Professor Philip Newsome PhD, FRCPE

Professor of Experimental Hepatology and Hon Consultant Hepatologist
Head of Cell Therapy

School of Immunity and Infection

Contact details

Telephone +44 (0)121 415 8700 (tel:+44 121 415 8700)

Telephone (2) +44 (0)121 414 5614 (tel:+44 121 414 5614)

Email p.n.newsome@bham.ac.uk (mailto:p.n.newsome@bham.ac.uk)

Centre for Liver Research 5th Floor
Institute of Biomedical Research
School of Immunity and Infection
College of Medical and Dental Sciences
University of Birmingham
Edgbaston
Birmingham
B15 2TT
UK

About

Philip Newsome is Professor of Experimental Hepatology and Clinical Director of the Birmingham University Stem Cell Centre

Philip has published over major research papers in scientific journals as well as reviews and book chapters in the fields of stem cell biology and liver disease. He has received major grants from NIHR, European Union, Wellcome Trust, UKSCF, BBSRC and the Medical Research Council.

He is an enthusiastic communicator on the theme of translational stem cell work and non-alcoholic fatty liver disease and gives frequent talks to various groups at both the local and national level. Philip frequently contributes to both the local and national media and continues to advise the BBC on stem cell-related stories.

Qualifications

- Fellowship of Royal College of Physicians Edinburgh 2009
- PhD Medicine 2003
- MBChB 1995
- BSc (Hons) Neuroscience 1994

Biography

My work thus far has focussed on the cellular contributions to repair following liver injury. This has included hepatocytes, embryonic stem cell derived hepatocytes and bone marrow-derived stem cells.

He completed his medical and doctoral training in Edinburgh where he studied the hepatocytic contribution of human stem cells in vitro and also in murine models. As part of this he identified mechanisms regulating hepatocyte adhesion during liver injury. During his clinical training in Edinburgh he established a group which continued studies of human adult and also human embryonic stem (hES) cells. The work with human embryonic stem cell derived hepatocytes has led to the refinement of differentiation protocols such that they are able to reliably produce large numbers of homogeneous cells which have many of the mature functions seen in primary human hepatocytes. This has had immediate implications in their use by pharmaceutical companies for drug testing, and will also be relevant in the context of their use for bio-artificial liver support systems. This is hugely relevant in the arena of hepatocyte transplantation for liver disease, which is currently limited by our inability to ensure adequate engraftment of donor hepatocytes in the diseased liver.

He has now established a group in Birmingham which has a major interest in studying the trafficking, engraftment and functional contribution that bone marrow stem cells and hES-derived hepatocytes make to liver injury/regeneration. This work is funded by way of project grants and clinical training fellowships from the MRC.

He is also a PI on the NIHR Biomedical Research Unit in Birmingham which includes a trial of haematopoietic stem cells in patients with chronic liver disease (REALISTIC study). He is the Chief Investigator on this trial, which is twinned with Edinburgh, and has started recruitment. He is also the co-Director/Clinical Director for the Birmingham University Stem Cell Centre (BUSCC).

With respect to his clinical practice he is the clinical lead for the metabolic liver service at the Liver Unit in Birmingham. This includes cohorts of patients with Non-alcoholic fatty liver disease (NAFLD) tyrosinaemia, glycogen storage disease, porphyria and cystic fibrosis, who are likely candidates for cell therapy in the future. Building on this clinical programme he has developed a research interest in NAFLD which encompasses both basic science and clinical components (funded by Wellcome Trust).

Prospective researchers should contact him regarding job/training opportunities.

Teaching

Teaching Programmes

A range of lectures on aspects of stem cell biology, stem cell contribution in liver injury, liver regeneration and disease modelling using genetically modified mice. These include stem cell courses for **BMedSci (/undergraduate/courses/med/medical-sci.aspx)** , and one-off lectures for a number of **MBChB (/undergraduate/courses/med/medicine.aspx)** , MSc and BSc courses. He also provides bed-side teaching for clinical students.

Module lead on **BMedSci (/undergraduate/courses/med/medical-sci.aspx)** course (liver disease and health)

Postgraduate supervision

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

- Contribution of adult stem cells to liver injury and repair.
- Non-alcoholic fatty liver disease; ranging from laboratory to clinical studies.

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

Stem Cell Biology, Clinical Trials, Cell trafficking and Non-alcoholic fatty liver disease

RESEARCH ACTIVITY

As a clinician scientist Phil's research starts with cutting edge basic science work which is being successfully translated to the bedside by way of innovative therapeutic studies, such as the NIHR-funded clinical trial of stem cell therapy in patients with liver cirrhosis for which he is Chief Investigator. This is the largest randomised controlled trial of stem cell therapy thus far and is in collaboration with his colleague Stuart Forbes in Edinburgh. Demonstration of efficacy in this trial would have a major impact in the NHS given the rising levels of liver cirrhosis in the UK and the lack of effective therapies at present.

Stem Cell Biology

The main emphasis of his group's laboratory work over the last few years has been on the trafficking and role of both adult and embryonic stem cells in the context of liver injury. This has allowed identification of the key molecular interactions that regulate the successful engraftment of such cells into the liver.

Non-alcoholic fatty liver disease

Additionally he has a bench to bedside programme of research in non-alcoholic fatty liver disease (NAFLD). He is clinical lead for the metabolic liver service at UHBFT and is Chief Investigator on a Wellcome Trust funded randomised double-blinded placebo controlled trial of Liraglutide (novel Glucagon-like peptide-1 analogue) in patients with NAFLD. This is an Investigator initiated study performed in conjunction with an industrial partner (Novo Nordisk) and the University of Nottingham (Guru Aithal). NAFLD is now the commonest cause of liver disease in the West, and for which again there are no effective therapies.

Other activities

- Clinical lead for metabolic liver disease at the Liver Unit, University Hospital Birmingham NHS Foundation Trust
- Lead for CPD in the School of Immunity and Infection
- Expert advisor for the Association of Glycogen Storage Disorders

Publications

Dowman J, Gunson B, Bramhall SJ, Badminton M, Newsome PN. Transplantation of Livers from Donors with Acute Intermittent Porphyria. Annals of Internal Medicine. 2011 in press.

MJ Armstrong , DD Houlihan, L Bentham, JC Shaw, R Cramb, S Olliff, PS Gill, JM Neuberger, RJ Lilford, PN Newsome. Presence and Severity of Non-alcoholic Fatty Liver Disease in a Large Prospective Primary Care Cohort. J Hepatology 2011 in press.

Dowman JK, Tomlinson JW, Newsome PN. Systematic review: the diagnosis and staging of non-alcoholic fatty liver disease and non-alcoholic steatohepatitis. Aliment Pharmacol Ther. 2011 Mar;33(5):525-40. doi: 10.1111/j.1365-2036.2010.04556.x. Epub 2010 Dec 29. PMID: 21198708.

Payne CM, Samuel K, Pryde A, King J, Brownstein D, Schrader J, Medine CN, Forbes SJ, Iredale JP, Newsome PN*, Hay DC*. Persistence of functional hepatocyte-like cells in immune-compromised mice. Liver Int. 2011 (* joint senior author)
Feb;31(2):254-62. doi: 10.1111/j.1478-3231.2010.02414.x. Epub 2010 Dec 10. PMID: 21143581.

Crosby HA, Lalor PF, Ross E, Newsome PN, Adams DH. Adhesion of human haematopoietic (CD34+) stem cells to human liver compartments is integrin and CD44 dependent and modulated by CXCR3 and CXCR4. J Hepatol. 2009
Oct;51(4):734-49. Epub 2009 Jul 30. PMID: 19703720.

Hay DC, Fletcher J, Payne C, Terrace JD, Gallagher RC, Snoeys J, Black JR, Wojtacha D, Samuel K, Hannoun Z, Pryde A, Filippi C, Currie IS, Forbes SJ, Ross JA, Newsome PN*, Iredale JP*. Highly efficient differentiation of hESCs to functional hepatic endoderm requires ActivinA and Wnt3a signaling. Proc Natl Acad Sci U S A. 2008 Aug 26;105(34):12301-6. (* joint senior author) Epub 2008 Aug 21. PMID: 18719101; Central PMCID: PMC2518825.

Houlihan DD, Newsome PN. Critical review of clinical trials of bone marrow stem cells in liver disease. Gastroenterology. 2008 Aug;135(2):438-50. Epub 2008 May 15. Review. PMID: 18585384.

Newsome PN, Johannessen I, Boyle S, Dalakas E, McAulay KA, Samuel K, Rae F, Forrester L, Turner ML, Hayes PC, Harrison DJ, Bickmore WA, Plevris JN. Human cord blood-derived cells can differentiate into hepatocytes in the mouse liver with no evidence of cellular fusion. Gastroenterology. 2003 Jun;124(7):1891-900. PMID: 12806622.

Expertise

Stem cell research for liver disease; clinical interest in fatty liver disease and liver transplantation; metabolic liver disease (cystic fibrosis, porphyria, glycogen storage disease)