett R. Pneumonia in lambs inoculated with Bordetella parapertussis: bronchoalveolar lavage and ultrastructural studies. Vet Pathol 1988 Jul;25(4):297-303.
- [10] **Chen W**, Alley MR, Manktelow BW. Respiratory tract-associated lymphoid tissue in conventionally raised sheep. J Comp Pathol 1989 Oct;101(3):327-40.
- [11] **Chen WX**, Alley MR, Manktelow BW. Experimental induction of pneumonia in mice with Bordetella parapertussis isolated from sheep. J Comp Pathol 1989 Jan;100(1):77-89.
- [12] Xu ZJ, **Chen WX**. Viral haemorrhagic disease in rabbits: a review. Vet Res Commun 1989;13(3):205-12.
- [13] **Chen W**, Alley MR, Allardyce RA, Keenan J. Experimental Ascaris-induced airway hypersensitivity in sheep: no serological evidence of association with Toxocara canis infection. N Z Vet J 1990 Jun;38(2):80.
- [14] **Chen W**, Alley MR, Manktelow BW. Pneumonia in mice produced by cell-free extract of cultures of Bordetella parapertussis. Res Vet Sci 1990 Jan;48(1):18-22.
- [15] **Chen W**, Alley MR, Manktelow BW, Davey P. Mast cells in the ovine lower respiratory tract: heterogeneity, morphology and density. Int Arch Allergy Appl Immunol 1990;93(2-3):99-106.
- [16] **Chen W**, Alley MR, Manktelow BW, Slack P. Perinatal development of lymphoid tissue and its associated epithelium in the ovine pharyngeal tonsil: a morphological study. N Z Vet J 1990 Sep;38(3):106-11.
- [17] **Chen W**, Alley MR, Manktelow BW, Slack P. Mast cells in the bovine lower respiratory tract: morphology, density and distribution. Br Vet J 1990 Sep-Oct;146(5):425-36.
- [18] **Chen W**, Pack RJ, Alley MR, Carr DH, Manktelow BW. Airway hypersensitivity induced by Ascaris suum extract in New Zealand Romney sheep. N Z Vet J 1990 Jun;38(2):57-61.
- [19] Jones BR, Jones JM, **Chen W**, Cayzer J. Chronic renal failure in young Old English Sheepdogs. N Z Vet J 1990 Sep;38(3):118-21.

- [20] **Chen W**, Alley MR, Manktelow BW. Morphological and morphometric studies of the airways of sheep with acute airway hypersensitivity to inhaled *Ascaris suum*. *Int J Exp Pathol* 1991 Oct;72(5):543-51.
- [21] **Chen W**, Alley MR, Manktelow BW. Clearance of ovine isolates of *Bordetella parapertussis* from murine trachea and lungs. *N Z Vet J* 1991 Jun;39(2):75-6.
- [22] **Chen W**, Alley MR, Manktelow BW. Airway inflammation in sheep with acute airway hypersensitivity to inhaled *Ascaris suum*. *Int Arch Allergy Appl Immunol* 1991;96(3):218-23.
- [23] **Chen W**, Alley MR, Manktelow BW, Hopcroft D, Bennett R. The potential role of the ovine pharyngeal tonsil in respiratory tract immunity: a scanning and transmission electron microscopy study of its epithelium. *J Comp Pathol* 1991 Jan;104(1):47-56.
- [24] **Chen W**, Havell EA, Harmsen AG. Importance of endogenous tumor necrosis factor alpha and gamma interferon in host resistance against *Pneumocystis carinii* infection. *Infect Immun* 1992 Apr;60(4):1279-84.
- [25] **Chen W**, Havell EA, Moldawer LL, McIntyre KW, Chizzonite RA, Harmsen AG. Interleukin 1: an important mediator of host resistance against *Pneumocystis carinii*. *J Exp Med* 1992 Sep 1;176(3):713-8.
- [26] **Chen W**, Mills JW, Harmsen AG. Development and resolution of *Pneumocystis carinii* pneumonia in severe combined immunodeficient mice: a morphological study of host inflammatory responses. *Int J Exp Pathol* 1992 Dec;73(6):709-20.
- [27] Harmsen AG, **Chen W**. Resolution of *Pneumocystis carinii* pneumonia in CD4+ lymphocyte-depleted mice given aerosols of heat-treated *Escherichia coli*. *J Exp Med* 1992 Sep 1;176(3):881-6.
- [28] Harp JA, **Chen W**, Harmsen AG. Resistance of severe combined immunodeficient mice to infection with *Cryptosporidium parvum*: the importance of intestinal microflora. *Infect Immun* 1992 Sep;60(9):3509-12.
- [29] **Chen W**, Gigliotti F, Harmsen AG. Latency is not an inevitable outcome of infection with *Pneumocystis carinii*. *Infect Immun* 1993 Dec;61(12):5406-9.
- [30] **Chen W**, Harp JA, Harmsen AG. Requirements for CD4+ cells and gamma interferon in resolution of established *Cryptosporidium parvum* infection in mice. *Infect Immun* 1993 Sep;61(9):3928-32.
- [31] **Chen W**, Harp JA, Harmsen AG, Havell EA. Gamma interferon functions in resistance to *Cryptosporidium parvum* infection in severe combined immunodeficient mice. *Infect Immun* 1993 Aug;61(8):3548-51.
- [32] **Chen W**, Havell EA, Gigliotti F, Harmsen AG. Interleukin-6 production in a murine model of *Pneumocystis carinii* pneumonia: relation to resistance and inflammatory response. *Infect Immun* 1993 Jan;61(1):97-102.
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- [34] Harmsen AG, **Chen W**, Gigliotti F. Active immunity to *Pneumocystis carinii* reinfection in T-cell-depleted mice. *Infect Immun* 1995 Jul;63(7):2391-5.
- [35] Chadwick VS, **Chen W**. Testing for *Helicobacter pylori* infection: when? how? and so what? *Med Lab Bull* 1997;1-10.
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- [37] Erb KJ, Kirman J, Delahunt B, **Chen W**, Le Gros G. IL-4, IL-5 and IL-10 are not required for the control of *M. bovis*-BCG infection in mice. *Immunol Cell Biol* 1998 Feb;76(1):41-6.
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- [46] **Chen W**. Novel cancer vaccines. *Expert Opin Ther Patents* 2001;11:937-50.
- [47] **Chen W**, Chadwick V, Tie A, Harp J. *Cryptosporidium parvum* in intestinal mucosal biopsies from patients with inflammatory bowel disease. *Am J Gastroenterol* 2001 Dec;96(12):3463-4.
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- [49] **Chen W**, Paulus B, Shu D, Wilson, Chadwick V. Increased serum levels of eotaxin in patients with inflammatory bowel disease. *Scand J Gastroenterol* 2001 May;36(5):515-20.
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- immunization with the attenuated live vaccine strain of the pathogen. *Vaccine* 2004 Jun 2;22(17-18):2116-21.
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Patents

1. Patel, G. B. and **Chen, W**. Archaeal polar lipid aggregates for administration to animals. **PCT application** (filed December 2007). NRC IPSO file # 11561. Entered national phase filing in USA (11/956,653, December 2007), European, Canada and India (filed July, 2009).
2. **Chen, W**. and Patel, G. B. Use of *Francisella tularensis* for prevention and treatment of allergic airway disorders. **PCT application** (filed March, 2008). NRC IPSO file # 11894. Entered National phase in USA, Canada, Europe and India (filed September, 2009).
3. Zhang, J, **Chen, W**. and Henry, M. Induction of mucosal immune responses by mucosal delivery pentabody complex (MDPC). **PCT application** (filed November 2009). NRC IPSO file #11890.
4. Zhang, J, **Chen, W**., Mackenzie, CR, Arbabi, M., Li, S. BSA-Specific Antibodies. **PCT application** (filed April 2010). NRC IPSO file #12203.

Technical reports

1. **Chen, W.** (2009). Protection against intranasal and subcutaneous LVS challenge in BALB/c mice subcutaneously immunized with LVS. DynPort Vaccine Company Ltd. Frederick, MD, USA.
2. **Chen, W.** (2009). Cytokine ELISPOT Assay Development Report. DynPort Vaccine Company Ltd. Frederick, MD, USA.
3. **Chen W.** (2010). Development of a BALB/c mouse tularemia model using SC LVS vaccination and IN SCHU S4 challenge. DynPort Vaccine Company Ltd. Frederick, MD, USA.
4. **Chen W.** (2010). Development of Francisella tularensis-specific Cell-Mediated Immunity Assays: Lymphocyte Proliferation, Luminex and Intracellular Cytokine Staining. DynPort Vaccine Company Ltd. Frederick, MD, USA.

Research Grants Awarded

Grant Holder and Principal Investigator (since 2002, I am at NRC intramural research program):

- 1996: Characterisation of early immunopathological changes in a murine model of human inflammatory bowel disease (IBD). By Wellington Medical Research Foundation (\$9,872);
- 1996: Chronic active gastritis: Mechanism of active immunosuppression by *Helicobacter pylori*. By New Zealand Lottery Grants Committee (\$29,740);
- 1996: Role of interleukin 12 in the pathogenesis of IBD. By Health Research Council of New Zealand (\$53,888);
- 1997: Immunopathogenesis of human chronic gastrointestinal diseases --- Application for a thermal cyclor. By Wellington Medical Research Foundation (\$9,500);
- 1997: HRC Travel grants. By Health Research Council of New Zealand (\$3,000)
- 1997: Mycoplasmas and Inflammatory bowel disease. By Wellington Medical Research Foundation (\$8,550);
- 1998: Adhesion molecules and tumour associated lymphocytes in colorectal cancer. By Wellington Medical Research Foundation (\$12,206);
- 1998: Bacterial DNA and pathogenesis of IBD. By Health Research Council of New Zealand (\$55,446);
- 1998: Corticotropin-releasing hormone (CRH) and irritable bowel syndrome. By Health Research Council of New Zealand (\$56,147);
- 1999: Mycoplasmas and Inflammatory bowel disease. By Health Research Council of New Zealand (\$244,686);
- 1999: Immunopathogenesis of human chronic gastrointestinal diseases --- Application for an UV spectrophotometer. By Wellington Medical Research Foundation (\$15,746);
- 1999: Rapid identification of novel autoantigens in ulcerative colitis by SEREX approach. By Health Research Council of New Zealand (\$55,852).

- 2004: Mouse model of oral infection with virulent *Francisella tularensis*. By National Institutes of Health, USA (US \$400,000).

Grant Co-holder and Principal Investigator/Co-investigator:

- 1994: Altered immune response in ulcerative colitis. By New Zealand Lottery Grants Committee (PI: VS Chadwick, \$50,625);
- 1995: *Helicobacter pylori*: early effect of eradication therapy. By Wellington Medical Research Foundation (PI: VS Chadwick, \$9,000);
- 1996: Trial of Pentasa in patients with irritable bowel syndrome. By Health Research Council of New Zealand (PI: VS Chadwick, \$45,694);
- 1996: Is irritable gut an inflamed gut? By Health Research Council of New Zealand (PI: VS Chadwick, \$56,250);
- 1997: Purchase of an image analysis unit. By Todd Foundation (\$5,000);
- 1997: Application of in vivo expression technology (IVET) to *Helicobacter pylori* infection. By New Zealand Lottery Grants Committee (PI: VS Chadwick, \$14,625);
- 1998: Microscopic colitis and mucosal mast cells in irritable bowel syndrome. By Health Research Council of New Zealand (PI: VS Chadwick, \$361,445);
- 1998: Clinical studies of the effects of *H. pylori* exported proteins on the human immune system studied *ex vivo* and *in vivo*. By Health Research Council of New Zealand (PI: VS Chadwick, \$60,756).
- 2004-2005. Development of lipopolysaccharide-based vaccines against veterinary pathogens. By Dow AgroSciences, (PI: A Cox, \$50,000/yr).
- 2001-2006. Acellular vaccines against *Francisella tularensis*. By National Institutes of Health, USA (PI: WJ Conlan, US\$250,000/yr).
- 2004-2006. Novel, archaeal lipid-based mucosal adjuvant platform technology. By Dow AgroSciences, (PI: GB Patel, \$200,000/yr).
- 2004-2006. Targetting the upper respiratory and lower digestive mucosa for better vaccine delivery. By Dow AgroSciences, (PI: JB Zhang, \$200,000/yr).
- 2005-2010. Development of live *Francisella tularensis* vaccines. By National Institutes of Health, USA (PI: A. Sjostedt, US\$100,000/yr).
- 2005-2010. Tularemia research team. By NIH/NIAID (a subcontract from Dynport Vaccine Company (US) (US \$1.4 million/yr for NRC components).
- 2008-2011. Microbial forensics. By the Chemical, Biological, Radiological or Nuclear Research and Technology Initiative (CRTI)(PI: C. Corbett, Public Health Agent of Canada).
- 2011 – 2013. Design of c-di-GMP as mucosal vaccine adjuvants. By NSERC Collaborative Research and Development Grant (PI: Hongbin Yan, Brock University) \$77,490/yr x 3 yrs.

NOTES:

1. The amounts do not include indirect cost/overhead cost payment and the Health Research Council of New Zealand is the NIH, MRC, or CIHR equivalent in New Zealand.
2. As an NRC employer since 2002, I am not eligible to apply for research grants from most Canadian federal funding agencies such as CIHR and NSERC.

Recent invited oral presentations (2008 -)

1. Invited speaker and session co-chair: BIT World Vaccine Conference, Beijing, China, March 2011.
2. Invited speaker. Canada-China Vaccine Workshop, Taizhou, China, March 2011.
3. Invited speaker. Emerging Pathogen Research Centre Special Symposium, University of Ottawa. Dec 2010.
4. Oral presenter. 8th International Symposium on the Biology of Acinetobacter, Rome, Sept 2010.
5. Invited speaker. Canada-Mexico Vaccine Workshop, Ottawa, Canada, December 2010.
6. Invited speaker, BIT World Vaccine Conference, Beijing, China, March 2010.
7. Invited seminar speaker, Department of Microbiology, California State University, Los Angeles, September 2009
8. Invited speaker, All Things Considered for Vaccines Conference, Washington DC, November 2009
9. Invited presenter, The Crossroad for Biotransfer, Montreal, May 2009
10. Invited seminar speaker, South Texas Center for Emerging Infectious Diseases, University of San Antonio, Texas, April 2009
11. Invited speaker, Cambridge Healthtech Institute's 3rd Annual "the Challenge of antibacterial drug development" (San Diego, CA), March 2009
12. Invited speaker, Biotechnology Research Institute, National Research Council Canada, Montreal, February 2009
13. Co-chair and invited speaker, BIT World Vaccine Congress, Fushan, China, December 2008 (cancelled due to medical emergence)
14. Invited speaker, All Things Considered for Vaccines Conference, Washington DC, November 2008
15. Invited seminar speaker, Albany Medical College, Albany, New York, September 2008
16. Invited seminar speaker, Department of Biology, Brock University, May 2008
17. Invited speaker, Cambridge Healthtech Institute's 2nd Annual "the Challenge of antibacterial drug development" (San Diego, CA), April 2008.
18. Invited speaker, 2008 Tularemia Research Conference (Sagamore, New York, USA), March 2008.

Editorial Board Membership

BMC Infectious Diseases (Associate editor, 2009-)
 World Journal of Gastroenterology (2005-)
 Asian Pacific Journal of Tropical Medicine (2009-)
 World Journal of Gastrointestinal Pathophysiology (2010-)
 World Journal of Experimental Medicine (2011-)
 World Journal of Vaccine (2011-)

Others

Grant review: (*ad hoc* member)
 National Institutes of Health (NIH), USA
 Canadian Institute for Health Research (CIHR)

Natural Sciences and Engineering Research Council of Canada (NSERC)
US Army Medical Research and Material Command
The Eli and Edythe L Braoad Foundation (Los Angeles, USA)
United States Department of Agriculture
University Grant Committee (UGC) of Hong Kong
Lottery Grant Committee of New Zealand
Wellington Medical Research Foundation
American Institute of Biological Sciences
Global Partnership Program, Foreign Affairs Canada
The H.L. Holmes Award 2011

Manuscript review (*ad hoc* member)

American Journal of Respiratory Cells and Molecular Biology
Asian Pacific Journal of Tropical Medicine
Biochemistry and Cell Biology
BMC Infectious Disease
BMC Medicine
BMC Microbiology
Bone Marrow Transplantation
Canadian Journal of Microbiology
Canadian Journal of Public Health
Cellular Immunology
Clinical and Experimental Pharmacology and Physiology
Digestive and Liver Disease
Expert Opinion on Biological Therapy
Expert opinion on Drug
Expert Review of Vaccines
FEMS Immunology and Medical Microbiology
FEMS Microbiology Letter
Future Microbiology
Infection and Immunity
Journal of Infectious Diseases
Journal of Leucocyte Biology
Journal of Macroencapsulation
Journal of Parasitology
Journal of Toxicology & Environmental Health
Kluwer Academic/Plenum Publishers (New York)
Medicinal Research Review
Microbial Pathogenesis
Molecular Pharmateutics
Nanomedicine
New Zealand Veterinary Journal
PoLS One
Scand J Immunology
Vaccine

Viral Immunology
World Journal of Gastroenterology

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