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EDUCATION

1989-1994 **Ph.D.**, Ophthalmology, Hunan Medical University, P.R.China.

1982-1987 **M.D.**, Medicine, HengYang Medical College, P.R.China.

Membership of Professional Bodies

- Member of British Society for Research into Aging
- Member of Overseas Chinese Society of Ophthalmology and Vision Research
- Member of Association for Research in Vision & Ophthalmology (ARVO)
- Member of British Society of Immunology

EMPLOYMENT

- Sept. 2009-Present** **Senior Lecturer,**
Centre for Vision and Vascular Science, Queen's University Belfast.
- Aug. 2008-Aug. 2009** **Senior RCUK Fellow,**
Immunology and Infection, University of Aberdeen, UK
- Apr. 2005-Jul. 2008** **RCUK Fellow,**
Immunology and Infection, University of Aberdeen, UK
- Feb. 2000-Mar. 2005** **Post-doctoral Research Fellow**
Department of Ophthalmology, University of Aberdeen, UK
- Sept. 1997-Jan. 2000** **Post-doctoral Research Scientist**
Department of Exploratory Research, Tokyo Research Institute,
Seikagaku Corporation, Japan.
- Jul. 1994-Sept.1997** **Assistant professor, senior trainee ophthalmologist**
Department of Ophthalmology, XiangYa Hospital, Hunan Medical
University, Hunan, China
- Jul. 1987-Aug. 1989** **Trainee doctor (resident)**
Long Shang People's Hospital, Hunan, China

TEACHING EXPERIENCE

- 2009-present: Coordinate a SSC course: "Foundation in Ophthalmology and Visual Science", and also deliver 6 lectures in the module. Queen's University Belfast (QUB).

- 2009-present: Lecture "Age-related macular degeneration", level-3 Biomedical Science course. QUB.
- 2010-present: Lecture "Complement system in innate immunity", level-2 Biomedical Science course. QUB.
- 2009-present: Supervise 3-4 undergraduate students (annually) for their research projects. QUB.
- 2008-2009: Co-ordinate "Immunology Research Skills Tutorial" course for MSc in Molecular & Cellular Immunology. University of Aberdeen.
- 2007-2009: Lecturer on "Complement activation in age-related macular degeneration" for MSc student (Molecular & Cellular Immunology). University of Aberdeen
- 2004-2009: Tutorial for undergraduate students in Medical Immunology (Imaging Leukocyte Trafficking). University of Aberdeen.
- 2004-2009: Tutorial for Molecular & Cellular Immunology MSc students (In vivo and In vitro imaging immune responses). University of Aberdeen
- 2004-2009: Tutorial for Bio-Medical Technology MSc students (Bio-medical imaging techniques). University of Aberdeen.
- 1994-1997: Undergraduate course in Clinical Ophthalmology at Hunan Medical University, China.

PHD STUDENT SUPERVISION

- Currently acting as the primary supervisor for three PhD students and the 2nd supervisor for one PhD student at Queen's University Belfast.
- During my service with the University of Aberdeen: I supervised three PhD students and two of them have graduated and are doing their post-doc (one in US and one in Aberdeen). The other student is expected to graduate in early 2011.

REVIEW DUTIES

1. **Journal referee** for 1) *Blood*; 2) *Brain Research*; 3) *Journal of Leukocyte Biology*; 4) *Experimental Eye Research*; 5) *Ophthalmology Research*; 6) *Molecular Vision*; 7) *Investigative Ophthalmology and Visual Science*; 8) *British Journal of Ophthalmology*; 9) *Biomarker Insights*; 10) *Gastroenterology*; 11) *Current Eye Research*; 12) *Graefe's Archive for Clinical and Experimental Ophthalmology*; 13) *Clinical Ophthalmology*; 14) *immunology*.
2. **Grant referee** for 1) Medical Research Council (MRC), UK; 2) *Biotechnology and Biological Sciences Research Council (BBSRC)*, UK; 3) *the Wellcome Trust*, UK; 4) *Diabetes UK*; 5) *National Eye Research Center*; 6) *National Natural Science Foundation of China (NSFC)*.

DISTINGUISHING AWARDS

- **2005-2010**: Research Council UK (RCUK) Fellowship Award.
- **Royal Society International Travel Awards** for the following years: 2005, 2008, 2010.
- **2005**: Uveitis Award (1st Prize): German Uveitis Patients Interests Group.
- **2000**: Patent: A new mouse IL-12 inhibitor, Japanese Patent No. JP 20658699, 1999; European Patent No. EP 1074260 A1, 2000
- **1997**: Zhang WenShang Eye Foundation Award (1st Prize): Chinese Society of Ophthalmology of Hunan Branch.
- **1996**: New Technology Award (2nd Prize): Science and Technology Committee,

- Hunan Province, China.
- **1995:** Advanced Science & Technology Award (3rd award): Health Department of Hunan Province, China.

RESEARCH GRANTS

1. **2010-2015:** "Development of a Vision Science Research Building". £4.8 million. Wellcome-Wolfson Capital Award. Co-holder with other nine colleagues, Lead applicant: Prof A Stitt.
2. **2010-2013:** "Mechanism of inflammation-induced retinal angiogenesis". £60,000. PhD studentship. National Eye Research Centre. UK. **PI**
3. **2010-2013:** "RAGE is central to initiation and progression of pro-inflammatory pathway in diabetic retina". £159,628. Fight for Sight. Project grant. Co-holder with Prof A Stitt (lead applicant).
4. **2009-1012.** "Microglia and complement activation in age-related macular degeneration". £79,500. By Age UK (Former Research into Aging, Help the Aged. UK, **PI**.
5. **2009-2010.** "Monocyte malfunction and age-related macular degeneration". £12,000 National Health Service (NHS) Endowment. UK, **PI**.
6. **2008-2009.** "Endocannabinoid system in the ageing retina and age-related macular degeneration". £12,000. NHS Endowment. UK. **PI**.
7. **2008-2009.** "Oxidative damage and microglial activation in age-related macular degeneration". £10,000. Tenovus Scotland. **PI**.
8. **2007-2009.** "Complement regulation in age-related macular degeneration". \$100,000. By American Health Assistance Foundation: Macular Degeneration Research. USA. **PI**.
9. **2007-2008.** "Microarray analysis of retinal microglial gene expression in the rodent model of age-related macular degeneration". £14,100. By NHS Endowment. UK, **PI**.
10. **2007-2008.** "Complement factor H and factor B in retinal pigment epithelial cells". £10,000. By Tenovus Scotland. **PI**.
11. **2006-2007.** "Understanding the pathogenesis of fundus autofluorescence in the murine model of age-related macular degeneration". £12,000. By NHS Endowment. UK, **PI**.
12. **2005-2010.** "Imaging immune response in the eye". £125,000. Research Council UK (RCUK) fellowship award.
13. **2003-2005:** £228,536 "Does the CD200-CD200 receptor interaction signal altered trafficking or survival of migrating myeloid macrophages and dendritic cells *in vivo* either in the basal state or during organ specific autoimmune inflammation". The Wellcome Trust. Co-holder with Prof. J Liversidge, Dr IJ Crane.

PUBLICATIONS & PRESENTATIONS

Refereed Papers:

1. **Xu H**, Chen M, Forrester JV, Lois N. Cataract surgery induces pro-inflammatory gene expression and protein secretion. *Invest Ophthalmol Vis Sci*. 2010. August 18. [Epub ahead of print].
2. Ganesan PB, He S, **Xu H**. Modelling of pulsatile blood flow in arterial trees of retinal

- vasculature. *Medical Engineering Physics*. 2010. Oct 31. [Epub ahead of print].
3. Chen M, Muckerise E, Forrester JV, **Xu H**. Immune activation in retinal aging: a gene expression study. *Invest Ophthalmol Vis Sci*. 2010. 51(11):5888-5896.
 4. Chen M, Muckersie E, Forrester JV, **Xu H**. Inhibition of the alternative pathway of complement activation reduces inflammation in experimental autoimmune uveoretinitis. *Eur J Immunol*. 2010. 40: 2870-2881
 5. Motulsky E, Koch P, Janssens S, Liénart M, Vanbellinghen A, Bolaky N, Chan CC, Caspers L, Martin-Martinez M, **Xu H**, Delporte C, and Willermain F. Aquaporins expression on blood retinal barrier cells during experimental autoimmune uveitis. *Mol Vis*. 2010. Apr 3 ; 16 :602-10.
 6. Ganesan PB, He S, **Xu H**. Analysis of retinal circulation using an image-based network model of retinal vasculature. *Microvasc Res*. 2010, 80(1):99-109.
 7. Ganesan PB, He S, **Xu H**. Development of an image-based network model of retinal vasculature. *Ann Biomed Eng*. 2010,38(4):1566-85.
 8. Forrester JV, **Xu H**, Kuffova L, McMenamin P, Dick AD. (Review) Dendritic cell physiology and function in the Eye. *Immunol Rev*. 2010. 234(1)282-304.
 9. Copland DA, Hussain K, Baalashubramanian S, Hughes TR, Morgan BP, **Xu H**, Dick AD, Nicholson LB. Systemic and local anti-C5 therapy reduces the disease severity in experimental autoimmune uveoretinitis. *Clin Exp Immunol*. 2010. 159:303-314.
 10. **Xu H**, Chen M, Forrester JV. (Review) Para-inflammation in the aging retina. *Prog Retin Eye Res*. 2009. 28(5):348-368.
 11. Dagkalis A, Wallace C, **Xu H**, Liebau S, Manivannan A, Stone M, Mack M, Liversidge J, Crane IJ. Development of experimental autoimmune uveitis with efficient recruitment of monocytes is independent of CCR2. *Invest Ophthalmol Vis Sci*. 2009, 50(9):4288-4294.
 12. Forrester JV, **Xu H**, Lambe T, Cornall R, (Review). Immune privilege or privileged immunity? *Mucosal Immunol*. 2008,1(5):372-381.
 13. Chen M, Muckersie E, Robertson M, Forrester JV, **Xu H**. Up-regulation of complement factor B in retinal pigment epithelial cells is accompanied by complement activation in the aged retina. *Exp Eye Res*. 2008, 87(6):543-440.
 14. **Xu H**, Koch P, Chen M, Lau A, Reid DM, Forrester JV. A Clinical grading system for retinal inflammation in the chronic model of experimental autoimmune uveoretinitis using digital fundus images. *Exp Eye Res*. 2008, 87(4):319-326.
 15. Chen M, Muckersie E, Roberston M, Fraczek M, Forrester JV, **Xu H**. Characterization of a mouse retinal pigment epithelial cell line: B6-RPE07. *Invest Ophthalmol Vis Sci*. 2008, 49(8):3699-3706.
 16. **Xu H**, Manivannan A, Crane IJ, Dawson R, Liversidge J. Critical but divergent roles for CD62L and CD44 in directing monocyte trafficking in vivo during inflammation. *Blood*. 2008, 112(4):1166-74.
 17. Kezic J, **Xu H**, Chinnery HR, Murphy C, McMenamin PG. Retinal microglia and uveal tract dendritic cells and macrophages are not CX3CR1 dependent in their homing and distribution. *Invest Ophthalmol Vis Sci*. 2008. 49;1599-608.
 18. **Xu H**, Chen M, Manivannan A, Lois N, Forrester JV. Age-dependent accumulation of lipofuscin in perivascular and subretinal microglia in experimental mice. *Aging Cell*. 2008. 7; 58-68.
 19. **Xu H**, Chen M, Mayer EJ, Forrester JV, Dick AD. Turnover of retinal microglia in adult experimental mouse. *GLIA*. 2007. 55; 1189-98.
 20. **Xu H**, Cheng CL, Chen M, Manivannan A, Cabay L, Pertwee RG, Coutts A, Forrester JV. Anti-inflammatory property of the cannabinoid receptor-2-selective agonist JWH-133 in a rodent model of autoimmune uveoretinitis. *J Leukoc Biol*. 2007. 82; 532-541.
 21. **Xu H**, Chen M, Reid D, Forrester JV. LYVE positive macrophages are present in normal murine eyes. *Invest Ophthalmol Vis. Sci*. 2007. 48: 2162-71.
 22. **Xu H**, Dawson R, Forrester JV and Liversidge J. Identification of novel dendritic cell

- populations in mouse retina. *Invest Ophthalmol Vis. Sci.* 2007. 48:1701-10.
23. Chen M, Forrester JV, **Xu H**. Synthesis of complement factor H in RPE cells is down-regulated by oxidized photoreceptor outer segment. *Exp Eye Res.* 2007. 84: 635-45.
 24. Crane IJ, **Xu H**, Wallance C, Manivannan A, Mack M, Liversidge J, Marquez G, Sharp PF, Forrester JV. Involvement of CCR5 in the passage of Th1-type cells across the blood-retina barrier in experimental autoimmune uveitis. *J Leukoc Biol.* 2006. 79:435-45. (C.J.I. and X.H. shared first author)
 25. **Xu H**, Manivannan A, Dawson R, Crane IJ, Mack M, Sharp P and Liversidge J. Differentiation to the CCR2+ Inflammatory Phenotype In Vivo Is a Constitutive, Time-Limited Property of Blood Monocytes and Is Independent of Local Inflammatory Mediators. *J Immunol.* 2005. 175:6915-23.
 26. **Xu H**, Kurihara H, Ito T, Kikuchi H, Yoshida K, Yamanokuchi H, Asari A. The keratan sulfate disaccharide gal(6S03) b1,4 glcNAc(6S03) modulates IL12 production by macrophages in murine Thy-1 type autoimmune disease. *J Biol. Chem.* 2005. 280:20879-86
 27. **Xu H**, Dawson R, Crane IJ and Liversidge J. Leukocyte diapedesis in vivo induces transient loss of tight junction proteins at the blood-retina barrier. *Invest Ophthalmol Vis. Sci.* 2005. 46:2487-94.
 28. Sharp FP, Manivannan A, **Xu H**, Forrester JV. (Review) The scanning laser ophthalmoscope—a review of its role in bioscience and medicine. *Phys. Med. Biol.* 2004 (49) 1085-1096.
 29. **Xu H**, Manivannan A, Jiang H-R, Liversidge J, Sharp PF, Forrester JV, and Crane IJ: Recruitment of IFN γ -producing cells into the inflamed retina in vivo is preferentially regulated by P-selectin glycoprotein ligand 1:P/E-Selectin interactions. *J. Immunol.* 2004, 172:3215-3224.
 30. **Xu H**, Manivannan A, Goatman K, Jiang H-R, Liversidge J, Sharp PF, Forrester JV, and Crane IJ: Reduction in Shear Stress, Activation of the Endothelium and Leukocyte Priming are all required for Leukocyte Passage across the Blood-Retina Barrier. *J Leukoc. Biol.* 2004, 75: 224-232.
 31. **Xu H**, Manivannan A, Liversidge J, Sharp PF, Forrester JV, and Crane IJ. Requirements for passage of T lymphocytes across non-inflamed retinal microvessels. *J. Neuroimmunol.* 2003, 142: 47-57.
 32. Crane IJ, **Xu H**, Manivannan A, McKillop-Smith S, Lamont G, Wallace C, Liversidge J, Sharp PF, Forrester JV. Effect of anti-macrophage inflammatory protein-1 on leukocyte trafficking and disease progression in experimental autoimmune uveoretinitis. *Eur. J. Immunol.* 2003, 27: 402-410 (C.J.I. and X.H. shared first author)
 33. **Xu H**, Forrester JV, Liversidge J, and Crane IJ. Leukocyte trafficking in experimental autoimmune uveitis: Breakdown of blood-retinal-barrier and up-regulation of cellular adhesion molecules. *Invest Ophthalmol Vis Sci.* 2003, 44: 226-234.
 34. Rosenbaum JT, Planck SR, Crane IJ, **Xu H**, Martin TM, and Forrester JV. (Review) Imaging ocular immune responses by intravital microscopy (Review). *Int. Rev. Immunol.* 2002,21(2-3):255-272.
 35. **Xu H**, Manivannan A, Liversidge J, Sharp P, Forrester JV, and Crane IJ. Involvement of CD44 in leukocyte trafficking at the blood retinal barrier. *J. Leukoc. Biol.* 2002, 72: 1133-1141.
 36. Jiang H-R, Muckersie E, Robertson M, **Xu H**, Liversidge J and Forrester JV. Secretion of interleukin-10 or interleukin-12 by LPS activated dendritic cells is critically dependent on time of stimulus relative to initiation of purified DC culture. *J. Leukoc. Biol.* 2002, 72: 978-985.
 37. **Xu H**, Manivannan A, Goatman K, Liversidge J, Sharp PF, Forrester JV, and Crane IJ: Improved leukocyte tracking in mouse retinal and choroidal circulation. *Exp Eye Res.* 2002, 74:403-410.
 38. **Xu H**, Ito T, Tawada A, Maeda H, Hiroko Yamanokuchi H, Kyoko Isahara, Keiichi Yoshida, Yasuo Uchiyama, and Akira Asari. Effect of hyaluronan oligosaccharides on the expression

of heat shock protein 72. *J. Biol. Chem.* 2002, 277 (19):17308-17314.

39. **Xu H**, Manivannan A, Garry D, Liversidge J, Sharp PF, Forrester JV, and Crane IJ: Evaluation of leukocyte dynamic in mouse retinal circulation with scanning laser ophthalmoscopy (Video report). *Br. J Ophthalmol.* 2001, July, available at <http://bj.o.bmjournals.com/cgi/content/full/85/7/DC1>
40. **Xu H**, Kurihara H, Ito T, Nakajima SI, Hagiwara E, Yamanokuchi H, Asari A. IL-12 Enhances Lymphoaccumulation by Suppressing Cell Death of T Cells in MRL- lpr/lpr Mice. *J Autoimmun.* 2001, 16(2):87-95.

Books & Chapters

1. **(2010) Xu H**, Liversidge J. "Quantitative in site analysis of claudin expression at the blood-retinal barrier" in "Claudins: Methods and Protocols". Kursad Turksen (Editor). Springer. (In press).
2. **(2009) Xu H**, Forrester JV. Chapter 7 "Inflammation in age-related macular degeneration: what is the evidence?" in "Essentials in Ophthalmology". Uwe Pleyer and John V Forrester (Editors). Springer. Pages 61-71.
3. **(2009) Xu H**. Chapter "Lipofuscin and autofluorescence in experimental models". In "Fundus Autofluorescence". Dr Noemi Lois and JV Forrester (Editors). Lippincott. Pages 38-47.
4. **(2002) Xu H**, Asari A. HA oligosaccharides accelerate heat shock protein 72 expression. In "Hyaluronan (Vol 1): Biochemical and Biological Aspect" P435-446. Kennedy JF and Phillips GA, (Editors). Woodhead publishing Ltd.
5. **(1997) Xu H** and Wang CY. Chapter "Macular tumors". In "Macular diseases" p278-335. Nie AG and Chen S (Editors). Hunan Science & Technology Publishers. China.
6. **(1996) Xu H**. Chapter "Corneal surgery complications". In Ocular surgery complications: symptoms and managements". Wang CY (Editor). Human Science and Technology Publisher. China.

Invited presentations/lectures

1. Immune response and age-related macular degeneration. **The Royal College of Ophthalmologists seminar: Benchside Spectrum of Translational Research in Ophthalmology**. Nov. 2010. London, UK
2. Innate immunity and retinal aging. **XIX biennial Meeting of the Internatinal Society for Eye Research (ISER 2010)**. July 2010. Montreal. Canada
3. In vivo imaging retinal inflammation in experimental autoimmune uveoretinitis. **European Association for Vision and Eye Research (EVER)**. Sept 30-Oct. 3, 2009. Portoroz. Slovenia.
4. Macrophage and complement in EAU and retinal degeneration. **10th Congress of international Ocular Inflammation Society (IOIS)**. May 30-June 2 2009. Prague. Czech Republic.
5. Leukocyte trafficking at the neuroretina in patho-physiological condition. **European Frontiers in Ocular Pharmacology**. University of Catania, 4th December 2008. Italy.
6. Leukocyte trafficking at the blood retinal barrier. **Singapore National Eye Research Center**. Oct. 22, 2008. Singapore.
7. Para-inflammation in the ageing retina and in age-related retinal degeneration. **NHG Eye Institute International Ophthalmology Congress**, Oct. 23-25, 2008 Singapore.
8. Complement activation in retinal pigment epithelial cells. In Educational section of **World Ophthalmology Congress 2008**. Hong Kong, China.
9. Complment activation in the aging retina in physio-pathological conditions. **2008**

Annual Meeting of European Association for Vision and Eye Research (EVER).
Portoroz, Slovenia.

10. Leukocyte trafficking in the neuroretina in patho-physiological conditions. **2008 Annual Meeting of ARVO.** Fort Lauderdale, USA.
11. Leukocyte trafficking in experimental autoimmune uveoretinitis. **The 1st International Symposium on Uveitis in China.** Oct. 2007 GuangZhou, China.
12. Complement activation in the retina. **Aberdeen Inflammation & Immunity Theme Symposium.** 2007, Aberdeen.
13. Macrophage, complement and age-related macular degeneration. **Aberdeen Royal Infirmary, Eye Clinic.** 2007, Aberdeen.
14. Comparison of monocyte and T lymphocyte trafficking at the blood-retina barrier in vivo. **International Society of Neuroimmunology Congress.** Oct. 2006, Nagoya, Japan.

Other conference presentations

I have delivered over 40 oral/poster presentations in national and international conferences.

