

# Cytokines in translational research: bench to bedside

The BioPark Hertfordshire, Welwyn Garden City, AL7 3AX: 8<sup>th</sup> July 2010

"This meeting will review the importance of efficient cytokine detection in translational medicine from the bench to bedside. From basic research to clinical trials the optimal way to assess cytokine levels will be discussed evaluating relatively low-tech methods such as ELISA to high throughput multiplex platform technologies. The best way to evaluate cytokines as mediators of pathology, as immunotherapeutics and as biomarkers will be addressed" Meeting Chair - Dr Stephen J Thompson, King's College London

This event has CPD accreditation and will have a [troubleshooting panel session](#).

On registration you will be able to submit your questions to the panel that will be asked by the chair on the day of the event

- 9:00 – 9:45      **Registration**
- 9:45 – 10:00    **Introduction by the Chair:** *Dr Stephen J Thompson*, King's College London
- 10:00 – 10:30    **BiP: an anti-inflammatory mediator which induces a TH2 cytokine profile**  
*Dr Valerie Corrigan*, KCL School of Medicine at Guy's, King's and St Thomas' Hospitals, London, UK  
Translational research, from bench to bedside, has many difficulties not least due to the differences that arise following the transfer from in vitro to in vivo systems across species. Our research with BiP has involved human *in vitro*, murine *in vivo* and a human/murine xenogeneic *ex vivo* models. Throughout our investigations we have shown a consistency in the pattern of cytokine production induced by BiP with sustained IL-10 production in conjunction with increased TH2 cytokines, IL-4 and IL-5, and downregulation of pro-inflammatory cytokines such as TNF alpha. This anti-inflammatory cytokine profile is at least partially responsible for the immunomodulatory characteristics of BiP.
- 10:30 – 11:00    **Th17: a missing link in immunity**  
*Dr Marc Veldhoen*, MRC National Institute for Medical Research, UK
- 11:00- 11:10    **Speakers photo**
- 11:10 – 11:30    **Mid-morning break and poster viewing**
- 11:30 – 12:00    **KeyNote Speaker**  
**Talk title to be confirmed**  
*Professor Berent Prakken*, University Medical Centre Utrecht , The Netherlands
- 12:00 – 12:30    **Flow cytometry to analyse T cell subsets in tissue & Th17 cells**  
*Dr Alistair Noble*, King's College London  
Direct ex vivo analysis of T cell subsets in inflamed peripheral tissues by intracellular cytokine staining can be hampered by high background staining and low percentages of cytokine-positive cells. We have analysed T cell cytokine phenotypes in allergic airway disease and obtained cytokine profiles of T cell subsets during the acute and chronic stages of inflammation. Despite low levels of secreted IL-17 in lavage fluid at the acute stage we demonstrated the predominance of the CD4 Th17 subset in inflamed lung tissue and in the airways. Collaboration between Th17 and Th2 cells in the lung may regulate the progression of asthmatic disease via remodelling of the airways.
- 12:30–13:30    **Lunch and Poster Viewing**
- 13:30 - 14: 30    **Question and Answer Session**  
Delegates will be asked to submit questions to a panel of experts. Questions can be submitted before the event or on the day
- 14:30 – 15:00    **Cytokine secretion for the isolation of antigen specific T cells - from rare cell analysis to cellular therapeutics**  
*Dr John Campbell* – Miltenyi Biotec Ltd, Surrey, UK  
Antigen-specific T cells secrete cytokines in response to stimulation with their cognate antigen. Using the cytokine capture system, we can harness this to examine and isolate antigen specific T cells even at very low frequencies from complex mixtures. The ultimate application of this is in the clinical-grade isolation of antigen-specific T cells for

therapeutic use. Here I will discuss the applications of this technology in both the diagnostic and therapeutic settings.

15:00 – 15:30 **Afternoon Tea/Coffee and Last Poster Viewing**

15:30 – 16:00 **Cytokine-based strategies for diagnostics and therapeutics in autoimmune disease**

*Professor Mark Peakman*, Kings College, London

Type 1 diabetes arises when the immune system becomes poorly regulated and destroys the beta cells in the pancreas, which make insulin, a hormone that controls blood glucose levels and is therefore vital to life. The immune attack is the result of a genetic predisposition, and is probably triggered by a common environmental insult. Our research focuses on the role of autoreactive T cells in this process and in recent years we have unravelled elements of the pathways to disease using cytokine-based approaches.

16:00 – 16:30 **Effector and Regulatory T cells in CNS autoimmune disease**

*Professor Steve Anderton*, University of Edinburgh, Scotland

17:00 **Chairman's summing up.**

You can network with people from this event at

**Nature network** - <http://network.nature.com/groups/euroscicon/>

**Linked In-** <http://www.linkedin.com/groups?gid=1939569>

**Facebook** - <http://www.facebook.com/group.php?gid=70847076549>

**Twitter** - <http://twitter.com/Euroscicon/>

About the Chair:

**Stephen Thompson** received his B.Sc. in Cellular Pathology from the University of Bristol in 1984. He received his PhD in 1989 for studies characterising the role of House Dust Mite allergens in children with asthma and eczema. After these studies he began working on murine models of inflammatory arthritis, most notably pristane-induced arthritis, where he and his group were one of the first to characterise the immunopathology of this disease. Through the award of Arthritis Research Campaign post-doctoral fellowships (both in the UK and at the Southwestern Medical Center in Dallas, USA) he developed his interests in the role of stress proteins as inducers or targets of regulatory T cells and their potential use as anti-inflammatory immune modulators. He is currently based at Kings College London, Department of Rheumatology at Guys Hospital where he and his colleagues continue translational research to evaluate novel immunotherapeutic strategies for the treatment of rheumatoid arthritis

About the Speakers

Following a degree in Bacteriology from Edinburgh University **Valerie Corrigan** gained her PhD in Immunology from London University. Since then she has had a specific interest in T cells in inflammation biology and in particular their role in rheumatoid arthritis. Valerie is now senior lecturer in the Academic Department of Rheumatology on the Guy's Hospital Campus of KCL School of Medicine. Recently she was instrumental in isolating and identifying the stress protein BiP as a novel autoantibody in rheumatoid arthritis. Her subsequent work has generated data showing BiP has powerful anti-inflammatory and immunoregulatory properties. A clinical trial for BiP as a novel immunotherapy for rheumatoid arthritis is to be started later this year.

**Mark Peakman** trained in medicine at University College Hospital and pursued postgraduate training in clinical immunology. After he received his PhD in immunology of type 1 diabetes he held a senior clinical research fellowship at University of Pittsburgh. He subsequently returned to the UK and now oversees a research group at King's College London in the Department of Immunobiology. The main focus of the research is the cause of the autoimmune disease, type 1 diabetes (T1D). T1D is the third commonest autoimmune disease in the UK after thyroid autoimmunity and rheumatoid arthritis. Through defining critical targets for the immune response in diabetes the group has been able to examine how the immune system recognizes beta cells, and thus unravel disease mechanisms. More recently, this knowledge has been used to conduct the first clinical trial in T1D of a novel approach, called peptide immunotherapy. Going forward, a better understanding of the role of the immune response in T1D will promote the development of novel therapeutic strategies.

**Marc Veldhoen** trained in Medical Biology at the Faculty of Medicine, Utrecht University, and continued his scientific career at the Division of Molecular Immunology at the National Institute for Medical Research in Mill Hill, London. He was the first to describe the de novo differentiation of the new Th17 as well as the Th9 subsets of T helper cells. He went on to show the importance of Th17 cells in

the initiation of autoimmune responses and, via the identification of the Aryl Hydrocarbon Receptor in Th17, established a link between environmental toxins and auto-immunity.

**John Campbell** joined Miltenyi Biotec Germany in 2001 as project leader in T cell immune therapy, formerly lecturer in tumour Immunology at Glasgow University. Director of Clinical Immunology 2005-2006 USA. Now managing all aspects of clinical trials and applied immunology for MB UK. Long standing interest in flow cytometry, particularly rare cell analysis; use of MHC-Antigen complexes; measurement of cytokine production; analysis of patient samples; isolation of cells from complex mixtures

**Alistair Noble** started his career in cellular immunology research with a PhD at Guy's Hospital Medical School, investigating regulation of the allergic immune response. After postdoctoral studies in immune regulation at Harvard Medical School he returned to the UK to join King's College London in 1996. His research group investigates the regulation of T cell subsets and inflammatory processes in allergy and asthma.

*This meeting was **organised by Euroscicon** ([www.euroscicon.com](http://www.euroscicon.com)), a team of dedicated professionals working for the continuous improvement of technical knowledge transfer to all scientists. Euroscicon believe that they can make a positive difference to the quality of science by providing cutting edge information on new technological advancements to the scientific community. This is provided via our exceptional services to individual scientists, research institutions and industry. The event was hosted by **'BioPark** ([www.biopark.co.uk](http://www.biopark.co.uk)), a research and development centre in Welwyn Garden City providing specialist facilities and support for bioscience and health technology businesses to grow, and to develop new products and technologies*

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