

CURRICULUM VITAE

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UNIVERSITY EDUCATION

1979-1982: B.A., First Class Honours in Natural Sciences (Part II course, Biochemistry), University of Cambridge, U.K.

1982-1985: Ph.D. in Biochemistry at the Department of Biochemistry, University of Cambridge, U.K. Dissertation title: Molecular genetics of an insecticidal delta-endotoxin from *Bacillus thuringiensis* var. *israelensis*. (Research supervisor: Prof. D.J. Ellar).

ACADEMIC APPOINTMENTS

1985-1988: Junior Research Fellow at Gonville and Caius College, Cambridge, whilst working at the Department of Biochemistry, University of Cambridge, U.K.

1988-1990: Stanley Elmore Senior Medical Research Fellow at Sidney Sussex College, Cambridge whilst working at the MRC Laboratory of Molecular Biology, Cambridge, U.K.

1990-1996: Assistant Professor in the Department of Microbiology, UT Southwestern Medical Center, Dallas, Texas, U.S.A.

1996-2002: Associate Professor with tenure, Department of Microbiology, UT Southwestern Medical Center, Dallas, Texas, U.S.A.

1998-2002: Associate Professor with tenure, Center for Immunology (Center formed in 1998; became Department of Immunology in 2007), UT Southwestern Medical Center, Dallas, Texas, U.S.A.

2002-2014: Professor, Department of Immunology, UT Southwestern Medical Center, Dallas, Texas, U.S.A.

2004-2014: Paul and Betty Meek-FINA Professorship in Molecular Immunology, UT Southwestern Medical Center, Dallas, Texas, U.S.A.

2014-2018: Professor, Department of Molecular and Cellular Medicine and Department of Microbial Pathogenesis and Immunology, Texas A&M Health Science Center, College Station, Texas, U.S.A.

2018-2020: Research Professor, Department of Molecular and Cellular Medicine and Department of Microbial Pathogenesis and Immunology, Texas A&M Health Science Center, College Station, Texas, U.S.A.

2018-present: Professor of Molecular Immunology and Director of Translational Immunology, Centre for Cancer Immunology, University of Southampton, U.K.

HONORS, FELLOWSHIPS AND PROFESSORSHIPS

1979-1981: Entrance Exhibition at Gonville and Caius College, Cambridge, U.K.

1981-1982: Senior Scholarship at Gonville and Caius College, Cambridge, U.K.

1982-1985: Graduate Scholarship at Gonville and Caius College, Cambridge, U.K.

1985: Elected into Junior Research Fellowship at Gonville and Caius College, Cambridge, U.K. Held from October 1985-September 1988.

1988: Elected into 'Stanley Elmore Senior Medical Research Fellowship' at Sidney Sussex College, Cambridge, U.K. Held from October 1988-August 1990.

1997-2000: Established Investigator Award, American Heart Association.

2004-2014: Paul and Betty Meek-FINA Professorship in Molecular Immunology, UT Southwestern Medical Center, Dallas, Texas, U.S.A.

2009-present: Board of Distinguished Advisors, The Antibody Society.

2011: Visiting Professor, University of Oslo, Norway.

2018-2023: Royal Society Wolfson Research Merit Award.

2020-2021: Vice-President, The Antibody Society.

REVIEW PANELS, EDITORIAL BOARDS AND SCIENTIFIC ADVISORY BOARDS

1994: Department of Energy, Medical Applications and Biophysical Research Division.

1996-present: Member of special emphasis panels or ad hoc reviewer (for Immunological Sciences, Allergy and Immunology/Cellular and Molecular Immunology A Study sections), National Institutes of Health.

1996-present: ad hoc reviewer for Wellcome Trust (U.K.), Biotechnology and Biological Sciences Research Council (U.K.), Swiss National Science Foundation, Israel Science Foundation, Swedish Research Council for Engineering Sciences, Human Science Frontier Program and French National Research Agency.

1997-1999: American Heart Association, Texas Affiliate.

1993-2003: Editorial Advisory Board, Journal of Bioconjugate Chemistry.

2003-present: Editorial Board, Protein Engineering, Design and Selection (formerly Protein Engineering).

2009-2015: Member, Fellowship Review Committee, National Multiple Sclerosis Society.

2009-present: Editorial Board of mAbs.

2012: Programme Advisory Committee, Regional Centre for Biotechnology, Gurgaon, New Delhi, India.

2015-present: Scientific Advisory Board of the CPRIT Therapeutic Monoclonal Antibody Lead Optimization and Development Core Facility (Program leader: Zhiqiang An, Houston, TX).

2017-present: Scientific Advisory Board for Antibody Biology and Engineering Gordon Research Conference.

2019-present: Board of Directors, Antibody Society.

CONFERENCE ORGANIZATION

March-April 2009: Co-organizer of Keystone Meeting, ‘Antibodies as Drugs’, Whistler, Vancouver, Canada.

March 2010: Lead co-organizer of a new Gordon Research Conference, ‘Antibody Biology and Engineering’ held in Ventura, CA.

June 2016: Co-organizer of FASEB Science Research Conference (‘Immunoreceptors’), Snowmass, CO.

June 2018: Lead co-organizer of FASEB Science Research Conference (‘Immunoreceptors and Immunotherapy’), Snowmass, CO.

PUBLICATIONS

i) Papers in refereed journals

1. Ward, E.S. and Ellar, D.J. (1983) Assignment of the delta-endotoxin gene of *Bacillus thuringiensis* var. *israelensis* to a specific plasmid by curing analysis, *FEBS Letts.*, **158**, 45-49.

2. Ward, E.S., Ellar, D.J. and Todd, J.A. (1984) Cloning and expression in *Escherichia coli* of the insecticidal delta-endotoxin gene of *Bacillus thuringiensis* var. *israelensis*, *FEBS Letts.*, **175**, 377-381.

3. Ward, E.S. and Ellar, D.J. (1986) *Bacillus thuringiensis* var. *israelensis* delta-endotoxin: Nucleotide sequence and characterisation of the transcripts in *Bacillus thuringiensis* and *Escherichia coli*, *J. Mol. Biol.*, **191**, 1-11.

4. Ward, E.S., Ridley, A.R., Ellar, D.J. and Todd, J.A. (1986) *Bacillus thuringiensis* var. *israelensis* delta-endotoxin: Cloning and expression of the toxin in sporogenic and asporogenic strains of *Bacillus subtilis*, *J. Mol. Biol.*, **191**, 13-22.

5. Haider, M.Z., Ward, E.S. and Ellar, D.J. (1987) Cloning and heterologous expression of an insecticidal delta-endotoxin gene from *Bacillus thuringiensis* var. *aizawai* IC1 toxic to both lepidoptera and diptera, *Gene*, **52**, 297-302.
6. Ward, E.S and Ellar, D.J. (1987) Nucleotide sequence of a *Bacillus thuringiensis* var. *israelensis* gene encoding a 130 kD delta-endotoxin, *Nucleic Acids Res.*, **15**, 7195.
7. Earp, D.J., Ward, E.S. and Ellar, D.J. (1987) Investigation of possible homologies between crystal proteins of three mosquitocidal strains of *Bacillus thuringiensis*, *FEMS Microbiol. Letts.*, **42**, 195-199.
8. Ward, E.S. and Ellar, D.J. (1988) Cloning and expression of two homologous genes of *Bacillus thuringiensis* var. *israelensis* which encode 130-kilodalton mosquitocidal proteins, *J. Bacteriol.*, **170**, 727-735.
9. Ward, E.S., Ellar, D.J. and Chilcott, C. N. (1988) Single amino acid changes in the *Bacillus thuringiensis* var. *israelensis* delta-endotoxin affect the toxicity and expression of the protein, *J. Mol. Biol.*, **202**, 527-535.
10. Ward, E.S., Güssow, D., Griffiths, A., Jones, P.T. and Winter, G. (1989) Binding activities of a repertoire of single immunoglobulin variable domains secreted from *Escherichia coli*, *Nature*, **341**, 544-546.
11. Boulot, G., Eisele, J.L., Bentley, G.A., Bhat, T.N., Ward, E.S., Winter, G. and Poljak, R.J. (1990) Crystallization and preliminary X-ray diffraction study of the bacterially expressed Fv from the monoclonal anti-lysozyme antibody D1.3 and its complex with the antigen, lysozyme, *J. Mol. Biol.*, **213**, 617-619.
12. Ward, E.S. (1991) Expression and secretion of T cell receptor V α and V β domains using *Escherichia coli* as a host, *Scand. J. Immunol.*, **34**, 215-220.
13. Ward, E.S. (1992) Secretion of T cell receptor fragments from recombinant *Escherichia coli* cells, *J. Mol. Biol.*, **224**, 885-890.
14. Borrebaeck, C.A., Malmborg, A-C., Furebring, C., Michaelsson, A., Ward, S., Danielsson, L. and Ohlin, M. (1992) Kinetic analysis of recombinant antibody-antigen interactions: relation between structural domains and antigen binding, *Bio\technol.*, **10**, 697-698.
15. Cumber, A.J., Ward, E.S., Winter, G., Parnell, G.D. and Wawrzynczak, E.J. (1992) Comparative stabilities *in vitro* and *in vivo* of a recombinant mouse antibody FvCys fragment and a bisFvCys conjugate, *J. Immunol.*, **149**, 120-126.
16. Kim, J-K., Tsen, M-F., Ghetie, V. and Ward, E.S. (1994) Identifying amino acid residues that influence plasma clearance of murine IgG1 fragments by site-directed mutagenesis, *Eur. J. Immunol.*, **24**, 542-548.
17. Fields, B.A., Ysern, X., Poljak, R.J., Shao, X., Ward, E.S. and Mariuzza, R.A.(1994) Crystallization and preliminary X-ray diffraction study of a bacterially produced T-cell antigen receptor V α domain, *J. Mol. Biol.*, **239**, 339-341.
18. Kim, J-K., Tsen, M-F., Ghetie, V. and Ward, E.S. (1994) Catabolism of the murine IgG1 molecule: evidence that both CH2-CH3 domain interfaces are required for persistence of IgG1 in the circulation of mice, *Scand. J. Immunol.*, **40**, 457-465.

19. Kim, J-K., Tsen, M-F., Ghetie, V. and Ward, E.S. (1994) Localisation of the site of the murine IgG1 molecule that is involved in binding to the murine intestinal Fc receptor, *Eur. J. Immunol.*, **24**, 2429-2434.
20. Ciubotaru, M. and Ward, E.S. (1994) Expression of soluble T cell receptor fragments derived from a T cell clone associated with murine collagen induced arthritis, *Immunol. Letts.*, **43**, 139-141.
21. Filikov, A.V., Jones, J.R., Myasoedov, N.F. and Ward, E.S. (1994) Application of solid state catalytic hydrogen isotope exchange to the tritium labeling of lysozyme, *J. Label. Cmpds. Radiopharm.*, **XXXVI**, 179-185.
22. Ward, E.S. (1995) VH shuffling can be used to convert an Fv fragment of anti-hen egg lysozyme specificity to one that recognises a T cell receptor V α , *Mol. Immunol.*, **32**, 147-156.
23. Kim, J-K., Tsen, M-F., Ghetie, V. and Ward, E.S. (1995) Evidence that the hinge region plays a role in maintaining serum levels of the murine IgG1 molecule, *Mol. Immunol.*, **32**, 467-475.
24. Ober, R.J. and Ward, E.S. (1995) Correcting for phase distortion of NMR spectra analyzed using singular value decomposition of Hankel matrices, *J. Magn. Res.*, **114**, 120-123.
25. Jahn, S., Roggenbuck, D., Niemann, B. and Ward, E.S. (1995) Expression of monovalent fragments of human IgM autoantibody in *E. coli*. The input of somatically mutated CDR1/CDR2 and of the CDR3 into antigen binding specificity, *Immunobiol.*, **193**, 400-419.
26. Falcioni, F., Vidovic, D., Ward, E.S., Bolin, D., Singh, G., Shah, H., Ober, B. and Nagy, Z.A. (1995) Self tolerance to T cell receptor V β sequences, *J. Exp. Med.*, **182**, 249-254.
27. Rosloniec, E.F., Brand, D.D., Whittington, K.B., Stuart, J.M., Ciubotaru, M. and Ward, E.S. (1995) Vaccination with a recombinant V α domain of a T cell receptor prevents the development of collagen induced arthritis, *J. Immunol.*, **155**, 4504-4511.
28. Fields, B.A., Ober, B., Malchiodi, E.L., Lebedeva, M.I., Braden, B., Ysern, X., Kim, J-K., Shao, X., Ward, E.S. and Mariuzza, R.A. (1995) Crystal structure of the V α domain of a T cell antigen receptor, *Science*, **270**, 1821-1824.
29. Ghetie, V., Hubbard, J.G., Kim, J-K., Tsen, M-F., Lee, Y. and Ward, E.S. (1996) Abnormally short serum half lives of IgGs in β 2-microglobulin deficient mice, *Eur. J. Immunol.*, **26**, 690-696.
30. Popov, S.P., Hubbard, J. G. and Ward, E.S. (1996) A novel and efficient route for the isolation of antibodies that recognise T cell receptor V α s, *Mol. Immunol.* **33**, 493-502.
31. Popov, S.P., Hubbard, J. G., Kim, J-K., Ober, B., Ghetie, V. and Ward, E.S. (1996) The stoichiometry and affinity of the interaction of murine Fc fragments with the MHC class I related receptor, FcRn, *Mol. Immunol.* **33**, 521-530.
32. Medesan, C., Radu, C., Kim, J-K., Ghetie, V. and Ward, E.S. (1996) Localization of the site of the IgG molecule that regulates maternofetal transmission in mice, *Eur. J. Immunol.*, **26**, 2533-2536.
33. Ober, R.J. and Ward, E.S. (1996) A system theoretic formulation of NMR experiments, *J. Math. Chem.*, **20**, 47-65.
34. Medesan, C., Matesoi, D., Radu, C., Ghetie, V. and Ward, E.S. (1997) Delineation of the amino acid residues involved in transcytosis and catabolism of mouse IgG, *J. Immunol.*, **158**, 2211-2217.

35. Li, H., Lebedeva, M.I., Ward, E.S. and Mariuzza, R.A. (1997) Dual conformations of a T cell receptor V α homodimer: implications for variability in V α V β domain associations, *J. Mol. Biol.*, **269**, 385-394.
36. Ghetie, V., Popov, S., Borvak, J., Radu, C., Matesoi, D., Medesan, C., Ober, R.J. and Ward, E.S. (1997) Increasing the serum persistence of an IgG fragment by random mutagenesis, *Nature Biotech.*, **15**, 637-640.
37. Kumar, V., Coulsell, E., Ober, B., Hubbard, G., Sercarz, E. and Ward, E.S. (1997) Recombinant T cell receptor molecules can prevent and reverse experimental autoimmune encephalomyelitis: dose effects and involvement of both CD4⁺ and CD8⁺ T cells, *J. Immunol.*, **159**, 5150-5156.
38. Ober, R.J. and Ward, E.S. (1997) On the class of attainable multidimensional NMR spectra, *J. Math. Chem.*, **22**, 1-10.
39. Radu, C., Ober, B.T., Colantonio, L., Qadri, A. and Ward, E.S. (1998) Expression and characterization of recombinant, soluble peptide:I-A complexes associated with murine experimental autoimmune diseases, *J. Immunol.*, **160**, 5915-5921.
40. Medesan, C., Cianga, P., Mummert, M., Stanescu, D., Ghetie, V. and Ward, E.S. (1998) Comparative studies of rat IgGs to further delineate the Fc:FcRn interaction site, *Eur. J. Immunol.*, **28**, 2092-2100.
41. Borvak, J., Richardson, J., Medesan, C., Antohe, F., Radu, C., Simionescu, M., Ghetie, V. and Ward, E.S. (1998) Functional expression of the MHC Class I related receptor, FcRn, in endothelial cells of mice, *Int. Immunol.*, **10**, 1289-1298.
42. Thatte, J., Qadri, A., Radu, C. and Ward, E.S. (1999) Molecular requirements for T cell recognition by an MHC Class II restricted T cell receptor: the involvement of the fourth hypervariable loop of the V α domain, *J. Exp. Med.*, **189**, 509-519.
43. Aroeira, L.S., Mouton, C.G., Toran, J.L., Ward, E.S. and Martinez-A, C. (1999) Anti-V β antibodies induce and maintain staphylococcal enterotoxin B-triggered V β 8 cell anergy, *Eur. J. Immunol.*, **29**, 437-445.
44. Qadri, A., Radu, C., Thatte, J., Ober, B. and Ward, E.S. (1999) Characterization of the interaction of a T cell receptor alpha chain variable domain with major histocompatibility class II I-A molecules, *Int. Immunol.*, **11**, 967-977.
45. Ober, R.J., Ramakrishna, V. and Ward, E.S. (1999) On the role of reachability and observability in the analysis of NMR experiments, *J. Math. Chem.*, **26**, 15-26.
46. Ober, R.J. and Ward, E.S. (1999) The choice of reference cell in the analysis of kinetic data using BIAcore, *Anal. Biochem.*, **271**, 70-80.
47. Ober, R.J. and Ward, E.S. (1999) The influence of signal noise on the accuracy of kinetic constants measured by surface plasmon resonance experiments, *Anal. Biochem.*, **273**, 49-59.
48. Cianga, P., Medesan, C., Richardson, J., Ghetie, V. and Ward, E.S. (1999) Identification and function of FcRn in mammary gland of lactating gland, *Eur. J. Immunol.*, **29**, 2515-2523.

49. Kim, J-K., Firan, M., Radu, C., Kim, C-H., Ghetie, V. and Ward, E.S. (1999) Mapping of the site on human IgG1 for binding of the MHC class I related receptor, FcRn, *Eur. J. Immunol.*, **29**, 2819-2815.
50. Schuck, P., Radu, C. and Ward, E.S. (1999) Sedimentation equilibrium analysis of recombinant mouse FcRn with murine IgG1, *Mol. Immunol.*, **36**, 1117-1125.
51. Qadri, A., Radu, C.G., Thatte, J., Cianga, P., Ober, B.T., Ober, R.J. and Ward, E.S. (2000) A role for the region encompassing the c' strand of a T cell receptor V α domain in T cell activation events, *J. Immunol.*, **165**, 820-829.
52. Radu, C., Anderton, S.M., Firan, M., Wraith, D.C. and Ward, E.S. (2000) Detection of autoreactive T cells in H-2^u mice using peptide-MHC multimers, *Int. Immunol.*, **12**, 1553-1560.
53. Anderton, S.M., Radu, C.G., Lowrey, P.A., Ward, E.S. and Wraith, D.C. (2001) Negative selection during the peripheral immune response to antigen, *J. Exp. Med.*, **193**, 1-11.
54. Kumar, V., Maglione, J., Thatte, J., Pederson, B., Sercarz, E. and Ward, E.S. (2001) Induction of a type I regulatory CD4 T cell response following V β 8.2 DNA vaccination results in immune deviation and protection from experimental autoimmune encephalomyelitis, *Int. Immunol.*, **13**, 835-841.
55. Firan, M., Bawdon, R., Radu, C.G., Ober, R.J., Eaken, D., Antohe, F., Ghetie, V. and Ward, E.S. (2001) The MHC Class I related receptor, FcRn, plays an essential role in the maternofetal transfer of gammaglobulin in humans, *Int. Immunol.*, **13**, 993-1002.
56. Garcia, K.C., Radu, C.G., Ho, J., Ober, R.J. and Ward, E.S. (2001) Kinetics and thermodynamics of T cell receptor-autoantigen interactions in murine experimental autoimmune encephalomyelitis, *Proc. Natl. Acad. Sci. USA*, **98**, 6818-6823.
57. Machius, M., Cianga, P., Deisenhofer, J. and Ward, E.S. (2001) Crystal structure of a T cell receptor V α 11 (AV11S5) domain: new canonical forms for the first and second complementarity determining regions, *J. Mol. Biol.*, **310**, 689-698.
58. Ober, R.J., Radu, C.G., Ghetie, V. and Ward, E.S. (2001) Differences in promiscuity for antibody-FcRn interactions across species: implications for therapeutic antibodies, *Int. Immunol.*, **13**, 1551-1559.
59. Qadri, A. and Ward, E.S. (2001) Activation of a T cell hybridoma by alloligand results in differential effects on IL-2 secretion and activation induced cell death, *Eur. J. Immunol.*, **31**, 3825-3832.
60. Deng, C., Minguela, A., Hussain, R.Z., Lovett-Racke, A.E., Radu, C.G., Ward, E.S. and Racke, M.K. (2002) Expression of the tyrosine phosphatase SHP-1 determines T cell activation threshold and severity of experimental autoimmune encephalomyelitis, *J. Immunol.*, **168**, 4511-4518.
61. Bäcklund, J., Treschow, A., Firan, M., Malmström, V., Issazadeh-Navikas, S., Ward, E.S. and Holmdahl, R. (2002) Reversal of tolerance induced by transplantation of skin expressing the immunodominant T cell epitope of rat type II collagen entitles development of collagen-induced arthritis but not graft rejection, *Eur. J. Immunol.*, **32**, 1773-1783.
62. Ober, R.J. and Ward, E.S. (2002) Compensation for loss of ligand activity in surface plasmon resonance experiments, *Anal. Biochem.*, **306**, 228-236.

63. He, X., Radu, C., Sidney, J., Sette, A., Ward, E.S. and Garcia, K.C. (2002) Structural snapshot of aberrant antigen presentation linked to autoimmunity: the immunodominant epitope of myelin basic protein complexed with I-A^u, *Immunity*, **17**, 83-94.
64. Spiekermann, G.M., Finn, P.W., Ward, E.S., Dumont, J., Dickinson, B.L., Blumberg, R.S. and Lencer, W.I. (2002) Receptor-mediated IgG transport across mucosal barriers in adult life: Functional expression of FcRn in the mammalian lung, *J. Exp. Med.*, **196**, 303-310 .
65. Dall'Acqua, W.F., Woods, R.M., Ward, E.S., Palaszynski, S.R., Patel, N.K., Brewah, Y.A., Wu, H., Kiener, P.A. and Langermann, S. (2002) Increasing the affinity of a human IgG1 to the neonatal Fc receptor: biological consequences, *J. Immunol.*, **169**, 5171-5180.
66. Ober, R.J., Lin, Z., Ye, H. and Ward, E.S. (2002) Achievable accuracy of parameter estimation for multidimensional NMR experiments, *J. Magn. Res.*, **157**, 1-16.
67. Ober, R.J., Caves, J. and Ward, E.S. (2002) Analysis of exponential data using a non-iterative technique: application to surface plasmon resonance experiments, *Anal. Biochem.*, **312**, 57-65.
68. Braciak, T.A., Pedersen, B., Chin, J., Hsiao, C., Ward, E.S., Maricic, I., Jahng, A., Graham, F.L., Gauldie, J., Sercarz, E.E. and Kumar, V. (2003) Protection against experimental autoimmune encephalomyelitis generated by a recombinant adenovirus vector expressing the V β 8.2 TCR is disrupted by coadministration with vectors expressing IL-4 or -10, *J. Immunol.*, **170**, 765-774.
69. Ward, E.S., Zhou, J., Ghetie, V. and Ober, R.J. (2003) Evidence to support the cellular mechanism involved in serum IgG homeostasis in humans, *Int. Immunol.*, **15**, 187-195.
70. Huang, J., Han, M., Minguela, A., Pastor, S., Qadri, A. and Ward, E.S. (2003) T cell recognition of distinct peptide-I-A^u conformers in murine experimental autoimmune encephalomyelitis, *J. Immunol.*, **171**, 2467-2477.
71. Zhou, J., Johnson, J., Ghetie, V., Ober, R.J. and Ward, E.S. (2003) Generation of mutated variants of the human form of the MHC class I-related receptor, FcRn, with increased affinity for mouse immunoglobulin G, *J. Mol. Biol.*, **332**, 901-913.
72. Cianga, P., Cianga, C., Cozma, L., Ward, E.S. and Carasevici, E. (2003) The MHC class I-related receptor, FcRn, is expressed in the epithelial cells of the human mammary gland, *Hum. Immunol.*, **64**, 1152-1159.
73. Ober, R.J., Ram, S. and Ward, E.S. (2004) Localization accuracy in single molecule microscopy, *Biophys. J.*, **86**, 1185-1200.
74. Hunt, L.R., Ward, E.S. and Ober, R.J. (2004) Approximation of trajectories of nonlinear systems by iterates of systems with linear state dynamics, *Systems and Control Letts.*, **51**, 377-381.
75. Huang, J., Vestberg, M., Minguela, A., Holmdahl, R. and Ward, E.S. (2004) Analysis of autoreactive T cells associated with murine collagen-induced arthritis using peptide-MHC multimers, *Int. Immunol.*, **16**, 283-293.
76. Ober, R.J., Martinez, C., Vaccaro, C., Zhou, J. and Ward, E.S. (2004) Visualizing the site and dynamics of IgG salvage by the MHC Class I-related receptor, FcRn, *J. Immunol.*, **172**, 2021-2029.

77. Ober, R.J., Martinez, C., Lai, X., Zhou, J. and Ward, E.S. (2004) Exocytosis of IgG as mediated by the receptor, FcRn: an analysis at the single-molecule level, *Proc. Natl. Acad. Sci. USA*, **101**, 11076-11081.
78. Prabhat, P., Ram, S., Ward, E.S. and Ober, R.J. (2004) Simultaneous imaging of different focal planes in fluorescence microscopy for the study of cellular dynamics in three dimensions, *IEEE Transactions Nanobioscience*, **3**, 237-242.
79. Ober, R.J., Lai, X., Lin, Z. and Ward, E.S. (2005) State space realization of a three dimensional image set with application to noise reduction in fluorescent microscopy images of cells, *Multidimensional Systems and Signal Processing*, **16**, 7-47.
80. Lai, X., Lin, Z., Ward, E.S. and Ober, R.J. (2005) Noise suppression of point spread functions and its influence on deconvolution of three-dimensional fluorescence microscopy image sets, *J. Microscopy*, **217**, 93-108.
81. Zhou, J., Mateos, F., Ober, R.J. and Ward, E.S. (2005) Conferring the binding properties of the mouse MHC Class I-related receptor, FcRn, onto the human ortholog by sequential rounds of site-directed mutagenesis, *J. Mol. Biol.*, **345**, 1071-1081.
82. Huang, J.C., Ober, R.J. and Ward, E.S. (2005) The central residues of a T cell receptor sequence motif are key determinants of autoantigen recognition in murine experimental autoimmune encephalomyelitis, *Eur. J. Immunol.*, **35**, 299-304.
83. Ward, E.S., Martinez, C., Vaccaro, C., Zhou, J., Tang, Q. and Ober, R.J. (2005) From sorting endosomes to exocytosis: association of Rab4 and Rab11 GTPases with the Fc receptor, FcRn, during recycling, *Mol. Biol. Cell.*, **16**, 2028-2038.
84. Vaccaro, C., Zhou, J., Ober, R.J. and Ward, E.S. (2005) Engineering the Fc region of immunoglobulin G to modulate *in vivo* antibody levels, *Nature Biotechnol.*, **23**, 1283-1288.
85. Lin, Z., Zou, Q., Ward, E.S. and Ober, R.J. (2005) Cramer Rao lower bound for parameter estimation in nonlinear systems, *IEEE Signal Processing Letters*, **12**, 855-858.
86. Ram, S., Ward, E.S. and Ober, R.J. (2006) A stochastic analysis of performance limits for optical microscopes, *Multidimensional Systems and Signal Processing*, **17**, 27-57.
87. Ram, S., Ward, E.S. and Ober, R.J. (2006) Beyond Rayleigh's criterion: a resolution measure with application to single molecule microscopy, *Proc. Natl. Acad. Sci. USA*, **103**, 4457-4462.
88. Pastor, S., Vaccaro, C.G., Minguela, A., Ober, R.J. and Ward, E.S. (2006) Analyses of T cell receptor clustering at the T cell-antigen presenting cell interface and its impact on the activation of naïve CD4⁺ cells, *Int. Immunol.*, **18**, 1615-1625.
89. Vaccaro, C., Bawdon, R., Wanjie, S., Ober, R.J. and Ward, E.S. (2006) Divergent activities of an engineered antibody in murine and human systems have implications for therapeutic antibodies, *Proc. Natl. Acad. Sci. USA*, **103**, 18709-18714.
90. Minguela, A., Pastor, S., Mi, W., Richardson, J.A. and Ward, E.S. (2007) Feedback regulation of murine autoimmunity via dominant anti-inflammatory effects of interferon γ , *J. Immunol.*, **178**, 134-144.

91. Lambracht-Washington, D., O'Connor, K.C., Cameron, E., Jowdry, A., Ward, E.S., Frohman, E., Racke, M.K. and Monson, N.L. (2007) Antigen specificity of clonally expanded and receptor edited cerebrospinal fluid B cells from patients with relapsing remitting multiple sclerosis, *J. Neuroimmunol.*, **186**, 164-176.
92. Prabhat, P., Gan, Z., Chao, J., Ram, S., Vaccaro, C., Gibbons, S., Ober, R.J. and Ward, E.S. (2007) Elucidation of intracellular recycling pathways leading to exocytosis of the Fc receptor, FcRn, using multifocal plane microscopy, *Proc. Natl. Acad. Sci. USA*, **104**, 5889-5894.
93. Ram, S., Prabhat, P., Chao, J., Ward, E.S. and Ober, R.J. (2008) High accuracy 3D quantum tracking with multifocal plane microscopy for the study of fast intracellular dynamics in live cells, *Biophys J.*, **95**, 6025-6043.
94. Mi, W., Wanjie, S., Lo, S-T., Gan, Z., Pickl-Herk, B., Ober, R.J. and Ward, E.S. (2008) Targeting the neonatal Fc receptor for antigen delivery using engineered Fc fragments, *J. Immunol.*, **181**, 7550-7561.
95. Perez-Montoyo, H., Vaccaro, C., Hafner, M., Ober, R.J., Müller, W. and Ward, E.S. (2009) Conditional deletion of the MHC Class I-related receptor, FcRn, reveals the sites of IgG homeostasis in mice, *Proc. Natl. Acad. Sci. USA*, **106**, 2788-2793.
96. Gan, Z., Ram, S., Vaccaro, C., Ober, R.J. and Ward, E.S. (2009) Analyses of the recycling receptor, FcRn, in live cells reveal novel pathways for lysosomal delivery, *Traffic*, **10**, 600-614.
97. Ram, S., Prabhat, P., Ward, E.S. and Ober, R.J. (2009) Improved single particle localization accuracy with dual objective multifocal plane microscopy, *Optics Express*, **17**, 6881-6898.
98. Chao, J., Ram, S., Abraham, A., Ward, E.S. and Ober, R. J. (2009) A resolution measure for three - dimensional microscopy, *Optics Communications*, **282**, 1751-1761.
99. Pastor, S., Minguela, A., Mi, W. and Ward, E.S. (2009) Autoantigen immunization at different sites reveals a role for anti-inflammatory effects of interferon γ in regulating susceptibility to EAE, *J. Immunol.*, **182**, 5268-5275.
100. Cameron, E., Spencer, S., Lazarini, J., Harp, C., Racke, M.K., Ward, E.S., Frohman, E. and Monson, N. (2009) Potential of a unique antibody gene signature to predict conversion to clinically definite MS, *J. Neuroimmunol.*, **213**, 123-130.
101. Abraham, A., Ram, S., Chao, J., Ward, E.S. and Ober, R.J. (2009) Quantitative study of single molecule location estimation techniques, *Optics Express*, **17**, 23352-23373.
102. Chao, J., Ram, S., Ward, E. S. and Ober, R. J. (2009) A comparative study of high resolution microscopy imaging modalities using a three-dimensional resolution measure, *Optics Express*, **17**, 24377-24402.
103. Maverakis, E., Menezes, J., Ametani, A., Han, M., Stevens, D.B., He, Y., Wang, Y., Ono, Y., Miyamura, Y., Lam, K.S., Ward, E.S. and Sercarz, E.E. (2010) Molecular mimics can induce a nonautoaggressive repertoire that preempts induction of autoimmunity, *Proc. Natl. Acad. Sci. USA*, **107**, 2550-2555.
104. Chao, J., Ward, E.S. and Ober, R.J. (2010) A software framework for the analysis of complex microscopy image data, *IEEE Trans. Inf. Technol. Biomed.*, **14**, 1075-1087.

105. Patel, D.A., Puig Canto, A., Challa, D.K., Perez Montoyo, H., Ober, R.J. and Ward, E.S. (2011) Neonatal Fc receptor blockade by Fc engineering ameliorates arthritis in a murine model, *J. Immunol.*, **187**, 1015-1022.
106. Chao, J., Ward, E.S. and Ober, R. J. (2012) Fisher information matrix for branching processes with application to electron-multiplying charge-coupled devices, *Multidimensional Systems and Signal Processing*, **23**, 349-379.
107. Ram, S., Ward, E.S. and Ober, R.J. (2012) A stochastic analysis of distance estimation approaches in single molecule microscopy - quantifying the resolution limits of photon-limited imaging systems, *Multidimensional Systems and Signal Processing*, DOI 10.1007/s11045-012-0175-6, published online.
108. Zheng, J., Umikawa, M., Cui, C., Li, J., Chen, X., Zhang, C., Hyunh, H., Kang, X., Silvary, R., Wan, X., Puig-Canto, A., Chen, S-H., Wang, H-Y., Ward, E.S. and Zhang, C.C. (2012) Inhibitory receptors bind Angptls and support blood stem cells and leukemia development, *Nature*, **485**, 656-660.
109. Ram, S., Kim, D., Ober, R.J. and Ward, E.S. (2012) 3D single molecule tracking with multifocal plane microscopy reveals rapid intercellular transferrin transport at epithelial cell barriers, *Biophys. J.*, **103**, 1594-1603.
110. Gan, Z., Ram, S., Ober, R.J. and Ward, E.S. (2013) Using multifocal plane microscopy to reveal novel trafficking processes on the recycling pathway, *J. Cell Sci.*, **126**, 1176-1188.
111. Chao, J., Ram, S., Ward, E.S. and Ober, R.J. (2013) Ultrahigh accuracy imaging modality for super-localization microscopy, *Nature Methods*, **10**, 335-338.
112. Bansal, P., Khan, T., Bussmeyer, U., Challa, D.K., Swiercz, R., Velmurugan, R., Ober, R.J. and Ward, E.S. (2013) The encephalitogenic, human myelin oligodendrocyte glycoprotein-induced antibody repertoire is directed toward multiple epitopes in C57BL/6 mice, *J. Immunol.*, **191**, 1091-1101.
113. Challa, D.K., Bussmeyer, U., Khan, T., Perez Montoyo, H., Bansal, P., Ober, R.J. and Ward, E.S. (2013) Autoantibody depletion ameliorates disease in murine experimental autoimmune encephalomyelitis, *mAbs*, **5**, 655-659.
114. Devanaboyina, S.C., Lynch, S., Ober, R.J., Ram, S., Kim, D., Puig-Canto, A., Breen, S., Kasturirangan, S., Fowler, S., Peng, L., Zhang, H., Jermutus, L., Wu, H., Webster, C., Ward, E.S. and Gao, C. (2013) The effect of pH dependence of antibody-antigen interactions on subcellular trafficking dynamics, *mAbs*, **5**, 851-859.
115. Kang, J.C, Poovassery, J.S., Bansal., P., You, S., Manjarres, I.M., Ober, R.J. and Ward, E.S. (2014) Engineering multivalent antibodies to target heregulin-induced HER3 signaling in breast cancer cells, *mAbs*, **6**, 340-353.
116. Swiercz, R., Chiguru, S., Tahmasbi, A., Ramezani, S.M., Hao, G., Challa., D.K., Lewis, M.A., Kulkarni, P.V., Sun, X., Ober, R.J., Mason, R.P. and Ward, E.S. (2014) Use of Fc-engineered antibodies as clearing agents to increase contrast during PET, *J. Nucl. Med.*, **55**, 1204-1207.
117. Ram, S., Kim, D., Ober, R.J. and Ward, E.S. (2014) The level of HER2 expression is a predictor of antibody-HER2 trafficking behavior in cancer cells, *mAbs*, **6**, 1211-1219.

118. Tahmasbi, A., Ram, S., Chao, J., Abraham, A. V., Tang, F. W., Ward, E. S. and Ober, R. J. (2014) Designing the focal plane spacing for multifocal plane microscopy, *Optics Express*, **22**, 16706-16721.
119. Tahmasbi, A., Ward, E.S. and Ober, R.J. (2015) Determination of localization accuracy based on experimentally acquired image sets: applications to single molecule microscopy, *Optics Express*, **23**, 7630-7652.
120. Poovassery, J.S., Kang, J.C., Kim, D., Ober, R.J. and Ward, E.S. (2015) Antibody targeting of HER2/HER3 signaling overcomes heregulin-induced resistance to PI3K inhibition in prostate cancer, *Int. J. Cancer*, **137**, 267-277.
121. Chao, J., Ram, S., Lee, T., Ward, E. S. and Ober, R. J. (2015) Investigation of the numerics of point spread function integration in single molecule localization, *Optics Express*, **23**, 16866-16883.
122. Chao, J., Lee, T., Ward, E. S. and Ober, R. J. (2015) Fluorescent microspheres as point sources: a localization study, *PLoS One*, **10**, e0134112.
123. Ligocki, A.J., Rivas, J.R., Rounds, W.H., Guzman, A.A., Spadaro, M., Lahey, L., Chen, D., Henson, P.M., Graves, D., Greenberg, B.M., Frohman, E.M., Ward, E.S., Ronibson, W., Meinel, E., White, C.L. 3rd, Stowe, A.M., and Monson, N.L. (2015) A distinct class of antibodies may be an indicator of gray matter autoimmunity in early and established relapsing remitting multiple sclerosis patients, *ASN Neuro.*, **7**, ppi 1759091415609613.
124. Velmurugan, R., Challa, D., Ram, S., Ober, R.J. and Ward, E.S. (2016) Macrophage-mediated trogocytosis leads to death of antibody-opsonized tumor cells, *Mol. Cancer Ther.*, **15**, 1879-1889.
125. Challa, D.K., Mi, W., Lo, S-T., Ober, R.J. and Ward, E.S. (2016) Antigen dynamics govern the induction of CD4⁺ T cell tolerance during autoimmunity, *J. Autoimmunity*, **72**, 84-94.
126. Taha, M., Ward, E.S. and Nam, H.-J. (2016) The x-ray crystallographic structure of the human neonatal Fc receptor at acidic pH gives insights into pH-dependent conformational changes, *Protein Pept. Lett.*, **23**, 525-529.
127. Swiercz, R., Mo, M., Khare, P., Schneider, Z., Ober, R.J. and Ward, E.S. (2017) Loss of expression of the recycling receptor, FcRn, promotes tumor cell growth by increasing albumin consumption, *Oncotarget*, **8**, 3528-3541.
128. Vahid, M.R., Chao, J., Kim, D., Ward, E.S. and Ober, R.J. (2017) State space approach to single molecule localization in fluorescence microscopy, *Biomed. Optics Express*, **8**, 1332-1355.
129. Lea, J., Sharma, R., Yang, F., Zhu, H., Ward, E.S. and Schroit, A.J. (2017) Detection of phosphatidylserine-positive exosomes as a diagnostic marker for ovarian malignancies: a proof of concept study, *Oncotarget*, **8**, 14395-14407.
130. Velmurugan, R., Chao, J., Ram, S., Ward, E.S. and Ober, R.J. (2017) Intensity-based axial localization approaches for multifocal plane microscopy, *Optics Express*, **25**, 3394-3410.
131. Devanaboyina, S.C., Khare, P., Challa, D.K., Ober, R.J. and Ward, E.S. (2017) Engineered clearing agents for the selective depletion of antigen-specific antibodies, *Nature Commun.*, **8**, 15314.

132. Li, R., Chiguru, S., Li, L., Kim, D., Velmurugan, R., Kim, D., Tian, H., Schroit, A.J., Mason, R.P., Ober, R.J. and Ward, E.S. (2018) Targeting phosphatidylserine with calcium-dependent protein-drug conjugates for the treatment of cancer, *Mol. Cancer Ther.*, **17**, 169-182.
133. Khare, P., Challa, D.K., Devanaboyina, S.C., Velmurugan, R., Hughes, S., Greenberg, B., Ober, R.J. and Ward, E.S. (2018) Myelin oligodendrocyte glycoprotein-specific antibodies from multiple sclerosis patients exacerbate disease in a humanized mouse model, *J. Autoimmunity*, **86**, 104-115.
134. Velmurugan, R., Ramakrishnan, S., Kim, M., Ober, R.J. and Ward, E.S. (2018) Identification of a discrete vacuolar structure in association with phagocytosed tumor cells, *Traffic*, **19**, 273-284.
135. Ulrichts, P., Guglietta, A., Dreier, T., van Bragt, T., Hassens, V., Hofman, E., Vankerckhoven, B., Verheesen, P., Ongenaes, N., Lykhopy, V., Enriquez, J., Cho, J., Ober, R.J., Ward, E.S., de Haard, H. and Leupin, N. (2018) Neonatal Fc receptor antagonist efgartigimod safely and sustainably reduces IgGs in humans, *J. Clin. Invest.*, **128**, 4372-4386.
136. Deason, K., Troutman, T.D., Jain, A., Challa, D.K., Mandraju, R., Brewer, T., Ward, E.S. and Pasare, C. (2018) BCAP links IL-1R to the PI3K-mTOR pathway and regulates pathogenic Th17 differentiation, *J. Exp. Med.*, **215**, 2413-2428.
137. Kang, J.C., Sun, W., Khare, P., Karimi, M., Wang, X., Shen, W., Ober, R.J. and Ward, E.S. (2019) Engineering a HER2-specific antibody-drug conjugate to increase lysosomal delivery and therapeutic efficacy, *Nature Biotechnol.*, **37**, 523-526.
138. Challa, D.K., Wang, X., Perez-Montoyo, H., Velmurugan, R., Ober, R.J. and Ward, E.S. (2019) Neonatal Fc receptor expression in macrophages is indispensable for IgG homeostasis, *mAbs*, **11**, 848-860.
139. Howard, J.F. Jr, Bril, V., Burns, T.M., Mantegazza, R., Bilinska, M., Szczudik, A., Beydoun, S., Garrido, F.J.R.R., Piehl, F., Rottoli, M., van Damme, P., Vu, T., Evoli, A., Freimer, M., Mozaffar, T., Ward, E.S., Dreier, T., Ulrichts, P., Verschueren, K., Guglietta, A., de Haard, H., Leupin, N. and Verschueren, J.J.G.M. (2019) Randomized phase 2 study of FcRn antagonist efgartigimod in generalized myasthenia gravis, *Neurology*, **92**, e2661-e2673.
140. Lin, D., Lin, Z., Cao, J., Velmurugan, R., Ward, E.S. and Ober, R. (2019) A two-stage method for automated detection of ring-link endosomes in fluorescent microscopy images, *PLoS One*, **14**, e0218931.
141. Newland, A.C., Sánchez-González, B., Rejtő, L., Egyed, M., Romanyuk, N., Godar, M., Verschueren, K., Gandini, D., Ulrichts, P., Beauchamp, J., Dreier, T., Ward, E.S., Michel, M., Liebman, H.A., de Haard, H., Leupin, N. and Kuter, D.J. (2020) Phase 2 study of efgartigimod, a novel FcRn antagonist, in adult patients with primary immune thrombocytopenia, *Am. J. Hematol.*, **95**, 178-187.
142. Vatansever, E.C., Kang, J., Tuley, A., Ward, E.S. and Liu, W.R. (2020) An optimal “Click” formation strategy for antibody-drug conjugate synthesis, *Bioorg. Med. Chem.*, **28**, 115808.

143. Sun, W., Khare, P., Wang, X., Challa, D.K., Greenberg, B.M., Ober, R.J. and Ward, E.S. (2020) Selective depletion of antigen-specific antibodies for the treatment of demyelinating disease, *Mol. Therapy*, doi: 10.1016/j.ymthe.2020.11.017. Online ahead of print.

144. You, S., Chao, J., Cohen, E.A.K., Ward, E.S. and Ober, R.J. (2021) Microscope calibration protocol for single-molecule microscopy, *Opt. Express*, **29**, 182-207.

ii) Chapters in books, editorships and reviews

1. Howe, C.J. and Ward, E.S. (1989). Editors of *Nucleic Acids Sequencing: A Practical Approach*, IRL/Oxford University Press.

2. Murphy, G. and Ward, E.S. (1989) Sequencing of double-stranded DNA, *Nucleic Acids Sequencing: A Practical Approach* (eds. C.J. Howe and E. S. Ward, IRL/Oxford University Press), pp. 99-115.

3. Ward, E.S. and Howe, C.J. (1989) Troubleshooting in chain-termination sequencing, *Nucleic Acids Sequencing: A Practical Approach* (eds. C.J. Howe and E. S. Ward, IRL/Oxford University Press), pp. 79-97.

4. Jones, P.T., Ward, E.S., Güssow, D.H., Griffiths, A.D. and Winter, G. (1990) Generating a repertoire of antibody V genes and the selection and expression of antigen binding activities in *E. coli*, *Protein Engineering: Protein Design in Basic Research, Medicine, and Industry* (ed. M. Ikehara, Springer-Verlag), pp. 229-234.

5. Howe, C.J. and Ward, E.S. (1991) DNA Sequencing, *Essential Molecular Biology: A Practical Approach* (ed. T.A. Brown, IRL/Oxford University Press), pp. 157-183.

6. Ward, E.S. (1991) Expression and purification of antibody fragments using *Escherichia coli* as a host, *Antibody Engineering: A Practical Guide* (ed. C.A.K. Borrebaeck, Stockton Press, New York) pp. 121-137.

7. Ward, E.S. (1992) Antibody engineering: the use of *Escherichia coli* as an expression host, *FASEB J.*, **6**, 2422-2427.

8. Winter, G.P. and Ward, E.S. (1993) Antibody Engineering, *Clinical Aspects of Immunology-5th Edition* (eds. P.J. Lachmann, D.K. Peters, F.R. Rosen and M.J. Walport, Blackwell Scientific Publications), pp. 817-828.

9. Ward, E.S. (1993) Antibody engineering using *E. coli* as a host, *Advances in Pharmacology*, **24**, 1-20.

10. Ward, E.S. and Bebbington, C.R. (1995) Genetic manipulation and expression of antibodies, *Monoclonal Antibodies* (eds. E. Lennox and J. Birch, Hanser Publishers), pp. 137-185.

11. Ghetie, V. and Ward, E.S. (1995) Genetic manipulation of antibodies: from variable domains to constant regions, *The Antibodies* (eds. D. Capra and M. Zanetti, published by Gordon and Breach), *Advances in Antibody Engineering*, **1**, 169-211.

12. Ward, E.S. and Ghetie, V. (1996) The effector functions of immunoglobulins: implications for therapy, *Ther. Immunol.*, **2**, 77-94.

13. Ward, E.S. (1996) Production and manipulation of antibodies and T cell receptors using recombinant DNA technology, *Therapeutic Immunology* (eds. F. Austen, S. Burakoff, F. Rosen and T. Strom, Blackwell Scientific Publications), pp. 335-346.
14. Ward, E.S. and Qadri, A. (1997) Biophysical and structural studies of T cell receptors and ligands: implications in T cell signaling, *Curr. Opin. Immunol.*, **9**, 97-106.
15. Ghetie, V. and Ward, E.S. (1997) FcRn: the MHC class I-related receptor that is more than an IgG transporter, *Immunol. Today*, **18**, 592-598.
16. Ghetie, V. and Ward, E.S. (2000) Multiple roles for the major histocompatibility complex class I related receptor, FcRn, *Ann. Rev. Immunol.*, **18**, 739-766.
17. Ghetie, V. and Ward, E.S. (2002) Transcytosis and catabolism of antibody, *Immunologic Res.*, **25**, 97-113.
18. Ward, E.S. (2004) Acquiring maternal immunoglobulin: different receptors, similar functions, *Immunity*, **20**, 507-508.
19. Ram, S., Ward, E.S. and Ober, R.J. (2006) Resolution of optical microscope redefined, *Biophotonics Int.*, July 2006 issue, 42-45.
20. Ward, E.S. and Ober, R.J. (2009) Multitasking by exploitation of intracellular transport functions: the many faces of FcRn, *Adv. Immunol.*, **103**, 77-115.
21. Ward, E.S. and Ober, R.J. (2012) The diverse roles of FcRn: implications for antibody engineering, in *Therapeutic proteins: Strategies to modulate their plasma half-life* (ed. R. Kontermann, Wiley-Blackwell), pp. 207-222.
22. Ward, E.S., Velmurugan, R. and Ober, R.J. (2014) Targeting FcRn for therapy: from live cell imaging to *in vivo* studies in mice, *Immunol. Letts.*, **160**, 1204-1207.
23. Challa, D.K., Velmurugan, R., Ober, R.J. and Ward, E.S. (2014) FcRn: from molecular interactions to regulation of IgG pharmacokinetics and functions, in *Fc Receptors*, Current Topics in Microbiology and Immunology (eds. M. Daeron and F. Nimmerjahn, Springer International Publishing), vol. 382. pp. 249-272.
24. Ward, E.S., Devanaboyina, S.C. and Ober, R.J. (2015) Targeting FcRn for the modulation of IgG dynamics, *Mol. Immunol.*, **67**, 131-141.
25. Ward, E.S. and Ober, R.J. (2015) Commentary on 'There's been a flaw in our thinking', *Front. Immunol.*, **6**, 351.
26. Chao, J., Ward, E.S. and Ober, R.J. (2016) Fisher information theory for parameter estimation in single molecule microscopy: tutorial, *JOSA A*, **33**: B36-B57.
27. Ward, E.S. and Ober, R.J. (2017) Hepatic function of FcRn revealed: implications for overcoming drug-mediated hepatotoxicity, *Hepatology*, **66**, 2083-2085
28. Holt, S.E., Ward, E.S., Ober, R.J. and Alge, D. (2017) Shooting for the moon: using tissue-mimetic hydrogels to gain new insight on cancer biology and screen therapeutics, *MRS Commun.*, **7**, 427-441.

29. Ward, E.S. and Ober, R.J. (2018) Targeting FcRn to generate antibody-based therapeutics, *Trends Pharmacol. Sci.*, **39**, 892-904.
30. Stopforth, R.J. and Ward, E.S. (2020) The role of tumour-associated macrophages in antigen presentation, *Crit. Rev. Immunol.*, **40**, 205-224.