

# CURRICULUM VITAE

## DR. MICHAEL J.H. RATCLIFFE

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**Date of Birth:** August 8, 1954

**Nationality:** Dual national: British/Canadian

**Marital status:** Married, two children (born 1988 and 1990)

### A. Biographical information

#### 1. Degrees:

Ph.D. 1980. University College London, England. Immunology.

B.Sc. 1976. The University of Glasgow, Glasgow, Scotland. Honours Biochemistry.

#### 2. Employment:

##### Current positions:

2012-present Vice-Provost and Dean of Arts, Trinity College.

2001-present Professor, Department of Immunology, University of Toronto.

2001-present Full Member, School of Graduate Studies, University of Toronto.

2009-present Member of Senate, Trinity College at the University of Toronto.

2007-present Fellow, Trinity College at the University of Toronto.

2014-present Life Fellow, Clare Hall, Cambridge, UK

**Previous positions:**

2015 Visiting Scientist, Faculty of Medicine, University of Sao Paulo, Brazil  
2014-15 Visiting Scientist, Monash University, Melbourne, Australia  
2014 Visiting Scientist, Department of Pathology, University of Cambridge  
2014 Visiting Fellow, Clare Hall, Cambridge, UK  
2013-2014 Interim Provost and Vice-Chancellor, Trinity College.  
2001-2012 Chair, Department of Immunology, University of Toronto.  
2003-2007 Associate, Trinity College, University of Toronto.  
2005-2006 Acting Discipline Director, Molecular and Cell Biology, Sunnybrook Health Sciences Center, Toronto.  
2001-2012 Senior Scientist, Discipline of Molecular and Cell Biology, Sunnybrook Health Sciences Center, Toronto.  
1998-2001 Professor, Department of Microbiology and Immunology, McGill University, Montreal, Quebec, Canada.  
1991-1998 Associate Professor, Department of Microbiology and Immunology, McGill University, Montreal, Quebec, Canada.  
1991 Tenure awarded, McGill University.  
1986-1991 Assistant Professor, Department of Microbiology and Immunology, McGill University, Montreal, Quebec, Canada.  
1983-1986 I.C.R.F. Research Fellow, Imperial Cancer Research Fund, Tumour Immunology Unit, University College London, London, U.K.  
1980-1983 Member, Basel Institute for Immunology, Basel, Switzerland.

**3. Honours**

2011 John D. Reynolds Award from the Canadian Society for Immunology for contributions to Canadian Immunology  
1993-1996 Fonds de la Recherche en Santé du Québec Chercheur-boursier (Senior 2).  
1990-1993 Fonds de la Recherche en Santé du Québec Chercheur-boursier (Senior 1).  
1987-1990 Fonds de la Recherche en Santé du Québec Chercheur-boursier (Junior 2).

1983-1986 Imperial Cancer Research Fund Research Fellowship.  
1976-1980 Wellcome studentship.

#### **4. Professional affiliations and activities:**

##### *4.1 Societies*

British Society for Immunology:  
1978-present Member.

Canadian Society for Immunology:  
1988-present Member,  
1991-1993 Member of council.  
1993-1995 Re-elected to council.  
1999-2001 Vice-President.  
2001-2003 President.  
2003-2005 Past-President.

Canadian Federation of Biological Societies:  
1999-2003 Member of Executive Council.  
2004-2005 President-Elect.  
2005-2007 President.  
2007-2009 Past-President.

American Association of Immunologists:  
2001-present Member.

International Union of Immunology Societies:  
1991-2001 Chair: Avian CD Nomenclature Committee.  
2001-2010 Member: General Assembly (one of two Canadian members).  
2010-2016 Member: IUIS Council (elected 2010, re-elected 2013)  
2016-present Treasurer

##### *4.2 Grant review:*

Panel membership:  
1989-1991 Member: FRSQ panel for graduate studentships (M.Sc. level).  
1991-1993 Member: Cancer Research Society Fellowships Committee.  
1993-1996 Member: MRC Immunology and Transplantation Operating grants panel.  
1996-1999 Scientific Officer: MRC Immunology and Transplantation Operating grants panel.

- 2000-2003 Chairman: CIHR (formerly MRC) Immunology and Transplantation Operating Grants Panel.
- 2003-2004 Invited member: CIHR Multi-User Equipment and Maintenance grant panel.
- 2004-2005 Member: CIHR Multi-User Equipment and Maintenance grant panel.
- 2004 Member: Ontario College of Graduate Studies; site visit reviewer for Department of Microbiology and Immunology, University of Western Ontario.
- 2004-present Member: College of Reviewers, Canada Research Chairs.
- 2005-2006 Invited Chair: CIHR Immunology and Transplantation Operating grants panel.
- 2006-2009 Chairman: CIHR Immunology and Transplantation Operating grants panel B.
- 2006-2008 Member: Ontario Research Fund: Research Excellence Committee.
- 2007-2009 Member: Canada Research Chairs Interdisciplinary Adjudicating Committee.
- 2007 Member: International Review Committee for the Institut de recherches cliniques de Montréal.
- 2008-2013 Member: Cole Foundation for Childhood Leukemia fellowship review panel
- 2009 Member: CIHR Strategic Training Program Grant panel B.
- 2012-present Member: Banting Research Foundation Grant Review Panel.

Ad hoc reviewer:

Fonds de la Recherche en Santé du Québec  
 Medical Research Council of Canada  
 Natural Sciences and Engineering Research Council of Canada  
 National Cancer Institute of Canada  
 Canadian Institutes of Health Research  
 Saskatchewan Health Research Foundation  
 British Columbia Health, Michael Smith Health Research  
 Alberta Heritage  
 Unites States Department of Agriculture  
 National Institutes of Health, USA  
 National Science Foundation, USA  
 Science Foundation Ireland

#### 4.3 *Editorial boards*

Guest editor: Seminars in Immunology, volume 2 issue 3, 1990. *B Lymphocyte Development*. Saunders Scientific Publications.

International Editorial Advisory Board: Veterinary Immunology and Immunopathology, 1999-2010.

Editorial Advisory Board: Seminars in Immunology 2001-2011.

Immunobiology Section Editor: Elsevier Reference Module in Biological Sciences. 2016-present.

Ad hoc reviewer:

Canadian Journal of Allergy and Clinical Immunology, Cellular Immunology, Development and Comparative Immunology, Developmental Dynamics, European Journal of Immunology, Experimental Molecular Pathology, Immunobiology, Immunology, Immunological Investigations, Immunology Letters, International Immunology, Journal of Anatomy, Journal of Clinical Immunology, Journal of Experimental Medicine, Journal of Immunology, Journal of Leukocyte Biology, Journal of Molecular Medicine, Nature, Oncogene, Trends in Immunology, Veterinary Research, Veterinary Immunology and Immunopathology.

#### 4.4 *Consultancies*

Moore and Van Allen Pllc., Attorneys at Law (Durham, North Carolina); Expert witness reports and testimony in patent litigation, 1997-1998.

Member: Scientific Advisory Board: Origen Therapeutics (Burlingame, CA, USA), 2000-2012.

Member: Board of Advisors: Crystal Bioscience (Palo Alto, CA, USA) 2012-2017.

#### 4.7 *National committees*

Workshop co-ordinator and organizing committee member for the 4<sup>th</sup> Canadian Society for Immunology Meeting, March 1990, Mont-Gabriel, Quebec.

Organizer of the 6<sup>th</sup> Canadian Society for Immunology Meeting, March 1992, Mont-Gabriel, Quebec.

Organizer of the 8<sup>th</sup> Canadian Society for Immunology Meeting, March 1994, Sainte-Adèle, Quebec.

Organizer of the 10<sup>th</sup> Canadian Society for Immunology Meeting, March 1996, Sainte-Adèle, Quebec.

Organizer of the 12<sup>th</sup> Canadian Society for Immunology Meeting, March 1998, Sainte-Adèle, Quebec.

Chairman of the Scientific Program committee for the 14<sup>th</sup> Canadian Society for Immunology Meeting, March 2000, Chateau Bromont, Quebec.

Chairman of the Scientific Program Committee for the 15<sup>th</sup> Canadian Society for Immunology Meeting, April 2001, Lake Louise, Alberta.

Member of the Scientific Program Committee for the 16<sup>th</sup> Canadian Society for Immunology Meeting, April 2002, Blue Mountain, Ontario.

Member of the Scientific Program Committee for the 17<sup>th</sup> Canadian Society for Immunology Meeting, April 2003, Lake Louise, Alberta.

Member of the Scientific Program Committee for the 18<sup>th</sup> Canadian Society for Immunology Meeting, April 2005., Whistler, British Columbia.

Chair of the 4<sup>th</sup> CFBS Northern Lights Symposium on Infection and Immunity, October 2006, Ottawa, Ontario.

Health Canada Scientific Advisory Committee for HIV Therapies (member, 2003-2009).

Health Canada Scientific Advisory Committee for Infectious Disease Therapies (member 2009-present).

Stemnet National Center of Excellence Training Awards Committee (member 2009-present).

#### 4.8 *International committees*

Convening chairman and organizer of the 1<sup>st</sup> International Avian CD Nomenclature Workshop. Montreal, June 1991.

Convening chairman of the Avian CD Nomenclature committee of the International Union of Immunology Societies (1991-2001).

Member of the Scientific Program Committee for the 12<sup>th</sup> International Congress of Immunology, July 2004, Montreal, Quebec.

Vice-Chair for the 7<sup>th</sup> International Veterinary Immunology Symposium, July 2004, Quebec City, Quebec.

Member of the General Assembly: International Union of Immunology Societies: 2004-2010.

Member of Council: International Union of Immunology Societies: 2010-present.

Treasurer and member of Executive Committee: International Union of Immunology Societies: 2016-present.

Member: Steering Committee: IUIS Congress Beijing October 2019.

Member: Scientific Program Committee: IUIS Congress Beijing October 2019.

## Publications

### *Refereed Publications*

1. **Ratcliffe, M.J.H.** and Ivanyi, J. Allelic exclusion of the surface expression of surface IgM allotypes on spleen and bursal B cells in the chicken. *Immunogenetics*. 1979. **9**: 149-156.
2. **Ratcliffe, M.J.H.** and Ivanyi, J. Allotype suppression in the chicken. I. Generation of chronic suppression in heterozygous but not in homozygous chickens. *Eur. J. Immunol.* 1979. **9**: 847-852
3. **Ratcliffe, M.J.H.** and Ivanyi, J. Allotype suppression in the chicken. II. Suppression in homozygous chickens with anti-allotype antibody and allotype disparate B cells. *Eur. J. Immunol.* 1981. **11**: 296-300.
4. **Ratcliffe, M.J.H.** and Ivanyi, J. Allotype suppression in the chicken. III Analysis of the recovery from suppression by neonatally injected or maternally derived antibodies. *Eur. J. Immunol.* 1981. **11**: 301-306.
5. **Ratcliffe, M.J.H.** and Ivanyi, J. Allotype suppression in the chicken. IV. Deletion of B cells and lack of suppressor cells during chronic suppression. *Eur. J. Immunol.* 1981. **11**: 306-310.
6. **Ratcliffe, M.J.H.** and Julius, M.H. H-2 restricted T-B cell interactions involved in polyspecific B cell responses mediated by soluble antigen. *Eur. J. Immunol.* 1982. **12**: 643-641.
7. **Ratcliffe, M.J.H.** and Julius, M.H. Two classes of bystander B cell response: activation requirements reflect those of B cells in general. *J. Immunol.* 1983. **131**: 581-586.
8. **Ratcliffe, M.J.H.** Allotype suppression in the chicken. V. Abnormal ratios of chronically suppressed IgM and IgG isotypes. *Cell. Immunol.* 1984. **83**: 208-214.
9. Vainio, O. and **Ratcliffe, M.J.H.** Proliferation of chicken peripheral blood leukocytes in response to pokeweed mitogen is macrophage dependent. *Cell. Immunol.* 1984. **85**: 225-243.
10. **Ratcliffe, M.J.H.** and Julius, M.H. T dependent activation of resting B cells mediated by concanavalin A. *Eur. J. Immunol.* 1984. **14**: 280-283.
11. **Ratcliffe, M.J.H.**, Julius, M.H. and Kim, K.-J. Heterogeneity in the response of T cells to antigen presented by B lymphoma cells. *Cell. Immunol.* 1984. **88**: 49-60.
12. Orme, I.M., **Ratcliffe, M.J.H.** and Collins, F.M. Acquired immunity to heavy infection with *mycobacterium bovis* BCG and its relationship to the development of non-specific unresponsiveness *in vitro*. *Cell. Immunol.* 1984. **88**: 285-296.
13. **Ratcliffe, M.J.H.** and Mitchison, N.A. Function of Ig receptors in B cell triggering. *Ann. Immunol. (Inst. Pasteur) Paris.* 1984. **135D**: 73-79, 105-106.

14. Owens, T., Czitrom, A.A., Gascoigne, N.R.J., Crispe, I.N., **Ratcliffe, M.J.H.**, Lai, P.K. and Mitchison, N.A. The presentation of cell surface alloantigens to T cells. *Immunobiol.* 1984. **168**: 189-201.
15. Pink, J.R.L., **Ratcliffe, M.J.H.** and Vainio, O. Immunoglobulin bearing stem cells for clones of B (bursa derived) lymphocytes. *Eur. J. Immunol.* 1985. **15**: 617-620.
16. **Ratcliffe, M.J.H.** Ontogeny and cloning of B cells in the bursa of Fabricius. *Immunol. Today* 1985. **6**: 223-227.
17. **Ratcliffe, M.J.H.** Lack of pre-B cells in hatched chickens. *Immunol. Today* 1985. **6**: 349-350.
18. Vainio, O., **Ratcliffe, M.J.H.** and Leanderson, T. Chicken T cell growth factor: use in the generation of long-term cultured T cell lines and biochemical characterisation. *Scand. J. Immunol.* 1986. **23**: 135-142.
19. **Ratcliffe, M.J.H.**, Lassila, O., Pink, J.R.L. and Vainio, O. Avian B cell precursors: cell surface immunoglobulin expression is an early, possibly bursa independent event. *Eur. J. Immunol.* 1986. **16**: 129-133.
20. **Ratcliffe, M.J.H.**, Lassila, O., Reynolds, J., Pink, J.R.L. and Vainio, O. A re-evaluation of the function of the bursa of Fabricius. *Prog. Clin. Biol. Res.* 1987. **238**: 3-14.
21. Mitchison, N.A. and **Ratcliffe, M.J.H.** B cells can be activated in more than one way. in *Paradoxes in Immunology*, Levy, J.G. and Nepom, G.T. Eds. CRC Press, 1987. pp. 163-169.
22. Vainio, O., Veromaa, T., Eerola, E., Toivanen, P. and **Ratcliffe, M.J.H.** Antigen-presenting cell-T cell interaction in the chicken is MHC class II restricted. *J. Immunol.* 1988. **140**: 2864-2868.
23. Julius, M.H., Rammensee, H.-G., **Ratcliffe, M.J.H.**, Lamers, M.C., Langhorne, J. and Kohler, G. The molecular interactions with helper T cells which limit antigen specific B cell differentiation. *Eur. J. Immunol.* 1988. **18**: 381-386.
24. Julius, M.H., Rammensee, H.-G., **Ratcliffe, M.J.H.**, Lamers, R., Langhorne, J. and Kohler, G. Why cognate Th-B interaction usually limits the activation of resting B cells. in *The T Cell Receptor*, Davis, M.M. and Kappler, J., Eds. Alan R. Liss Inc. 1988. pp. 217-227.
25. **Ratcliffe, M.J.H.** and Klaus, G.G.B. The biology of B cell activation. in *B Lymphocytes in Human Diseases*, Bird, G. and Calvert, J. Eds. Oxford University Press. 1988. pp. 102-129.
26. **Ratcliffe, M.J.H.** and Lamb, J.R. Lymphocyte purification, growth, cloning and functional assays. in *Pharmacology of Lymphocytes. Handbook of Experimental Pharmacology*, Moorley, J. and Bray, M.A. Eds. Springer-Verlag A.G. 1988. **85**: 319-343.



27. **Ratcliffe, M.J.H.** Generation of immunoglobulin heavy chain diversity subsequent to cell surface immunoglobulin expression in the avian bursa of Fabricius. *J. Exp. Med.* 1989. **170**: 1165-1173.
28. **Ratcliffe, M.J.H.** Development of the avian B lymphocyte lineage. *CRC Crit. Rev. Poult. Biol.* 1989. **2**: 207-234.
29. Huffnagle, G., **Ratcliffe, M.J.H.** and Humphries, E.H. Bu-2, a cell surface antigen present on distinct avian hematopoietic lineages, is expressed in germinal centers. *Hybridoma* 1989. **8**: 589-604.
30. **Ratcliffe, M.J.H.** and Tkalec, L. Cross-linking of the surface immunoglobulin of lymphocytes from the bursa of Fabricius results in second messenger generation. *Eur. J. Immunol.* 1990. **20**: 1073-1078.
31. **Ratcliffe, M.J.H.** and Paramithiotis, E. The end can justify the means. *Semin. Immunol.* 1990. **2**: 217-226.
32. **Ratcliffe, M.J.H.** (Ed.) B Lymphocyte Development. *Semin. Immunol.* 1990. **2**: 165-226.
33. Veillette, A. and **Ratcliffe, M.J.H.** Avian CD4 and CD8 interact with a cellular tyrosine protein kinase homologous to mammalian p56<sup>lck</sup>. *Eur. J. Immunol.* 1991. **21**: 397-401.
34. Benatar, T., Iacampo, S., Tkalec, L. and **Ratcliffe, M.J.H.** Expression of immunoglobulin genes in the avian embryo bone marrow revealed by retroviral transformation. *Eur. J. Immunol.* 1991. **21**: 2529-2536.
35. Paramithiotis, E., Tkalec, L. and **Ratcliffe, M.J.H.** High levels of CD45 are expressed co-ordinately with CD4 and CD8 on avian thymocytes. *J. Immunol.* 1991. **147**: 3710-3717.
36. **Ratcliffe, M.J.H.**, Coggeshall, K.M., Newell, M.K. and Julius, M.H. T cell receptor oligomerisation but not dimerisation, induces increased cytosolic calcium concentrations and reveals a lack of stable association between CD4 and the T cell receptor complex. *J. Immunol.* 1992. **148**: 1643-1651.
37. Srikumar, R., Cain, A.C., Vachon, V., Richardson, C.R., **Ratcliffe, M.J.H.**, Saarinen, L., Käyhty, H., Mäkelä, P.H. and Coulton, J.W. Monoclonal antibodies specific to porin of *Haemophilus influenzae* type b: localization of their cognate epitopes and tests of their biological activities. *Mol. Microbiol.* 1992. **6**: 665-676.
38. Chow, L.M.C., **Ratcliffe, M.J.H.** and Veillette, A. *tkl* is the avian homologue of the mammalian *lck* tyrosine protein kinase gene. *Mol. Cell. Biol.* 1992. **12**: 1226-1233.
39. Benatar, T., Tkalec, L. and **Ratcliffe, M.J.H.** Stochastic rearrangement of immunoglobulin variable region genes in chicken B cell development. *Proc Natl. Acad. Sci. USA.* 1992. **89**: 7615-7619.

40. Reddy, S.K., Silim, A. and **Ratcliffe, M.J.H.** Biological roles of the major capsid proteins and relationships between the two existing serotypes of infectious bursal disease virus. *Arch. Virol.* 1992. **127**: 209-222.
41. Srikumar, R., Dahan, D., Gras, M.F., **Ratcliffe, M.J.H.** , van Alphen, L. and Coulton, J.W. Antigenic sites on porin of *Haemophilus influenzae* type b: mapping with synthetic peptides and evaluation of structure predictions. *J. Bacteriol.* 1992. **174**: 4007-4016.
42. Marmor, M.D., Benatar, T. and **Ratcliffe, M.J.H.** Retroviral transformation *in vitro* of chicken T cells expressing either  $\alpha\beta$  or  $\gamma\delta$  T cell receptors by reticuloendotheliosis virus strain T. *J. Exp. Med.* 1993. **177**: 647-656.
43. **Ratcliffe, M.J.H.**, Benatar, T., Coumidis, A., Iacampo, S. and Marmor, M.D. Retroviral transformation as an approach to analyzing early stages of chicken B lymphocyte development. *Les colloques de l'I.N.R.A.* 1993. **62**: 331-336.
44. Paramithiotis, E. and **Ratcliffe, M.J.H.** Bursa dependent subpopulations of peripheral B lymphocytes in chicken blood. *Eur. J. Immunol.* 1993. **23**: 96-102.
45. Reddy, S.K., **Ratcliffe, M.J.H.** and Silim, A. Flow cytometric analysis of the neutralizing immune response against infectious bursal disease virus using avian retrovirus-transformed lymphoblastoid cell lines. *J. Virol. Methods.* 1993. **44**: 167-178.
46. Benatar, T. and **Ratcliffe, M.J.H.** Polymorphism of the functional immunoglobulin variable region genes in the chicken by exchange of sequence with donor pseudogenes. *Eur. J. Immunol.* 1993. **23**: 2448-2453.
47. **Ratcliffe, M.J.H.**, Boyd, R., Chen, C.H. and Vainio, O. Avian CD Nomenclature workshops, Montreal, June 1991, Budapest, August 1992 and Tours, September 1992. *Vet. Immunol. Immunopathol.* 1993. **38**: 375-386.
48. Paramithiotis, E. and **Ratcliffe, M.J.H.** Bursa dependent and independent peripheral B cell populations in the chicken. *Les colloques de l'I.N.R.A.* 1993. **62**: 325-330.
49. **Ratcliffe, M.J.H.** Ligation of cell surface immunoglobulin in the chicken bursa of Fabricius. *Res. Immunol.* 1993. **144**: 450-455.
50. Paramithiotis, E. and **Ratcliffe, M.J.H.** B cell emigration directly from the cortex of lymphoid follicles in the bursa of Fabricius. *Eur. J. Immunol.* 1994. **24**: 458-463.
51. Paramithiotis, E. and **Ratcliffe, M.J.H.** Survivors of bursal B cell production and emigration. *Poult Sci.* 1994. **73**: 991-997.
52. Moeck, G.S., Bazzaz, B.S.F., Gras, M.F., Ravi, T.S., **Ratcliffe, M.J.H.** and Coulton, J.W. Genetic insertion of a reporter epitope in the ferrichrome-iron receptor of *Escherichia coli* K-12. *J. Bacteriol.* 1994. **176**: 4250-4259.
53. **Ratcliffe, M.J.H.** and Jacobsen, K. Rearrangement and diversification of immunoglobulin genes in chicken B cell development. *Semin. Immunol.* 1994. **6**: 175-184.

54. Paramithiotis, E. Jacobsen, K. and **Ratcliffe, M.J.H.** Loss of cell surface immunoglobulin expression precedes B cell death by apoptosis in the bursa of Fabricius. *J. Exp. Med.* 1995. **181**: 105-113.
55. Tregaskes, C.A., Kong, F.K., Paramithiotis, E., Chen, C.L., **Ratcliffe, M.J.H.**, Davison, F., and Young, J. Identification and analysis of the expression of CD8 $\alpha\alpha$  and CD8 $\alpha\beta$  isoforms in chickens reveals a major TCR $\gamma\delta$  CD8 $\alpha\alpha$  subset of intestinal intraepithelial lymphocytes. *J. Immunol.* 1995. **154**: 4885-4494.
56. Chan, S.L., Alizadeh-Khiavi, K., Chronopoulos, S., Li, W., Fried, V., Smith, H.T., Butt, T., **Ratcliffe, M.J.H.** and Ali-Kahn, Z. Recombinant and amyloid-associated ubiquitin during *in vivo* amyloidogenesis. *Int. J. Clin. Invest.* 1995. **2** 191-194.
57. Moeck, G.S., **Ratcliffe, M.J.H.** and Coulton, J.W. Topological analysis of the *Escherichia coli* ferrichrome-iron receptor using monoclonal antibodies. *J. Bacteriol.* 1995. **177**: 6118-6125.
58. Jacobsen, K.A., Paramithiotis, E., Ewert, D.L. and **Ratcliffe, M.J.H.** Apoptotic cell death in the chicken bursa of Fabricius. In *Mechanisms of Lymphocyte Activation and Immune Regulation VI. Cell Cycle and Programmed Cell Death in the Immune System*. Gupta, S. and Cohen, J.J. (Eds.), Plenum Publishing Corp., 1996. pp 155-166.
59. Paramithiotis, E. and **Ratcliffe, M.J.H.** Evidence for phenotypic heterogeneity among B cells emigrating from the bursa of Fabricius. A reflection of functional diversity? *Curr. Top. Microbiol. Immunol.* 1996. **212**: 27-34.
60. **Ratcliffe, M.J.H.**, Paramithiotis, E., Coumidis, A., Sayegh, C.E., Demaries, S.L., Martinez, O. and Jacobsen, K.A. The bursa of Fabricius and its role in avian B lymphocyte development. In *Poultry Immunology*, Davison, F., Payne, J. and Morris, T.R. (Eds.), Carfax, 1996. pp11-30.
61. **Ratcliffe, M.J.H.** The study of B cell differentiation. In *Manual of Immunological Methods, 2<sup>nd</sup> Edition*, Lefkovits, I. (Ed), Academic Press, 1997. pp 2200-2211.
62. **Ratcliffe, M.J.H.** Chicken immunoglobulin isotypes and allotypes. In *Handbook of Experimental Immunology, 5<sup>th</sup> edition*, Weir, D.W., Herzenberg, L.A. and Herzenberg, L.A. (Eds), Blackwell Scientific Publications, Oxford, 1997. pp 24.1-24.15.
63. Jeurissen, S.H.M., Vainio, O. and **Ratcliffe, M.J.H.** Leukocyte markers in the chicken. In *Handbook of Vertebrate Immunology*, Pastoret, P.P., Griebel, P. and Govaerts, H. (Eds.), Academic Press Ltd., London. 1998. pp81-86.
64. Demaries, S.L. and **Ratcliffe, M.J.H.** Cell surface and secreted immunoglobulins in chicken B cell development. In *Handbook of Vertebrate Immunology*, Pastoret, P.P., Griebel, P. and Govaerts, H. (Eds.), Academic Press Ltd., London. 1998. pp89-92.
65. Sayegh, C.E., Drury, G.L., Demaries, S.L., Iacampo, S. and **Ratcliffe, M.J.H.** Colonization of the bursa of Fabricius by slg<sup>+</sup> B cell precursors lacking V(D)J encoded determinants: a clonal analysis. In *10<sup>th</sup> International Congress of Immunology*, Talwar, G.P., Nath, I., Ganguly, N.K. and Rao, K.V.S. (Eds.), Monduzzi Editore, Bologna, Italy. 1998. pp 111-114.

66. Sayegh, C.E., Demaries, S.L., Iacampo, S. and **Ratcliffe, M.J.H.** Development of B cells that lack V(D)J-encoded determinants in the avian embryo bursa of Fabricius. *Proc. Natl. Acad. Sci. USA*. 1999. **96**: 10806-10811.
67. Sayegh, C.E., Drury, G.L. and **Ratcliffe, M.J.H.** Efficient antibody diversification by gene conversion *in vivo* in the absence of selection for V(D)J-encoded determinants. *EMBO J*. 1999. **18**: 6319-6328.
68. Sayegh, C.E., Rao, M.A. and **Ratcliffe, M.J.H.** Avian B cell development: lessons from transgenic models. *Vet. Immunol. Immunopathol*. 1999. **72**: 31-37.
69. Sayegh, C.E., Demaries, S.L., Friedmann, J., Pike, K. and **Ratcliffe, M.J.H.** The chicken B cell receptor complex and its role in avian B cell development. *Immunol. Rev*. 2000. **175**: 187-200.
70. Sayegh, C.E. and **Ratcliffe, M.J.H.** Perinatal deletion of B cells expressing surface immunoglobulin molecules that lack V(D)J-encoded determinants in the bursa of Fabricius is not due to intra-follicular competition. *J. Immunol*. 2000. **164**: 5041-5048.
71. Pike, K.A., Friedmann, J.E., Iacampo, S., Sandhu, R. K. and **Ratcliffe, M.J.H.** Replacement of surface immunoglobulin expression by the cytoplasmic domains of the Ig $\alpha$ / $\beta$  heterodimer in early B cell development. In *Proceedings of the 6<sup>th</sup> AIRG Meeting*, Schat, T., Dietert, R., Marsh, J. and Naqi, S. (Eds.), AAAP Press. 2001. 90-97.
72. **Ratcliffe, M.J.H.** and Pike, K.A. Influence of antibody diversification on the mechanism of haplotype exclusion of immunoglobulin gene expression. *Semin. Immunol*. 2002. **14**: 199-205. Second round comments on the issue of haplotype exclusion. *ibid* **14**: 233. Final round comments on the issue of haplotype exclusion. *ibid* **14**: 243-244. Final final round comments on the issue of haplotype exclusion. *ibid* **14**: 245.
73. Pike, K.A. and **Ratcliffe, M.J.H.** Cell surface immunoglobulin receptors in B cell development. *Semin. Immunol*. 2002. **14**: 351-358.
74. **Ratcliffe, M.J.H.** B cell development in gut associated lymphoid tissues. *Vet. Immunol. Immunopathol*. 2002. **87**: 337-341.
75. Pike, K.A., Baig, E. and **Ratcliffe, M.J.H.** The avian B-cell receptor complex: distinct roles of Ig $\alpha$  and Ig $\beta$  in B-cell development. *Immunol. Rev*. 2004. **197**: 10-15.
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