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Professor Ed Rainger BSc, PhD

Professor of Chronic Inflammation

Cardiovascular and Respiratory Sciences

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About

Ed Rainger is Reader in Chronic Inflammation in the School of Clinical and Experimental Medicine. Ed has published over 80 research papers, reviews and book chapters in the field of inflammation research with a particular focus on vascular inflammation leading to atherosclerosis.

Ed is Deputy Director and Cardiovascular Theme Coordinator of the School of Clinical and Experimental Medicine Post-graduate Research Committee. Ed also sits on The Postgraduate Graduate Quality Assurance Committee of the College of Medicine and Dentistry and the Biomedical Ethical Review Sub-committee.

Ed is Chairman of the UK adhesion Society which holds biannual meetings.

Qualifications

- PhD: Comparative Immunology (1992)
- BSc: in Marine Biology (1989)

Biography

Ed Rainger qualified for a BSc in Marine Biology from Newcastle University in 1989. Moving to Swansea, Ed conducted his PhD studies (awarded in 1992) in comparative immunology, specifically looking at the responses to commercially farmed fish species to vaccination. In 1993 Ed moved to Birmingham University where he worked as a post-doctoral research fellow in the department of Physiology investigating the inflammatory response to hypoxia and the role of platelets in recruiting leukocytes.

In 2002 Ed was awarded a prestigious 5 year Lectureship from the British Heart Foundation. This personal fellowship was renewed for a further 5 years in 2007 at the level of Senior Lecturer. During the 10 years of tenure as a British Heart Foundation Fellow, Ed developed sophisticated co-culture models in which disease environments could be recapitulated in vitro and the cellular pathology of inflammatory diseases investigated.

In 2006 Ed was awarded a Readership at the University of Birmingham in The School of Clinical and Experimental medicine working closely with colleagues across the School, College and University to investigate the cellular pathology of chronic inflammatory diseases.

Teaching

- BMedSci teaching: Lecturing to 3rd year Cardiovascular, Cellular Pathology and Biology of Ageing option.
- Oral dissertation for BMedSci Cardiovascular option.
- Practical Laboratories
- Cardiovascular Science 1; Cardiovascular and Respiratory Science
- 3rd year research project supervision
- MBChB teaching: Small Group Teaching;Cardiovascular Physiology; Respiratory Physiology
- SSA 's: Assessing the impact of the cardiovascular system on the immune system, The role of dietary risk factors in the development and pathology of atherosclerosis

Postgraduate supervision

PhD Supervision:

4 completed ; 2 submitted thesis; 1 current

Ed is interested in supervising PhD projects in the areas of

● The role of dietary omega-3 polyunsaturated fatty acids in regulating inflammation.

● The role of platelets in inflammation

● Regulation of the inflammatory process by cells of the stromal environment.

If you are interesting in studying any of these subject areas please contact Ed on the contact details above, or for any general doctoral research enquiries, please email: **dr@contacts.bham.ac.uk (mailto:dr@contacts.bham.ac.uk)** or call +44 (0)121 414 5005.

For a full list of available Doctoral Research opportunities, please visit our **Doctoral Research programme listings. (http://www.bham.findaphd.com/?es=y&apl=y&aplt=&show)**

Research

Dr Rainger uses multicellular co-culture models and animal models to investigate the recruitment and fate of leukocytes and platelets during acute inflammation and in chronic inflammatory diseases. Currently he has a number of active research 'themes'

1. The ability of smooth muscle cells to regulate the recruitment of leukocytes and platelets using in vitro and in vivo models of atherosclerosis.
2. The role of CD31 (PECAM-1) in the development of atherosclerosis in the ApoE knock out mouse.
3. The ability of mesenchymal stem cells to modulate leukocyte recruitment and retention in chronic diseases, with special emphasis on rheumatoid arthritis
4. Stromal derived signals that promote the migration of T-lymphocytes across vascular and lymphatic endothelial cells.
5. The role of omega-3-polyunsaturated fatty acids in regulating acute and chronic inflammatory responses.

Other activities

- Chairman of the UK Adhesion Society.
- Deputy Director of Graduate Studies, School of Clinical and Experimental Medicine
- Post Graduate Co-ordinator for the Cardiovascular Theme in the School of Clinical and Experimental Medicine.
- Member, Centre for Cardiovascular Sciences PI Committee
- Member of Biomedical Ethical Review Sub-committee.
- Member of The Postgraduate Graduate Quality Assurance Committee of the College of Medicine and Dentistry
- Member, Expert committee of the Agence d'Evaluation de la Recherche et des établissements d'Enseignement Supérieur (AERES).

Publications

Kuckleburg CJ., Yates CM., Zhao Y., Kalia N., Nash GB., Watson SP and Rainger GE. Endothelial cell borne platelet bridges selectively recruit monocytes in human and mouse models of vascular inflammation. **Cardiovascular Research**. (In press). **http://cardiovascres.oxfordjournals.org/cgi/reprint/cvr040?ijkey=D4yoyHy8PzRkwzm&keytype=ref (http://cardiovascres.oxfordjournals.org/cgi/reprint/cvr040?ijkey=D4yoyHy8PzRkwzm&keytype=ref)**

Tull SP, Yates CM, Maskrey BH, O'Donnell VB, Madden J, Grimble RF, Calder PC, Nash GB, RaingerGE.**PLoS Biol** 7(8): e1000177. doi:10.1371/journal.pbio.1000177

Smith E, McGetterick H, Stone MA, Shaw JS, Middleton J, Nash GB, Buckley CD, and Rainger GE. (2008). The Duffy Antigen Receptor for Chemokines and CXCL5 are essential for the recruitment of neutrophils in a multi-cellular model of the rheumatoid arthritis synovium. **Arthritis Rheum**, 58; 1968-1973.

Buckley CD, Ross EA, McGettrick HM, Osborne CE, Haworth O, Schmutz C, Stone PCW, Salmon M, Matharu NM, Vohra RK, Nash GB and Rainger GE (2006). Identification of a phenotypically and functionally distinct population of long lived neutrophils in a model of reverse endothelial migration. **J Leuk Biol**. 79:303-311.

Tull SP, Anderson SI, Hughan SC, Watson SP, Nash GB and Rainger GE. (2006). Cellular pathology of atherosclerosis: smooth muscle cells promote adhesion of platelets to co-cultured endothelial cells. **Circ Res**. 98: 98-104.

Lally F., Smith E., Filer A., Stone M.A., Shaw SJ, Stone M.A., Nash G.B., Buckley C.D and Rainger G.E (2005) A novel mechanism of neutrophil recruitment in a coculture model of the rheumatoid synovium. **Arthritis and Rheumatism .52: 3460-3469.**52: 3460-3469 (Cover title).

Tsouknos A., Nash G.B., and RaingerG.E. (2003) Monocytes initiate a cycle of leukocyte recruitment when cocultured with endothelial cells. **Atherosclerosis**170: 49-58

Rainger G.E. and Nash G.B. (2001). Cellular pathology of atherosclerosis: smooth muscle cells prime cocultured endothelial cells for enhanced leukocyte adhesion. **Circulation Research** 88: 615-622

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