

One Medicine: Comparative Aspects of Research and Clinical Diagnosis in Allergic Disease

BioPark, Hertfordshire, UK: Friday, November 20, 2009

"The concept of 'one medicine' linking disease diagnosis in human and veterinary patients is gathering momentum internationally. This meeting focuses on the comparative aspects of allergy research, clinical diagnosis and therapy in humans and animals". Meeting Chair - Professor Michael J. Day *BSc BVMS(Hons) PhD Dipl ECVP FASM FRCPath FRCVS*, University of Bristol, UK

This meeting has CPD accreditation

- 9:30 – 9:45 Registration
- 9:45 – 10:00 Introduction by the Chair: *Professor Michael J. Day*, University of Bristol, UK
- 10:00 – 10:30 **Identification of the major allergens in saliva of *Culicoides nubeculosus* (biting midge).**
Dr Doug Wilson, University of Bristol, UK
Insect bite hypersensitivity (IBH) is an allergy of horses to the bites of midges [*Culicoides spp.*]. Affected horses develop an acute phase response following intradermal challenge with *Culicoides* salivary gland proteins followed by a late phase response in which skin biopsies show increased numbers of infiltrating T-cells, mast cells, eosinophils and IgE producing B-cells. Symptoms include pruritis, hair loss, serous effusion and haemorrhage followed by a chronic dermal fibrosis, and hyperkeratosis. Current research has focused on identifying the abundant salivary gland proteins of *Culicoides* that act as allergens; with a long term goal of developing an effective immunotherapy for this condition.
- 10:30 – 11:00 **Immunopathogenesis of equine allergic diseases: insect bite hypersensitivity**
Dr Elaine Marti, Division of Clinical Research VPH, Vetsuisse Faculty, University of Bern, Switzerland
Insect bite hypersensitivity (IBH) is mainly caused by an immediate type hypersensitivity reaction to bites of insects of the genus *Culicoides*. IBH-affected horses have IgE antibodies against various salivary gland proteins from *Culicoides* and their basophils release histamine and sulfidoleukotrienes after stimulation with *Culicoides* extract. IBH does not occur in Iceland where *Culicoides* are absent. However, following importation into continental Europe where *Culicoides* are present, more than 50% of Icelandic horses develop IBH but fewer than 10% of their offspring born in Europe do so. Differences in the *Culicoides*-specific immune response between these two groups of horses will be presented.
- 11:00 – 11:05 Speakers photo
- 11:05 – 11:30 Mid-morning break and poster viewing
- 11:30 – 12:00 **Genetics of Canine Atopic Dermatitis: A Suitable Model for the Human Condition?**
Shona Wood, Faculty of Veterinary Sciences, The University of Liverpool, UK
The use of canines as a model for human disease is advantageous because different breeds form genetically isolated populations in strong linkage disequilibrium. This is of benefit in genetic study because less genetic markers are required to find an association with the disease and smaller sample sizes can be used to find these associations, relative to human genetic studies. My work has focused on the identification of the genetic factors causing cAD. By using mRNA expression microarray, qPCR validation and literature searches candidate genes for cAD have been identified. Moreover a whole genome scan was performed using the Illumina SNP chip to identify potentially causative SNPs. These data informed a large scale case/control comparison of SNP frequencies using the Sequenom platform. I will discuss the results of this study in terms of the similarities with the human condition and the use of the dog as a disease model for humans.
- 12:00 – 12:30 **The pathogenesis of canine atopic dermatitis**
Dr Tim Nuttall, The University of Liverpool, UK
Canine atopic dermatitis (AD) is a common inflammatory dermatosis with a complex pathogenesis. It is possible that epidermal barrier defects enhance exposure to allergens, irritants and micro-organisms. Most cases possess IgE to environmental allergens (10-20% of cases appear to be non-allergic), which bind to FcεRI on Langerhans cells, enhancing allergen capture, and mast cells, mediating activation. Acute lesions are dominated by TH2-type chemokines and cytokines that recruit and activate eosinophils and other cells. Subsequent self-trauma, keratinocyte

activation and microbial colonisation induce TH1-mediated chronic cell-mediated inflammation. Failure of T-regulatory cell mechanisms may prevent resolution.

- 12:30 – 13:30 Lunch and poster viewing
- 13:30 – 14:00 Talk Title to be confirmed
Dr Petra Roosje, University of Bern, Switzerland
- 14:00 – 14:30 Selected Oral Presentations
- 14:30 – 15:00 **Mechanisms of allergy and their diagnostic relevance**
Dr Carsten B. Schmidt-Weber, Imperial College, London, UK
Allergy disease are caused by immunologic allergen tolerance. Recent developments in the understanding of the immune system dramatically changed our view on the cause of this loss of immune tolerance. Consequently diagnosis of this immunologic disease requires more comprehensive approaches.
- 15:00 Chairman's summing up & close.

About the chair

Professor Michael Day qualified as a veterinary surgeon from Murdoch University in 1982. After a period in small animal practice he returned to Murdoch to complete a PhD and Residency in Microbiology and Immunology. Michael held postdoctoral positions in experimental immunology at the Universities of Bristol and Oxford, and in 1990 returned to Bristol where he is currently Professor of Veterinary Pathology and Director of Laboratory Diagnostic Services. Michael is chairman of the WSAVA Scientific Committee and Editor-in-Chief of the *Journal of Comparative Pathology*. He has been a recipient of the BSAVA Amoroso (1999) and Petsavers (2000, 2005, 2006) Awards and the RCVS Norman Hall Medal (2003).

About the Speakers

Shona Wood is a Zoology graduate from the University of Wales, Bangor. Her experience in canine genetics is gained from time spent as a research technician at the Centre for Integrated Genomic Medical Research at the University of Manchester. She is currently funded by the BBSRC and Pfizer animal health to research the genetics of canine atopic dermatitis for a PhD degree in the Faculty of Veterinary Science at the University of Liverpool.

Dr Doug Wilson is a Lecturer in virology at the University of Bristol school of Veterinary Sciences. His main area of research is the immunology of horses with a special interest in the immunopathology of Insect Bite Hypersensitivity (IBH).

Dr Tim Nuttall graduated from The University of Bristol Veterinary School in 1992. After three years in practice he undertook a residency in veterinary dermatology followed by a PhD studying canine atopic dermatitis. He then moved to The University of Liverpool Veterinary School, where he is currently Senior Lecturer in Veterinary Dermatology. With his colleague Neil McEwan, Tim runs a busy referral dermatology clinic and has research interests in the genetic basis of atopic dermatitis, microbial colonisation of the skin and antimicrobial resistance. Outside of work he enjoys hill walking, mountain biking, kayaking and single malt whisky.

Dr Eliane Marti graduated as DVM from the Faculty of Veterinary Medicine of the University of Bern. Thesis on the genetic basis of Allergic Diseases in the horse. Worked in a research project as visiting scientist on equine sarcoid at the Baker Institute, Cornell, USA. 1992-1994 postdoctoral research position at the Div. Of Immunogenetics, Faculty of Veterinary Medicine, Bern. 1995 Research project at the Animal Health Trust, Newmarket, UK. 1996-2001: postdoctoral research at the Div of Immunogenetics, University of Bern. 2001 Habilitation in Veterinary Immunology. Since 2002 Head of the Group of Clinical Immunology, Div. of Clinical Veterinary Medicine, University of Berne. Main research area is insect bite hypersensitivity in horses.

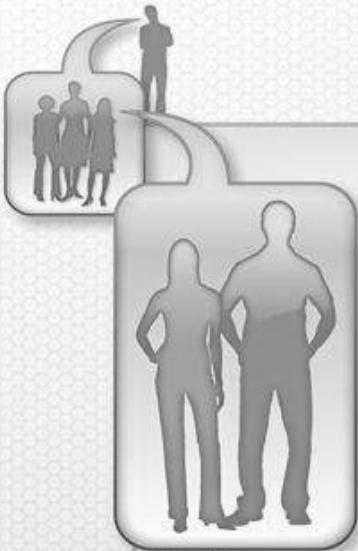
Dr Carsten B. Schmidt-Weber is reader at the Allergy and Clinical Immunology at NHLI, Imperial College. He is coordinating the experimental and molecular activities of the Section of Allergy and Clinical Immunology, is directing the Molecular Immunology group and is member of the Asthma UK MRC centre. His main interest are mechanisms underlying allergen tolerance.

This meeting was organised by Euroscicon (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), a research and

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