Empowered Antibodies 2013

14 May 2013
The Stevenage Bioscience Catalyst
Gunnels Wood Road, Stevenage , Hertfordshire, United Kingdom

The aim of this event is to discuss new ideas to accelerate antibody-drug conjugates, bispecifics and other empowered antibody therapies to the clinic.

This event has CPD accreditation

This event is part of the 2013 ***Euroscicon BioTherapeutics Week***,
to find out more see www.biotherapeutics2013.com

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Meeting chair
Professor Roy Jefferis, PhD; CChem, FRSC; MRCP; FRCPath; DSc
Professor Emeritus: Molecular Immunology School of Immunity & Infection University of Birmingham B15 2TT UK

Who Should Attend
Biotech and Pharma Industry: CEOs, Chief Scientists, Group Heads, Senior and Junior Scientists, Research

Academic and Research Institutes: Group and Lab Heads, Postdoctoral Scientists and Research Students

People working in

- Antibody Development
- Antibody Discovery
- Antibody Engineering
- Formulation Development
- Biologics
- Monoclonal antibody operations
- Immunoassay development
- Protein Engineering
- Translational Research
- Discovery Chemistry
- Molecular Medicine
- Molecular Discovery Research
- Molecular Biology and Chemistry
- Regulatory Affairs
- Business Development
- Genomics

9:00 – 9:45 Registration

9:45 – 10:00 **Introduction by the Chairs**: Professor Roy Jefferis, PhD; CChem, FRSC; MRCP; FRCPath; DSc
Professor Emeritus: Molecular Immunology School of Immunity & Infection University of Birmingham B15 2TT UK

10:00 – 10:40 **Radionuclide imaging and therapy with antibodies**
Professor Phil Blower, Kings College London, UK
Radiolabelling antibodies and antibody fragments with gamma and positron emitting radionuclides serves is valuable both for diagnostic imaging in patient management (for detection/localisation of disease, and for studying the in vivo biological behaviour and distribution of therapeutic antibodies. With suitable beta or alpha emitting radionuclides it can also be applied in targeted radionuclide therapy of cancer. This presentation will outline examples of these applications under development, and some of the methods for radiolabelling with different radionuclides.

10:40 – 11:20 **Antibody directed phototherapy**
Dr Mahendra Deonarain, CSO, PhotoBiotics Ltd & Honorary Reader in Antibody Technology, Imperial College London.

Photo-activated ADCs promise to combine the cosmetic benefits of laser therapy with the potency and selectivity of antibody-drug targeting. We have been developing single-chain Fv antibodies specifically optimized for accommodating covalently attached PDT drugs in a technology platform called "OptiLink". Antibody fragments, by virtue of their faster clearance dramatically improve the side-effect profile of PDT drugs. We show that scFv-based ADCs, activated by laser light are can destroy tumours in a range of challenging animal models for ovarian and prostate cancer. High drug loading can be achieved even with small fragments that potentially can overcome some of the limitations seen with traditional Immunoglobulin-based ADCs.

11:20 – 11:50 **Speakers' photo then mid-morning break and trade show**
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11:50 – 12:30 **Patient humoral immune responses and the design of antibodies with improved effector functions for cancer therapy**
Dr Sophia N Karagiannis, St. John's Institute of Dermatology, King's College London School of Medicine, UK
Immune activatory and effector functions contribute to anti-tumoural efficacy of clinically-approved therapeutic antibodies. This presentation will highlight key elements of our approach towards developing antibodies with improved effector functions and efficacy, encompassing: a) elucidating antibody mechanisms of action in disease-relevant models; b) dissecting humoral (B cell and antibody) responses and antibody-blocking mechanisms in patients; c) evaluating the potential clinical applicability of different antibody classes, including those with potent effector functions such as antibodies engineered with Fc regions of the IgE class. Our anti-Folate Receptor alpha antibody in pre-clinical development supported by the CR-UK New Agents Committee is a paradigm for the latter concept. Elucidating immune escape mechanisms harbours the potential to inform the rational design of antibodies less prone to tumour-induced blockade.

12:30 – 13:10 **Antibody directed enzyme prodrug systems for cancer therapy**
Dr Surinder K Sharma, Head: ADEPT & Translational Therapeutics, UCL Cancer Institute

13:10 – 14:10 **Lunch and trade show**
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14:10 – 14:50 **Targeted co-delivery of antigens and adjuvants to dendritic cells for anti-tumour immunity induction**
Dr. Sandra Diebold, Guy's Hospital London
The initiation of immune responses is dependent on innate immune activation via sensors that detect molecular structures associated with certain pathogens. In case of viral infections, viral nucleic acids serve as molecular signatures that trigger innate immune activation. We explore synthetic mimics of viral nucleic acids as adjuvants for the induction of anti-tumour immunity. We investigate antibody-antigen-adjuvant conjugates for co-deliver antigens and nucleic acid adjuvants to C-type lectin receptor-expressing dendritic cells. This approach proved to be more efficient in inducing cytotoxic T lymphocytes than co-injection of antibody-antigen conjugates with soluble adjuvant and led to effective anti-tumour immunity in a proof-of-principal mouse model

14:50 – 15:30 **Immunogenicity, aggregation and stability assessment of antibodies**
Dr Olga Obrezanova, Lonza Biologics plc, Cambridge,
It is estimated that only 1 out of every 1,000 preclinical candidates reaches the commercial market. Most failures are due to a lack of efficacy and safety. Unwanted immunogenic responses can have serious consequences on the efficacy of drugs and potential patient safety. Stability and aggregation issues can greatly increase costs of process development and manufacturing and create timeline delays. The ability to assess the "developability" of a therapeutic candidate in early preclinical and clinical phases of development can be a very powerful tool to enhance the probability of success. A number of methodologies are available to evaluate potential development risks including safety and immunogenicity, stability and low productivity. This presentation will demonstrate *in-silico* and *in vitro* platforms for assessment of immunogenicity, aggregation and chemical stability and show examples of application of these platforms together with protein engineering to reduce immunogenicity, reduce aggregation and improve stability of therapeutic proteins and antibodies.

15: 30 – 16:00 **Afternoon Tea**

16:00 – 17:00 **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

17:00 Chairman's summing up

Media partners

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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.

About the Speakers

After studying Natural Sciences at Cambridge University, **Phil Blower** completed a DPhil in transition-metal chemistry University of Sussex in 1984. After postdoctoral research at Indiana University on a Fulbright Scholarship, and then at Oxford University, in 1987 he joined the National Health Service as Clinical Radiochemist with Kent and Canterbury Hospital (Nuclear Medicine) and University for Kent (Biosciences), combining inorganic chemistry with nuclear medicine, developing research programmes in radiochemistry and bioconjugate synthesis, leading to some of the earliest clinical evaluations of rhenium-186 and rhenium-188 therapeutic agents. In 2006 he was appointed Professor of Imaging Chemistry at King's College London.

Mahendra Deonarain obtained a first class degree in Biochemistry at Imperial College in 1988, and went on to Cambridge University in 1991 where he carried out his PhD research into protein engineering. Dr Deonarain's interests in antibody therapeutics started when he was a post-doctoral research fellow at the Imperial Cancer Research Fund where he led the development of a number of antibody based therapeutic molecules that have been patented. In 1997, he was appointed as a lecturer in the Department of Biological Sciences at Imperial College and set up a research group working on the development of recombinant antibodies and conjugates for therapy. In 2010 he was promoted to Reader in Antibody Technology at Imperial. Dr Deonarain is now a biotechnology consultant working for a number of university-based spin-out enterprises developing cancer therapeutics and retains honorary links with Imperial College. He has published more than 60 papers and patents in the area of protein and antibody engineering and conjugates. In 2001, he co-founded PhotoBiotics to commercially develop antibody-targeted PDT, which is close to entering clinical development with its lead product. He is PhotoBiotics' Chief Science Officer.

Olga Obrezanova is an applied mathematician specialising in statistical modelling of proteins and small molecules properties. She graduated from Rostov University in Russia and obtained her Ph.D. in Applied Mathematics from the same university in 1995. She then worked in Rostov University and subsequently in the University of Cambridge, doing teaching and research in the areas of underwater acoustics and fracture mechanics. In 2005 Olga joined Inpharmatica, a drug discovery company that merged with BioFocus DPI at the end of 2006, and in 2009 she transferred to Optibrium which was founded as a spin-out from BioFocus DPI. Her work focused on applying statistical modelling and machine learning methods to problems in drug discovery. In particular, she developed new computational techniques to build QSAR models of ADME properties and designed algorithms enabling automatic model generation. In 2010 she joined Lonza Biologics as a Principal Scientist in the Applied Protein Services department. Her work and research concentrates on development *of in silico* predictive tools for assessment of protein immunogenicity, aggregation and stability, in particular on development and applications of Lonza's T-cell epitope screening platform Epibase™.

Sandra Diebold has studied Biology at the Eberhardt-Karls University in Tübingen and received her PhD from the Free University Berlin for her thesis on receptor-mediated gene transfer into dendritic cells. As a PhD student she worked in Martin Zenke's laboratory at the Institute for Molecular Pathology in Vienna and at the Max-Delbrück Center in Berlin. She subsequently joined Caetano Reis e Sousa's laboratory at the Cancer Research UK London Research Institute as a postdoctoral fellow, where she studied mechanisms of viral recognition by dendritic cells. Since 2006 she is a lecturer in the Peter Gorer Department of Immunobiology at King's College London, School of Medicine. Her group is exploring the use of synthetic mimics of viral nucleic acids as adjuvants for tumour immunotherapy.

Sophia Karagiannis is a translational cancer immunologist specialising in antibody therapies for melanoma, ovarian and breast carcinomas. She received BA and MS degrees at Rutgers University, USA, having received scholarship awards and a teaching assistantship (1987, 1991), and a PhD at King's College London in Biochemistry under SERC and SmithKline Beecham-funded scholarships (1995). She subsequently developed immunotherapeutic strategies for cancer and inflammatory diseases in academic and biotechnology environments in London and Cambridge as a postdoctoral associate and scientific investigator. She was appointed as NIHR Senior Research Fellow in 2007 and presently leads her own research group as Head of Cancer Antibody Discovery and

Immunotherapy at King's College London, focused on dissecting humoral immunity in cancer and leading research into tumour-targeting mechanisms of IgE antibodies and Th2 responses in cancer. Sophia co-founded the International Task Force on AllergoOncology and has pioneered IgE therapeutics for solid tumours. Her research and development initiative on the first IgE class antibody for cancer therapy is conducted in close collaboration with clinical and academic groups at King's College London and the CR-UK Drug Development Office.

Keywords: Antibody,Antibody Discovery,Antibody Engineering,Formulation Development,Biologics,Monoclonal antibody ,Immunoassay ,Protein Engineering,Translational Research,Discovery Chemistry,Molecular Medicine,Molecular Discovery Research,Molecular Biology and Chemistry,Regulatory Affairs,Business Development
Genomics, radionuclides, PET, nuclear medicine, SPECT, radionuclide therapy, dendritic cells; nucleic acid Toll-like receptor agonists; tumour immunotherapy; C-type lectin receptors, mAb effector functions, Humoral immunity in cancer, IgG4, IgE, Monocytes/macrophages

Registration Web Site: www.regonline.co.uk/ADC2013

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- You will be issued with a FULL delegate list within 14 days of the event, which will include the email addresses of the delegates (we are sorry that there is this delay in emailing the list, but we need to make sure that it takes into account any late arrivals). You will not be included in this list if you have opted out and you can do this by logging into your registration details. This list will not be sold or ever give out to third parties. Only people attending or sponsoring the event have access to the list
- There may be an independent meeting report published within a few months of this event. If this is published we will send you an email to let you know the reference details
- Notepads and pens are available from the Euroscicon reception desk
- We cannot give out the slides from our speaker's presentations as they are deleted immediately after each event. If you require a particular set of slides please approach the speaker
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- We may take pictures during the meeting. These pictures will be used to promote our events and placed on our various websites and the closed Euroscicon group on Facebook. If you do not want your photograph distributed please let one of the Euroscicon staff know.