University of Birmingham

Dr Simon Afford PhD FRCPath.

Reader in Liver Immunopathology

School of Immunity and Infection (/schools/immunity-infection/index.aspx)

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About

Simon Afford holds a Readership in Liver Immunopathology within the School of Infection and Immunity .

Simon has published extensively in scientific journals as well as reviews and book chapters in the fields of cellular and molecular mechanisms of hepatic inflammation. He has received major grants from the Wellcome Trust, Medical Research Council, Biological and Biological Science Research Council and NIHR BRU.He also sits on the editorial board of several prestigious international journals, and has served on many national and international scientific advisory boards and international meeting organising committees.

He is an enthusiastic communicator on his specialist research theme at national and international scientific and biomedical research meetings as well as to various lay groups in the broader community.

Qualifications

- Fellow of Royal College of Pathologists 2008
- Member of the Royal College of Pathologists 2000
- PhD in Immunology University of Birmingham 1988
- C Biol. MI Biol. Institute of Biology 1984
- Fellow of the Institute of Medical laboratory Sciences 1983

Biography

Prior to commencement of his PhD at the University of Birmingham and the beginning of his academic career, Simon worked and qualified as a senior chief research technician attaining the qualifications of Fellowship of the Institute of Medical Laboratory Sciences and Membership of the Institute of Biology. He went on to study for a PhD in Immunology and subsequently obtained a personal career development award from the Chest Heart and Stroke Foundation. Simon then joined the Department of Medicine and the Liver Research Laboratories as a post doctoral fellow continuing to work in Birmingham. In recognition of his published contributions to the field of liver immunopathology, he was awarded an honorary MRC Path in 2000 his Readership in 2006, and FRC Path in 2008.

Teaching

Teaching Programmes

- **Medical Science BMedSc (/undergraduate/courses/med/medical-sci.aspx)**
- **Medicine and Surgery MBChB (/undergraduate/courses/med/medicine.aspx)**

Postgraduate supervision

Simon is interested in supervising doctoral research students in the following areas:

- The role of TNF/TNFR family members in the development of chronic inflammatory and malignant liver disease .
- Enhancement of the liver cancer patients immune system
- The effects of oxidative stress on liver epithelial cell biology

If you are interesting in studying any of these subject areas please contact Simon 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

RESEARCH THEMES
Chronic Inflammatory Liver Disease, Cancer Cell Biology, Clinical Trials, Tumour Immunology and Immune/Gene Therapy

RESEARCH ACTIVITY
Chronic inflammation which fails to resolve is a characteristic feature of many life threatening liver diseases including primary biliary cirrhosis, primary sclerosing cholangitis, hepatitis, alcoholic liver disease, liver allograft rejection and liver cancer. Severe inflammation can lead to permanent tissue damage including fibrosis, loss of organ function and in some cases malignant disease including hepatocellular and cholangiocarcinoma. My group focuses predominantly on the cell and molecular mechanisms which control primary liver cell survival including the intracellular signalling pathways which direct cholagiocyte and hepatocyte survival, apoptosis, autophagy, and cellular transition.

Our access to human liver tissue via the clinical transplant program enables us to carry out detailed molecular and cell biological studies on isolated characterised populations of primary liver cells including epithelium (hepatocytes and cholangiocytes), intrahepatic endothelium, liver derived tumour and inflammatory cells. A better understanding of the pathways which regulate hepatic inflammation is a crucial step which offers the potential to identify new molecular targets and design more specific and effective therapeutic treatments for chronic inflammatory liver disease.
My group has extensive expertise in primary human liver cell isolation and culture and associated immunobiochemical technologies for molecular analysis of cell phenotype and function.

A major focus of our research has been determine how activation of tumour necrosis factor receptor (TNFr) superfamily members, particularly CD40 and Fas regulate cell function and survival during inflammation. Most widely known as a costimulatory molecule, CD40 is critical for several aspects of T cell B cell interactions. CD40 is also widely expressed on non haematopoietic cells in the liver where its function is different. My group has shown that CD40 is upregulated in inflammatory liver disease on liver epithelium (hepatocytes and cholangiocytes) and endothelium. It may well have roles in modulation of leukocyte recruitment via endothelium. It also has a profound effect on epithelial cell survival and endothelial cell proliferation.

As a major priority, we are pursuing studies designed to test the hypothesis that TNFR family members including CD40, Fn14, and ROS mediated mechanisms contribute to a tissue microenvironment which promotes chronic inflammation and development of liver pathobiology.

We are also pushing forward rapidly with the NIHR BRU initiative which involves targeting the CD40 system with novel therapeutic agents to stimulate antitumour immune responses in patients with hepatocellular and cholangiocarcinoma.

Other activities

Editorial Board Membership
J.Hepatology
Transplantation
Liver Transplantation
PLoS One
World Journal of Gastroenterology
Frontiers in BioScience.

CNRS and INSERM International Review Panel for Post Doctoral Career Development Award Programme.

Publications

RH Bhogal, CJ Weston, SM Curbishley, DH Adams, SC Afford. (2012) Autophagy: A Cyto-Protective Mechanism which Prevents Primary Human Hepatocyte Apoptosis During Oxidative Stress. Autophagy 2012 Apr 1;8(4). [Epub ahead of print]

Bhogal RH, CJ Weston, SM Curbishley, DH Adams and, SC Afford. (2012) Activation of CD40 via platelet derived CD154 amplifies ROS mediated hepatocyte death during hypoxia and reoxygenation. PLoS One 7(1):e30867. Epub 2012 Jan 25.

Wilson GK, Brimacombe CL, Reynolds GM, Fletcher F, Soames M, Ashcroft M, Afford S, Mitry R, Hubscher SG, Balfe P, McKeating JA (2012) A dual role for hypoxia inducible factor-1 alpha in the hepatitis C virus lifecycle and hepatoma migration. J.Hepatology. Apr;56(4):803-9. Epub 2011 Dec 16.

Bhogal RH, Hodson J, Bartlett DC, Weston CJ, Curbishley SM, Haughton E, Williams KT, Reynolds GM, Newsome PN, Adams DH, Afford SC. (2011) Primary Human Hepatocyte Isolation: a 100 liver experience PLoS One. 2011 Mar 29;6(3):e18222.

Bhogal RH, CJ Weston, SM Curbishley, Anand Bhatt, DH Adams and, SC Afford. (2011) Periportal and Perivenular Hepatocytes show Differential Capacity to Generate ROS in Response to CD40 activation during Hypoxia and Reoxygenation. FEBLett. 2011 Feb 25. [Epub ahead of print]

Humphreys, E.H., K.T.Williams, D.H.Adams and S.C.Afford. (2010) Primary and Malignant Cholangiocytes undergo CD40 mediated Fas dependent apoptosis, but are insensitive to direct activation with exogenous Fas Ligand. PLoS One. 2010 Nov 17;5(11):e14037.

Bhogal RH, CJ Weston, SM Curbishley, DH Adams and, SC Afford. (2010) Reactive Oxygen Species mediate human hepatocyte injury during hypoxia and reoxygenation. Liver Transpl. 2010 Nov;16(11):1303-13.

Edward Alabraba, Vincent Lai, Steven Wigmore, David Adams & S.C.Afford. (2008) Co-culture of Human Liver Macrophages and Cholangiocytes leads to CD40 Dependent Apoptosis and Cytokine Secretion. Hepatology. 2008 Feb;47(2):552-62.