Cancer Vaccines

Overcoming hurdles to cancer immune response:
Cell therapies, vaccine development and combination therapies

Copthorne Tara Hotel, London, UK

CHAIRS:
- Jonathan Zalevsky, Senior Vice President Biology and Pre-Clinical Development, **Nektar Therapeutics**
- Alfredo Nicosia, CEO, **Nouscom srl/ Reithera srl**

FEATURED SPEAKERS:
- Kandeepan Ganeshalingam, Executive Director, Therapeutic Area Head Oncology, **MSD**
- Fatema Legrand, Senior Clinical Scientist, **Genentech**
- David Gilijohann, CEO, **Excire**
- Jonathan Zalevsky, Senior Vice President Biology and Pre-Clinical Development, **Nektar Therapeutics**
- Agnete Fredriksen, Chief Scientific Officer, **Vaccibody**
- Mads Hald Andersen, Professor and Vice-Director, Centre for Cancer Immune Therapy, Copenhagen University Hospital; Founder, **IO Biotech**
- Rose-Ann Padua, Research Director, **INSERM**
- Zahra Jawad, Group Leader in Discovery Technology, **Agenus**

Highlights in 2017:
- Exploring the potential of the personalisation of cancer therapies
- Maximising therapeutic potential by combining therapies with immune checkpoint inhibitors
- In-depth case study examples of peptide, DNA, neoantigen and MHC based therapy development
- Assessing the use of pre-clinical data

Biomarkers of Immune Response

12.30 – 16.00

Workshop Leaders: Rose-Ann Padua, Research Director, **INSERM** | Antoine Toubert, Head, Autoimmunity, Autoimmunity, Transplantation, **INSERM**
Eric Tartour, Head, Laboratory of Clinical Immunology, **Hôpital Européen George Pompidou** | Sharam Kordasti, Senior Lecturer, **Kings College London**
Zwi Berneman, Professor of Haematology, **University of Antwerp**

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08.30 Registration & Coffee

09.00 Chairman’s Opening Remarks
Jonathan Zalevsky, Senior Vice President Biology and Pre-Clinical Development, Nektar Therapeutics

AUTOLUMOGROUS TUMOUR CELL IMMUNOTHERAPY

09.10 OPENING ADDRESS

09.10 Generation of fully personalised cancer vaccines with a potent, cost-effective and robust technology

• How to increase potency of neoantigen-based cancer vaccines without increasing manufacturing complexity
• Do we need to optimise neoepitope selection for each therapeutic modality?
• What is the optimal number of neoepitopes to include in a single cancer vaccine?
• Key criteria for designing a successful basket trial in multiple indications with individualised cancer vaccines

Linda Powers, Chief Scientific Officer, Nektar Therapeutics

09.50 Combined adjuvants for synergistic activation of cellular immunity (CASAC)

• Induction of therapeutically effective cellular immunity against cancer associated antigens, for immune therapy of cancer, remains a major challenge
• Given the age associated prevalence of cancer, therapeutic vaccination needs to be effective in conditions of immune senescence
• Therapeutic outcome in response to vaccination will also be dependent on the effective blockade of tumour induced immune suppression, tumour microenvironment, and adequate access of the effector cells to the target cells and tissues
• The development of a platform for screening based identification of combinations of immune regulators, enabling the induction of very effective stimulation of antigen specific cellular immunity will be described.
• The path to the clinical evaluation of a number of strategies for the vaccination induced cellular immunity will be discussed

Farzin Farzaneh, Professor of Molecular Medicine, Kings College London

10.30 Morning Coffee

11.00 DCVax®: Novel personalised immune therapies for solid tumors

• DCVax® is a fully personalised precision medicine, tailored to the individual patient and their tumor.
• DCVax® is designed to mobilise many active agents of the immune system to hit many targets on the cancer, unlike conventional cancer drugs and some other immune therapies, which generally use a single active agent to hit a single target on the cancer.
• A full course of DCVax® doses can be manufactured in a single batch within about a week, and can be stored frozen until needed (including for years)

Linda Powers, CEO, Northwest Biotherapeutics

COMBINATION THERAPIES

11.40 Therapeutic potential of cancer vaccines and immune checkpoint inhibitors

• Rise of immune checkpoint inhibitors in the therapeutic development for cancer
• Priming of patients with cancer vaccines for the immunotherapy of patients with immune checkpoint inhibitors
• Synergistic function of the combination of cancer vaccines and immune checkpoint inhibitors, like the cPD1 Pembrolizumab in the induction of more effective antitumor immune responses

Kandeepan Ganeshalingam, Executive Director, Therapeutic Area Head Oncology, MSD

12.20 Networking Lunch

13.30 Activation of the immune system in combination with checkpoint inhibitors

• Spherical Nucleic Acid (SNA™) are nanoscale, spherical arrangements of densely packed and radially oriented nucleic acids
• Localisation to endosomes permits large numbers of SNA’s to be delivered with low toxicity
• By activating innate immune cells, SNA’s enhance the function and secretion of cytokines
• AST-008 is a TLR9 agonist oligonucleotide in SNA format which demonstrates greater delivery to primary cells and more potent TLR9 activation in cell-based assays
• AST-008 has been evaluated in numerous solid and liquid tumour models, including breast, colon, bladder, melanoma and lymphoma
• Combining AST-008 with a checkpoint inhibitor (PD-1) results in a profound impact on tumour growth and survival
• An update on clinical progress will be provided

14.10 Cancer immunotherapy combination development strategies

• The cancer-immune set point and rational combination design
• The MORPHEUS platform: an applied trial concept for rapid development of combinations
• Personalised cancer vaccines

14.50 Afternoon Tea

15.20 Cell wars: the immune system fights back

• A DNA vaccine in combination with an immunomodulatory all-trans retinoic acid (ATRA) eliciting specific immune responses in myeloid malignancies with a reduction of tumour burden and antibody response
• Real time imaging reveals effector cells inducing cell death of target cells
• Depletion experiments show that the protective effects are immune mediated
• NF-kB signalling molecules upregulated

Rose-Ann Padua, Research Director, INSERM

16.00 Panel discussion: Will cancer vaccines ever exist?

• How do we define ‘successful treatment’?
  - Patient survival?
  - Response rate to treatment?
• Single vs. combination therapies
• What are the implications of a vaccine no longer being a replacement technology but a companion technology?

Moderated by:
Kandeepan Ganeshalingam, Executive Director, Therapeutic Area Head Oncology, MSD
Farzin Farzaneh, Professor of Molecular Medicine, Kings College London
Agnete Fredriksen, Chief Scientific Officer, Vaccibody

16.40 Chairman’s Closing Remarks and Close of Day One

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NW Bio is developing DCVax® dendritic cell-based therapeutic vaccines. The Company’s DCVax®-L for resectable solid tumors is in a 331-patient Phase III trial for newly diagnosed GBM, and Phase II trials in combination with checkpoint inhibitor drugs are planned. The Company’s DCVax®-Direct for inoperable solid tumors has completed a 40-patient Phase I trial for diverse cancers; various Phase II trials are planned. www.nwbio.com

Official Publications

Register online at www.cancervaccinesevent.com
12.20 Networking Lunch
Sune Justesen, ImmuniTrack
• High throughput MHC tetramer production to support
• What does a neo-epitope look like from the MHC perspective?
• Affinity vs. Stability based peptide MHC assays, implications on

11.40 In vitro validation of potential neo-epitopes by MHC based reagents
• Affinity vs. Stability based peptide MHC assays, implications on current in silico tools
• What does a neo-epitope look like from the MHC perspective?
• High throughput MHC tetramer production to support personalised cancer vaccination trials
Sune Justesen, Chief Scientific Officer, ImmuniTrack

10.30 Morning Coffee

11.00 Nouscom neo-antigen based viral vectored vaccine and a novel potent immunomodulator show synergistic activity in mouse cancer model
• Great Ape Adenovectors (GAd) are clinically validated genetic vaccine carriers with excellent safety and ability to induce potent CD8 T cell responses with effector memory phenotype
• GAd vectors encoding large numbers of cancer-specific neo-antigens induced potent and broad CD8 T cell responses in mice
• Combination of GAd vectors with check-point inhibitors improved immunogenicity and efficacy in tumor bearing mice
• Combination of GAd vectors and a novel potent immunomodulator led to almost 100% cure in mice lending support to a novel approach for combination therapy in the immune oncology field
Alfredo Nicosia, CEO, Nouscom srl/ Reithera srl

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• Affinity vs. Stability based peptide MHC assays, implications on current in silico tools
• What does a neo-epitope look like from the MHC perspective?
• High throughput MHC tetramer production to support personalised cancer vaccination trials
Sune Justesen, Chief Scientific Officer, ImmuniTrack

12.20 Networking Lunch

13.30 Targeting the tumor microenvironment with vaccine-activated anti-regulatory T cells
• Describe the discovery of self-reactive, pro-inflammatory T cells-termed anti-regulatory T cells (anti-Tregs) - effector T cells that specifically target immune-suppressive cells (including cancer cells)
• Providing examples of antigen-specific anti-Tregs
• Discussing their possible roles in immune homeostasis
• Current clinical vaccination trials and potential future clinical applications
Mads Hald Andersen, Professor and Vice-Director, Centre for Cancer Immune Therapy, Copenhagen University Hospital; Founder, IO Biotech

14.10 Individualised mRNA cancer immunotherapy
• Development of nanoparticle formulation for systemic RNA delivery
• Liposome formulated RNAs (RNA-Lipoplex)
• Personalised cancer vaccine (IVAC® platform)
Ludwig Heesen, Project Manager, BioNTech AG

14.50 Afternoon Tea

15.20 Immune modulation as an essential tool for cancer vaccines
• Cancer vaccines require an optimal adjuvant
• The “work” better with correct immune modulation
• Immune modulation can be achieved with IMiDs (Thalidomide analogues) or low dose chemotherapy
• Some agents, such as IMM-101 were developed as cancer vaccines but are actually very powerful immune modulators
Angus Dalgleish, Professor of Oncology, St George’s University of London

16.40 Effect of adjuvant/delivery system(s) on vaccine efficacy, two examples of PAP/HAGE® vaccines
• How a single amino-acid can change the immunogenicity of your vaccine
• How different adjuvants affect differently the immunogenicity of vaccine
• How different delivery systems also affect differently the immunogenicity of vaccine
Stephanie McArdle, Senior Research Scientist in Immunology, The John van Geest Research Centre, Nottingham Trent University (*sequences patented)

17.20 Chairman’s Closing Remarks and Close of Day Two
Stephanie McArdle, Senior Research Scientist in Immunology, The John van Geest Research Centre, Nottingham Trent University (*sequences patented)
Overview of Workshop:
With the increasing use of various immunotherapy strategies in the clinic it is essential for immunomonitoring techniques to be conducted in order to follow the response of patients to therapy. Such investigations will enable the discovery of neoantigens that may contribute to the efficacy of treatment. The potential cellular players, the use of screening techniques to monitor effects of treatment and an account of an immunotherapy trial will illustrate what is possible in clinical practice.

Reasons to attend:
This half day workshop is aimed at both clinical and research investigators to give insights into how to develop tools for both developing new therapeutic strategies and how to monitor responses to treatment. This will enable you to design clinical trials and to set up laboratory investigations to evaluate response to immunotherapy.

Programme:
12.30 Registration & Coffee
13.00 Introduction
13.10 Innate lymphoid cells and immune intervention in cancer
Antoine Toubert, Head, Autoimmunity, Transplantation, INSERM
13.45 Resident memory T cell as surrogate markers of the efficacy of cancer vaccines
Eric Tartour, Head, Laboratory of Clinical Immunology, Hopital Europeen George Pompidou
14.10 Discussion
14.30 Afternoon Tea
15.00 Using Cytome (mass cytometry) for immune-monitoring; challenges of big data management
Sharam Kordasti, Senior Lecturer, Kings College London
15.30 Wilms’ tumor 1 (WT1) RNA-electroporated dendritic cell vaccination as post-remission treatment to prevent or delay relapse in acute myeloid leukemia: final results of a Phase II Study in 30 patients
Zwi Berneman, Professor of Haematology, University of Antwerp
16.00 Workshop leader’s comments and close of the workshop

About the Workshop Leader:
Dr. Rose Ann Padua (Ph.D) is an INSERM Director of Research (Unit 1131), previously Reader at the University of Wales College of Medicine and Deputy Director of the Leukemia Research Fund Preleukaemia Unit. As a Fulbright scholar, spent 18 months in the laboratories of the Nobel Laureate Michael Bishop at the University of California San Francisco; was a Consultant Clinical Scientist with the NHS at King’s College Hospital in London where as the Head of the Minimal Residual Disease Section she set up their molecular diagnostics program for adult leukaemia; is a molecular biology consultant for the International Atomic Energy Agency where she is transferring molecular assays to the developing countries for childhood leukaemia and adult lymphoma; Previously Chair of Working Group on novel therapies of European COST action and animal models Work Package for the European Leukaemia Network. Her research focus has been on developing animal models to understand the biology of myeloid malignancy and to use these as preclinical tools to evaluate targeted therapeutic options. The most innovative of the approaches under development is a DNA based immunotherapy strategy.

About INSERM
Institut National Santé et Recherche Medicale (INSERM) is the French National Institute of Health. Created in 1964, it employs 15,000 research investigators in 300 Research Units in France. INSERM forms partnerships with Universities and Hospitals. The Workshop leader is in such a mixed unit, Unité Mixte de Recherche (UMR) or a mixed unit, Unité Mixte de Recherche (UMR), housed in the Institut Universitaire d’Hématologie (IUH), part of the Université Paris-Diderot in the Hôpital St-Louis campus and is focused on haematological malignancies.
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