

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel in the order listed on Form Page 2.
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NAME Barry T. Rouse		POSITION TITLE Lindsay Young Distinguished Professor	
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
University of Bristol	D.V.M	1961-1965	Veterinary Science
University of Guelph	MSc.	1966-1967	Virology
University of Guelph	Ph.D.	1967-1970	Immunology
University of Bristol	DSc.	1997	Science

A. Positions and Honors

1965-66 General Veterinary Practice
 1970-72 Medical Research Council, Canada. Fellowship at Walter and Eliza Hall Institute of Medical Research, Melbourne, Australia
 1972-77 Assistant [Associate] Professor, Veterinary School, University of Saskatchewan
 1977-79 Associate Professor, Department of Microbiology, University of Tennessee
 1979-94 Professor, Department of Microbiology, University of Tennessee
 1991-present Lindsay Young Professor of Graduate Teaching and Research
 1994-Present Lindsay Young Distinguished Professor of Microbiology
 1981-82 Fogarty Senior International Fellowship, at Johannes Gutenberg University, Mainz
 1981-82 Alexander von Humboldt Fellowship
 1986 University of Tennessee Chancellor's Scholar Award
 1989 & 1992 Beecham Award for Research Excellence.
 1986 Visiting Fellowship, John Curtin School, Australian National University with P.C. Doherty
 1986-88 Member Virology Study Section, DRG, NIH
 1989-92 Chairman AAR3 Study Section, DRG, NIH
 2001-2005 Member of IMS Study Section, DRG, NIH
 1997 DLT Smith Visiting Professorship, University of Saskatchewan, Canada
 1998 J.H. Subak-Sharpe Lecture, International Herpesvirus Workshop, York, England
 1999-2003 Section Editor, Journal of Immunology
 2001 Alcon Award for outstanding contributions to vision research
 2002 Dolph Adams Award of Leukocyte Biology Society for most cited paper 1995-2000
 2002-present Section Editor, Journal of Leukocyte Biology, Microbes and Infection

B. Selected Publications (out of >300)

Belkaid, Y., and Rouse, B.T. 2005. Natural regulatory T cells in infectious disease. *Nature Immunol.* In press.
 Banerjee, K., Biswas, P.S., and Rouse, B.T. 2005. Elucidating the protective and pathological T cell species in virus-induced corneal inflammatory condition herpetic stromal keratitis. *J. Leuko Biol.* 77: 24-32
 Banerjee, K., Biswas, P. S., Kim, B., Lee, S., and Rouse, B. T. 2004. CXCR2^{-/-} mice show enhanced susceptibility to Herpetic Stromal Keratitis: a role for IL-6 induced neovascularization. *J. Immunol.* 172: 1237-45.

- Biswas, P.S., Banerjee, K., Kim, B., and Rouse, B.T. 2004. Mice transgenic for IL-1 receptor antagonist protein are resistant to herpetic Stromal Keratitis: possible role for IL-1 in Herpetic Stromal Keratitis pathogenesis. *J. Immunol.* **172**: 3736-3744.
- Kim, B., Tang, Q.Q., Xu, J., Biswas, P.S., Schiffelers, R., Xie, F.Y., Ansari, A.M., Scaria, P.V., Woodle, M.C., Lu, P.Y., Rouse, B.T. 2004. Inhibition of ocular angiogenesis by siRNA targeting vascular endothelial growth factor – pathway genes; therapeutic strategy for herpetic stromal keratitis. *Am. J. Path.* **165**: 2177-85.
- Toka, F., Suvas, S., and Rouse, B.T. CD4+/CD25+ T cells regulate vaccine generated primary and memory CD8+ T cells responses against herpes simplex virus type 1. *J. Virol.* **78**: 13062-13089.
- Toka, F., Gierynska, M., Suvas, S., Schoenberger, S., Rouse, B.T. 2005. Rescue of memory CD8+ T cell reactivity and peptide/TLR9 ligand immunization by codelivery of cytokines or CD40 ligation. *Virology.* **331**: 151-158.
- Banerjee, K., Biswas, P.S., Kumaraguru, U., Schoenberger, S.P., and Rouse, B.T. 2004. Protective and pathological roles of virus specific and bystander CD8+ T cells in Herpetic Stromal Keratitis. *J. Immunol.* **173**: 7575-7583.
- Rouse, B.T. and Suvas, S. 2004. Regulatory cells and infectious agents – détente cordiale and contraire. *J. Immunology.* **173**: 2211-2215.
- Biswas, P.S., Banerjee, K., Zheng, M. and Rouse, B.T. 2004. Counteracting corneal immunoinflammatory lesion with interleukin-1 receptor antagonist protein. *J. Leuko Biol.* **76**: 869-875.
- Toka, F., Pack, C.H., Rouse, B.T. 2004. Molecular adjuvants for mucosal immunity. *Immun. Reviews.* **199**: 100-113.
- Suvas, S., Kim, B.S., Azkur, K., Kumaraguru, U., and Rouse, B.T. 2004. CD4+CD25+ regulatory T cells control the severity of viral immunoinflammatory lesions. *J. Immun.* **172**: 4123-4129.
- Kumaraguru, U., Suvas, S., Biswas, P., Azkur, K., and Rouse, B. Concomitant helper response rescue otherwise low activity CD8⁺ memory CTLs to become efficient effectors in vivo. *J. Immunol.* **172**: 4123-4132.
- Suvas, S., Kumaraguru, U., Pack, C. D., Lee, S., and Rouse, B. T. 2003. CD4⁺ CD25⁺ T cells regulate virus-specific primary and memory CD8⁺ T cell responses. *J. Exp. Med.* **198**: 889-901..
- Banerjee, K., Biswas, P. S., Kim, B., Lee, S., and Rouse, B. T. 2004. Mice show enhanced susceptibility to herpetic stromal keratitis: A role for IL-6-induced neovascularization. *J. Immunology.* **172**: 1237-45.
- Toka, F., Gierynska, M., and Rouse, B.T. 2003. Codelivery of CCR7 Ligands as molecular adjuvants enhances the protective immune response against herpes simplex virus type I. *J. Virology.* **77**: 12742-52.
- Lee, Y., Eo SK, Rouse, B. T. 2003. Influence of CCR7 ligand DNA pre-exposure on the magnitude and duration of immunity. *Virology.* **312**: 169-180.
- Kumaraguru, U., Pack, C., and Rouse, B. T. 2003. Toll-like receptor ligands link innate and adaptive immune responses by the production of heat-shock proteins. *J. Leuko. Biol.* **73**: 574-583.
- Lee, S. J., Gierynska, F., Kuklin, N. and Rouse, B. T. 2003. Influence of DNA encoding cytokines on systemic and mucosal immunity following genetic vaccination against herpes simplex virus. *Microbes and Infection.* **52**: 571-578.
- Blackman, M. A., Rouse, B. T., Chisari, F. V., and Woodland, D. L. 2001. Viral Immunology: Challenges associated with the progression from bench to clinic. *Trends in Immunol.* **23**: 565-567.
- Pack, C. and B. T. Rouse. 2003. DNA vaccines against herpes viruses in DNA Vaccines. Edited by H.C. Ertl. Kluwer Academics/Plenum NY. pp. 126-140.
- Lee, S., M. Zheng, B. Kim, and B. T. Rouse. 2002. Matrix metalloproteinase-9 plays a major role in angiogenesis caused by ocular infection with herpes simplex virus. *J. Clin. Invest.* **110**: 1105-1111.

- Zheng, M., D. M. Klinman, M. Gierynska, and B. T. Rouse. 2002. Angiogenesis caused by bioactive CpG motifs and herpesvirus DNA. *PNAS*. **99**: 8944-8949.
- Gierynska, M., U. Kumaraguru, S.-K. Eo, S. J. Lee, A. Krieg, and B. T. Rouse. 2002. Induction of CD8 T cells specific, systemic and mucosal, immunity against HSV with CpG-peptide complexes. *J. Virol*. **76**: 6568-6576.
- Kumaraguru, U., and B. T. Rouse. 2002. The IL-12 response to herpes simplex virus is mainly a paracrine response of reactive inflammatory cells. *J. Leukocyte Biol*. **72**: 564-570.
- Rouse, B. T. and S. Deshpande. 2002. Viruses and autoimmunity - an affair but not a marriage contract. *Revs. Med. Virol*. **12**:107-113.
- Lee, S, M. Zheng, S. K. Eo, S. Deshpande, T. A. Hamilton, and B. T. Rouse. 2001. IL-12 suppresses the expression of ocular immunoinflammatory lesions by effects on angiogenesis. *J. Leukocyte Biol*. **71**: 469-476.
- Deshpande, S. P., M. Zheng, S. Lee, and B. T. Rouse. 2002. Mechanisms of pathogenesis in herpetic immunoinflammatory ocular lesions. *Vet Microbial*. **86**: 17-26.
- Eo, S. K., U. Kumaraguru, C. Pack, and B. T. Rouse. 2001. Optimization of DNA vaccines for the prophylaxis and modulation of herpes simplex virus infections. *Expert Opinion on Biological Therapy*. **2**: 213-225.
- Zheng, M., M. Schwarz, S. Lee, U. Kumaraguru, and B. T. Rouse. 2001. Control of stromal keratitis by inhibition of neovascularization. *Am. J. Path*. **159**:1021-1029.
- Zheng, M., S. Deshpande, S. Lee, N. Ferrera, and B. T. Rouse. 2001. Contribution of VEGF in the neovascularization process during the pathogenesis of herpetic stromal keratitis. *J. Virol*. **75**:9828-9835
- Eo., S. K., U. Kumaraguru, and B. T. Rouse. 2001. Plasmid DNA expressing CCR7 ligand compensates for dysfunctional CD8 T cell responses by effects on dendritic cells. *J. Immunol*. **167**:3592-3599.
- Eo, S. K., S. Lee, U. Kumaraguru, and B. T. Rouse. 2001. Immunopotentiating effect of DNA vaccine against herpes simplex virus via co-delivery of plasmid DNA expressing CCR7 ligands. *Vaccine*. **19**:4685-4693.
- Deshpande, S. P., M. Zheng, S. Lee, K. Banerjee, S. Gangappa, U. Kumaraguru, and B. T. Rouse. 2001. Role of bystander activation mechanism in pathogenesis of herpetic stromal keratitis. *J. Immunol*. **167**:2902-2910.
- Rouse, B. T. and R. Ahmed. 2001. Immune response to viruses in Rich, R. R., Fleisher, T. A., Shearer, W. T. Schwartz, B. D., Strober, W. eds. *Clinical Immunology Principles and Practice*. Mosley-Year Book. **28**.1-28.10.
- Eo., S. K., Gierynska, M., Kumar, A. A., and B. T. Rouse. 2001. Prime boost immunization with DNA vaccine via mucosal route of submission changes the rules. *J. Immunol*. **166**:5473-5479.
- Deshpande, S. P., S. Lee, M. Zheng, B. Song, D. Knipe, J. A. Kapp, and B. T. Rouse. 2001. Herpes simplex virus induced keratitis: evaluation of the role of molecular mimicry in lesion pathogenesis. *J. Virol*. **75**:3077-3088.
- Kumaraguru, U., I. A. Davis, S. Deshpande, S. S. Tevethia, and B. T. Rouse. 2001. Antigen specific CD8+ T cells may be functionally defective in Lt⁻¹-mice. *J. Immunol*. **166**: 1066-1074.
- Eo, S. K., S. Lee, S. Chun, and B. T. Rouse. 2001. Modulation of immunity against herpes simplex virus infection via mucosal genetic transfer of plasmid DNA encoding chemokines. *J. Virol*. **75**:569-578.
- Eo, S. K., S. Chun, S. J. Lee, and B. T. Rouse. 2000. On the mechanisms of T cell silencing by IL-10 DNA: direct and indirect inhibition of T cell function. *Cell Immunol*. **206**: 59-69.
- Kumaraguru, U. and B. T. Rouse. 2000. Application of the intracellular interferon- γ assay to recalculate the potency of CD8+ T cell responses to HSV. *J. Virol*. **74**:5709-5711.

- Deshpande, S., U. Kumaraguru, and B. T. Rouse. 2000. Why do we lack an effective vaccine against HSV infections? *Microbes & Infection*. **2**:1-6.
- Kumaraguru, U., R. J. D. Rouse, S. K. Nair, B. D. Bruce, and B. T. Rouse. 2000. Involvement of an ATP dependent peptide-chaperone in cross presentation after DNA immunization. *J. Immunol.* **65**:750-759.
- Deshpande, S. P., U. Kumaraguru, and B. T. Rouse. 2000. Dual role of B cells in mediating innate and acquired immunity to herpes simplex virus infection. *Cell Immunol.* **207**: 79-87.
- Deshpande, S. P., M. Zheng, M. Daheshia, and B. T. Rouse. 2000. Pathogenesis of herpes simplex virus induced ocular immuno inflammatory lesions in B cell deficient mice. *J. Virology.* **74**:3517-3524.
- Gangappa, S., S. P. Deshpande, and B. T. Rouse. 2000. Bystander activation of CD4+ T cells accounts for herpetic ocular lesions. *Invest. Ophthalmol. Vis. Sci.* **41**:453-459.
- Rouse, B. T., Daheshia, M., and D. S. Schmid. 2000. Herpes simplex virus and the immune response: A balance of power. In *Effects of Microbes on the Immune System*. Ed. By M. W. Cunningham and R. S. Fujinami. Lippencott-Raven, Philadelphia. pp. 387-398.
- Gangappa, S., S. Deshpande, and B. T. Rouse. 1999. Bystander activation of CD4+ T cells can represent an exclusive means of immunopathology in a virus infection. *Europ. J. Immunol.* **29**:3674-3682.
- Chun, S., M. Daheshia, S. Lee, S. K. Eo, and B. T. Rouse. 1999. Distribution fate and mechanism of immune modulation following mucosal delivery of plasmid DNA encoding IL-10. *J. Immunol.* **163**:2393-2402.
- Chun, S., M. Daheshia, S. J. Lee, and B. T. Rouse. 1999. Immune modulation of IL-10 gene transfer via viral vector and plasmid DNA: Implications for gene therapy. *Cellular Immunology.* **194**:194-204.
- Davis, I. A., and B. T. Rouse. 1998. The spleen and organized lymph nodes are not essential for the development of gut-induced mucosal immune responses in lymphotoxin- α deficient mice. *Clin. Immunol. & Immunopathology.* **89**:150-159.
- Chun, S., M. Daheshia, N. A. Kuklin, and B. T. Rouse. 1998. Modulation of viral immunoinflammatory responses with cytokine DNA administered by different routes. *J. Virol.* **72**: 5351-5359.
- Kuklin, N., M. Daheshia, S. Chun, and B. T. Rouse. 1998. Immunomodulation by mucosal gene transfer using TGF β DNA. *J. Clin. Invest.* **102**: 438-444.

C. Research Support Ongoing

AI 14981 23-27 Barry T. Rouse, PI 06/01/78 to -5/31/06

Title: Immunity Mechanisms in Herpesvirus Infections. Objective: To understand how specific components of T cell immunity interact with herpes simplex virus infected cells and the design of systemic vaccines. No overlap

AI 46462-0-5 Barry T. Rouse, PI 03/01/00 to 02/28/05

Title: Vaccination against herpes simplex virus. Objective: To evaluate mucosal immunity and the value of DNA vaccines for its induction and modulation. No overlap.

EY 05093-19-22 Barry T. Rouse, PI 08/30/84 - 09/29/07

Title: Mechanisms of Immunopathology in Herpetic Stromal Keratitis. Objective: To understand the events that are involved in the pathogenesis of corneal lesions following infection with HSV.