The 4th Improving Immunohistochemistry Discussion Forum

Friday, 11 October 2013
Cineworld: The O2, London, SE10 0DX, UK

This event will be an ideal place to network, establishing lines of communication for the future if you ever need help with setting up and improving IHC. This is a specialist meeting with many experts in the field, together in one room, giving you unrivalled access, all in one place. This event has **CPD accreditation**.
Meeting chair: *Dr Will Howat,* Cancer Research UK, Cambridge.

Who Should Attend:
Biotech and Pharma Industry: CEOs, Chief Scientists, Group Heads, Senior and Junior Scientists, Research Managers
Academic and Research Institutes: Group and Lab Heads, Postdoctoral Scientists and Research Students
Even experienced people who are interested in keeping up with the technique should be at this unique event as well as those learning from the beginning.

The deadline for abstract submissions for oral and poster presentation has now passed.

Talk times include 5 – 10 minutes for questions

9:00 – 9:45 **Registration**

9:45 – 10:00 **Introduction by the Chair**: *Dr Will Howat,* Cancer Research UK, Cambridge.

10:00 – 10:30 **What's new and what's coming in diagnostic molecular pathology?**
Professor Bharat Jasani, Cardiff University School of Medicine, Institute of Cancer & Genetics, UK
Molecular Pathology has become established as a diagnostic discipline with the advent of molecular methods (FISH, PCR, DNA sequencing) capable of detecting cancer specific gene alterations (mutations, chromosomal translocations or gene amplifications) in formalin-fixed paraffin-embedded tissue sections. What's new is application of these methods to detection of a wide variety of cancers, sentinel lymph node metastases, and cancer subtype specific gene transcripts predictive of chemotherapy response or resistance. What's coming is genome wide sequencing capable of detecting inheritable SNPs and acquired gene alterations affecting cell signaling pathways and networks, allowing novel tumour specific diagnostics and treatment and monitoring strategies.

10:30 – 11:00 **Is the fixative just a fixation?**
Dr Francesca Chianini, Veterinary Research pathologist, Moredun Research Institute, Scotland, UK
It is well-known that for a successful outcome of immunohistochemical analysis tissues and cells need to retain as much as possible their original morphology and the antigenic sites of interest have to be accessible. This is why fixation plays a key role in immunohistochemistry and depending on target antigens to be labelled the most adequate fixative should be carefully chosen. Formalin fixed tissues are well suited for a variety of studies, but in same cases, as when investigating cells of the immune system, using a zinc-salt solution could play a pivotal role for good results.

11:00 – 11:30 **Speakers' photo then mid-morning break and poster exhibition and trade show**
Please try to visit all the exhibition stands during your day at this event. Not only do our sponsors enable Euroscicon to keep the registration fees competitive, but they are also here specifically to talk to you.

11:30 – 12:00 **A practical approach to multiple antigen detection using immunohistochemistry**
Dr Henny Martineau, Lecturer in Veterinary Pathology Royal Veterinary College, UK
The ability to label multiple antigens within a single section of fixed tissue using immunohistochemistry, is a powerful tool for both diagnostic and research pathologists. However, the potentially complicated and laborious methodology can be off putting. This talk will summarise the basic principles of multiple antigen labeling, and include a step by step guide of how best to set up your own experiment.

12:00 – 12:30 **Phenotyping TILs *In Situ:* Automated enumeration of FOXP3+ and CD69+ T cells in follicular lymphoma**
Dr Richard Byers, Senior Lecturer in Pathology, University of Manchester / Consultant Histopathologist, Manchester Royal Infirmary, UK
Increased regulatory T cells (Tregs) are associated with poor prognosis in cancer and understanding of the phenotype and spatial distribution of Tregs in situ would be advantageous. A tissue microarray comprising 66 follicular lymphoma samples was used in triplex immunohistochemistry for FOXP3, CD3 and CD69. Multispectral imaging was used to determine the numbers of CD3+ve and FOXP3/CD3+ and CD69/CD3+ positive T-cells. Kaplan-Meier analysis was used to determine prognostic significance of CD3+, FOXP3/CD3+ and CD69/CD3+ positive T-cells. Higher numbers of CD3 single positive cells, double positive FOXP3+CD3+ cells and double positive CD69+ CD3+ cells were significantly associated with a favourable outcome.

12:30 – 13:00 **Talk title to be confirmed**
Dr Kai Wilkens, Advanced Cell Diagnostics, Inc

13:00 – 14:00 **Lunch, poster exhibition and trade show**

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14:00 – 15:00 **Question and Answer Session**

15:00 – 15:30 **Variable expression of estrogen receptor in basal-like breast carcinomas**

Mrs Jennifer R. Won, PhD Candidate, University of British Columbia, Canada

Basal-like breast cancer is a particularly aggressive subtype. Since gene expression profiling methodologies are not widely accessible, surrogate immunohistochemical definitions for its identification typically rely on ER, PR and HER2 negativity. In an international survey of clinical laboratories, 46 of 48 participants demonstrated ER-positivity rates from 0 to 13.3% in basal-like carcinoma cases, while 2 laboratories possessed an abnormally high ER-positivity rate of 60%. Focusing on the basal-like subtype revealed considerable variability in ER staining. False-positive cases due to loss of staining specificity may be caused by suboptimal protocols that employ specific primary antibody clones and detection systems.

15:30 – 16:00 **Afternoon Tea, last poster session and trade show**

16:00 – 16:30 **Breast Estrogen and Progesterone Receptor Immunohistochemistry: Are we any closer to standardisation?**

Dr Merdol Ibrahim, Manager UK NQAS ICC & ISHb, University College London (UCL), UK

Breast biomarker immunohistochemistry, including estrogen (ER), progesterone (PR) and HER2 markers are routinely used in the clinical setting, for the correct classification and subsequent selection of patients for correct treatment regime. However, there is no standardised kit or method employed for either ER or PR immunohistochemistry, with variability in staining (mainly false- positive) driven by various factors including choice and dilution of antibody, pH of antigen retrieval and more sensitive detection systems. There is still therefore still a need to improve breast biomarker immunocytochemistry, with laboratories encouraged to validate their methodologies and include adequate control material to gauge the sensitivity and specificity of their methods.

16:30 – 17:00 **Using immunohistochemistry to differentiate M1 and M2 macrophages in COPD lung tissue**

Dr Sarah Bolton, Scientific Consultant, Sarah Bolton Ltd, The Research Network, UK

Tissue macrophages can be classified as either M1 (classically-activated) macrophages, which are pro-inflammatory with reduced capacity for phagocytosis or M2 (alternatively-activated) macrophages which are more phagocytic with a pro-repair capacity. The phenotype of macrophages in cancer tissue has been shown to correllate with disease prognosis. Macrophages from COPD patients are known to have reduced capability for phagocytosis, which could contribute to bacterial infections as well as exacerbate existing inflammation. We sought to investigate, using immunohistochemistry, the macrophage phenotypes in COPD lung and whether one phenotype was associated with a particular microenvironment.

17:00 **Chairman's Summing Up and Close of Meeting**

Keywords: Tissue Microarrays, immunohistochemistry, fixation, imaging, quantitation,glycol methacrylate resin, immunohistochemistry, fixation, Immunohistochemistry, tissue micro array, formalin fixed paraffin embedded material, high through put, quantifying biomarkers, clinical tissues, automated-analysis, In situ hybridization, IHC validation, RNAscope, digital pathology, gene expression, immunoprofiling, immune, tumour, new methods diagnostic molecular pathology, estrogen receptor, basal-like breast cancer, external quality assurance, molecular subtype, fixation, post-fixation, brain, immune system, cells, Immunohistochemistry, multiple antigen detection, breast biomarkers, estrogen receptor, progesterone receptor, immunohistochemistry, quality control, COPD, Macrophages, Immunohistochemistry, Human, Inflammation

Registration Website: http://www.regonline.co.uk/IHC2013

About the Chair

Will Howat graduated with a BSC (Hons) in Immunology & Pharmacology from the University of Strathclyde, before gaining a PhD in Pathology from the University of Southampton. After two post-doctoral positions in Southampton, he moved to the Wellcome Trust Sanger Institute in Cambridge as the leader of Research & Development for the Immunohistochemistry group of the Atlas of Protein Expression project. He is now with Cancer Research UK as the head the Histopathology/ISH facility at the Cambridge Research Institute.

About the Speakers

Francesca Chianini graduated in 1995 from Pisa Vet School in Italy. She practised in central Italy for two years before joining the Department of Pathology at the Universidad Autonoma de Barcelona in Spain where she carried out a Marie Courie founded PhD on Circovirus in pigs. In 2002 she moved to the Moredun Research Institute (MRI) where she led the Transmissible Spongiform Encephalopathy (TSE) group till 2012. She currently provides veterinary pathology expertise for Moredun research projects covering a number of bacterial, parasitological and viral diseases of sheep and cattle, as well as undertaking consultancy neuro-histopathological surveillance of diseases of farm livestock in Scotland.

Bharat Jasani is the Professor/Head of Pathology - development and management of regional diagnostic immunocytochemistry & molecular pathology service (1993-). Breast Cancer Module Lead for UKNEQAS of ICC (2004-). Member, International Working Group - Standardisation of Breast Cancer biomarking; International Advisor, Sub-Committee on Quality Assurance for Immunocytochemistry (USA); Key Opinion leader for biotechnological advances (2005-). Associate Partner (South Britain), European Biomed 2 - standardisation of PCR primers for lymphoma diagnosis (1998-2002). PI/CI - ECMC, MRC, & CR-UK sponsored translational cancer research (> £5m;) (2007-2017). Co-Awardee, Best National Health Innovation Award (2007) – gene-chip intra-operative detection of sentinel lymph node breast cancer metastases; >200 publications.

Henny Martineau graduated from Glasgow Veterinary School in 1998. Following two years in large animal pracitce in Wales, she returned to Glasogw to complete a pathology residency. She then worked as a pathologist for Astrazeneca, the Scottish Agricultural College, and the Moredun Research Institute, where she carried out a Phd looking at the pathogenesis of Jaagsiekte Sheep Retrovirus. She has been working as a lecturer in veterinary pathology at the Royal Veterinary School for two years.

Richard Byers underwent general medical training, trained as a histopathologist and did a PhD in molecular biology. Specialist diagnostic clinical interest is in leukaemia and lymphoma and he is the Head of an integrated molecular diagnostic service in haemato-oncology for Greater Manchester. Research is centered around technology development for translation of microarray identified prognostic gene signatures to routine clinical use, using real-time PCR measurement of gene expression and in-situ detection of multiple markers

Jennifer Won graduated with a Dipl T and BSc (Hons) in Biotechnology, jointly offered by the University of British Columbia and the British Columbia Institute of Technology, prior to pursuing a PhD in Pathology and Laboratory Medicine at the same institution. She is currently based at the Genetic Pathology Evaluation Centre in Vancouver (Canada), and her PhD supervisor is Torsten Nielsen. With research primarily focused on diagnostic, prognostic and predictive biomarkers in hormone receptor-negative breast cancers, she also has the pleasure of working closely with the Canadian Immunohistochemistry Quality Control on external quality assurance of immunohistochemical assays related to breast cancer.

Merdol Ibrahim, PhD - 1997: PhD from St Thomas Hospital, investigating CNS myelination, 1997-2001 Worked in Switzerland: a. Dept. Histology in Fribour: Neuron-glial interactions using fluorescence immunohistochemistry and image analyses b. Novartis Pharma (Basel), depart. of ToxicoPathology: Looking at toxicological mechanisms underlying Parkinson's disease, hepatic lesions and eye toxicity 2001-2004. Research scientist at the institute of Psychiatry (London), studying mechanisms of brain plasticity. 2004- current. Appointed manager of UK NEQAS-ICC. Oversees the quality of immunocytochemistry produced by 700 clinical laboratories, from 57 countries.

Sarah Bolton has over 20 years experience as an inflammation scientist in academia, small biotech and large pharmaceutical firms. Her main area of expertise lies within the respiratory therapy area, in particular the histopathology of human lung tissue and animal models of pulmonary disease. She is also experienced in the utility of human tissue in the pre-clinical phases of drug discovery including immunohistochemistry for target identification and validation studies as well as animal model development and validation. Since leaving AstraZeneca in 2011, she has established herself as an independent consultant providing histopathology advice to the wider scientific community.

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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.

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- 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
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