

TUESDAY 10 SEPTEMBER 2019

08:30 Registration and Coffee

09:30 Welcome and Introductions
King's College London, Cancer Research UK

EXPERIMENTAL CANCER MEDICINE CENTRES IMMUNOTHERAPY WORKSHOP "EMERGING CANCER IMMUNOLOGY FOR NEW THERAPIES"

Introduction

Prof Peter Parker, Lead King's Health Partners Cancer Research UK Centre
09:45 Prof Sir Robert Lechler, Senior Vice President (Health), King's College London
Prof James Spicer, Chair ECMC Immunotherapy Group
Dr Aoife Regan, Head of ECMC Programme Office

SESSION 1: NEXT GENERATION THERAPEUTICS | 10:00-13:00

Chairs: James Spicer & Sophia Karagiannis (10:00-11:00), Daniel Palmer & Juanita Lopez (11:30-13:00)

10:00 The Future of Immune Cell Therapies
Sophie Papa (King's College London, UK)

10:30 IgE Antibodies for Cancer Therapy
Sophia Karagiannis (King's College London, UK)

11:00 Coffee and Networking

11:30 Viral Vectors for Gene Therapy of Cancer
Farzin Farzaneh (King's College London, UK)

12:00 Targeting Regulatory T-Cells for Therapeutic Gain: From Mechanisms to New Therapies
Sergio Quezada (University College London, UK)

12:30 Key Determinants of Antibody Immunotherapy
Mark Cragg (University of Southampton, UK)

13:00 Lunch and Poster Presentation

SESSION 2: EMERGING THERAPEUTIC TARGETS | 14:00-18:00

Chairs: Bristi Basu & Stefan Symeonides (14:00-15:30), Deb Joseph-Pietras & Fiona Thomson (16:00-18:00)

14:00 **Targeting MDSC to Restores T Cell Immunity and Immunotherapy Against Cancers**
Carmela De Santo (University of Birmingham, UK)

14:30 **Macrophages: Bad Actors in Cancer**
Jeffrey Pollard (University of Edinburgh, UK)

15:00 **$\gamma\delta$ T Cells in Cancer Therapy**
Ben Willcox (University of Birmingham, UK)

15:30 **Coffee and Networking**

16:00 **Metabolic Underpinnings of Trained NK Cell Function**
Christoph Hess (University of Basel, Switzerland)

16:30 **The Heterogeneity of Tregs in Cancer – Opportunity or Liability?**
Shahram Kordasti (King's College London, UK)

17:00 **High Risk Glioblastoma Cells Revealed by Machine Learning and Single Cell Signaling Profiles**
Jonathan Irish (Vanderbilt University, US)

18:00 **Reception and Poster Presentation**

WEDNESDAY 11 SEPTEMBER 2019

08:00 **Registration and Coffee**

KEYNOTE SPEAKER

08:30 **Update in Immunotherapy: Continued Progress in Non-Small Cell Lung Cancer Treatment**
Julie Brahmer (Johns Hopkins, US)

Chair: Peter Parker

SESSION 3: BIG DATA AND PRECISION MEDICINE - GENERATION I | 09:00-13:05

Chairs: Anita Grigoriadis & Ben Willcox (09:00-11:05), Claire Shannon & Shahram Kordasti (11:20-13.05)

09:00 **Adaptive Mutability of Cancers in Response to Targeted Therapies**
Alberto Bardelli (University of Turin, Italy)

09:25 **Clonal Evolution in Cancer and Clinical Utility**
Joop Jansen (Radboudumc, Netherlands)

09:50 **Genomics and Patient Stratification**
Andrew Beggs (University of Birmingham, UK)

10:15 **Neoantigen Prediction in the Clinic**
Samra Turajlic (The Francis Crick Institute, UK)

10:40 **Complement and Cancer Related Inflammation**
Dimitrios Mastellos (National Center for Scientific Research, Greece)

11:05 Coffee and Networking

11:20 **Lymphoid Stress Surveillance: A Window on Troubling Immunological Ignorance**
Adrian Hayday (King's College London & University College London, UK)

11:50 **Building Prognostic and Predictive Models for Human Cancer Using Big Data**
Ash Alizadeh (Stanford University, US)

12:15 **The Immunome in Solid Cancers**
Jerome Galon (INSERM, France)

12:40 **The Clinical Immunome in Haematological Malignancies**
Nichola Cooper (Imperial College London, UK)

13:05 Lunch and Poster Presentation

Session 4: Big Data and Precision Medicine - Generation II | 14:00-18:00

Chairs: James Arnold & Sheeba Irshad (14:00-15:30), Tony Ng & Adrian Hayday (16:00-18:00)

14:00 **The Role of the Microbiome in Response and Toxicity to Therapy**
Jennifer Wargo (MD Anderson, US)

14:25 **Which Microbiome Signature(s) and How?**
Saeed Shoaie (Kings' College London, UK)

14:50 **Determinants of T-Cell Fate**
Ben Afzali (National Institute of Health, US)

15:15 **Selected Abstract:**
CSF1R+ Macrophages Sustain Pancreatic Tumor Growth Through T Cell Suppression and Maintenance of Key Gene Programs That Define the Squamous Subtype
Juliana Candido (Queen Mary University of London, UK)

15:30 **Coffee and Networking**

16:00 **Intracellular Innate Immunity and Response to Immunotherapy**
Eileen Parkes (Queen's University Belfast, UK)

16:25 **Molecular Imaging of the Tumour Metropolis**
Josephine Bunch (Imperial College London, UK)

16:50 **Selected Abstract:**
The Antimicrobial Peptide LL-37 Generates Dendritic Cells Optimised for Immunotherapy
Emily Findlay (University of Edinburgh, UK)

17:05 **Selected Abstract:**
Profiling the Normal Colonic Mucosa in Synchronous Colorectal Cancer by Imaging Mass Cytometry
Michele Bortolomeazzi (King's College London, UK)

17:25 **Debate: Allogeneic CAR-T Products will Largely Replace Autologous Cells Within 5 Years; Arguments For and Against**
Paul Moss (University of Birmingham, UK) & Farzin Farzaneh (King's College London, UK)
Moderator: Sophie Papa (King's College London, UK)

18:00 **Reception and Poster Presentation**

19:30 **Speakers' Dinner Reception**

THURSDAY 12 SEPTEMBER 2019

08:00 Registration and Coffee

**SESSION 5: TRANSLATING BIG DATA TO ROUTINE DIAGNOSTIC TESTS - IMPLEMENTATION |
08:50-13:00**

Chairs: Trevor Graham & Jonathan Irish (08:50-11:00), Francesco Dazzi & Mieke van Hemelrijck (11:30-13:00)

08:50 Big Data in Cancer Immunology - Dangers and Opportunities
Ton Coolen (King's College London, UK)

09:20 Big Data in Time and Space
Francesca Ciccarelli (The Francis Crick Institute, UK)

09:45 Combining Clinical and Laboratory Data to Identify Patient Populations
Duncan Murray (University of Birmingham, UK)

10:05 ImmunoGenomic Medicine: Cancer Immunotherapy Powered by Genomics
Benjamin Vincent (Lineberger Cancer Centre, US)

10:30 Debate: Do I Still Need My Microscope?
Arjan Van de Loosdrecht (Amsterdam University, Netherlands) & Robin Ireland (King's College Hospital, UK)

Moderator: Shahram Kordasti (King's College London, UK)

11:00 Coffee and Networking

11:30 Selected Abstract:
Artificial Intelligence Improves Flow Cytometry Diagnostics in Myelodysplastic Syndromes
Carolien Duetz (Amsterdam University Medical Center, Netherlands)

11:45 Selected Abstract:
Single-Cell Systems Neuroimmunology Reveals Immunosuppressive Correlates with Ventricular Stem Cell Niche Contact in Human Glioblastoma
Todd Bartkowiak (Vanderbilt University, US)

12:20 Selected Abstract:
Contrasting Drivers of Response to Immunotherapy Across Solid Tumour Types: Results from Analysis of >1000 Cases
Kevin Litchfield (The Francis Crick Institute, UK)

12:20 **Clinical Implementation of Stratified Immuno-oncology**
Sean Whittaker (King's College London, UK)

12:40 **Closing Remarks**

13:00 Lunch

PARALLEL WORKSHOPS | 14:00-18:00

14:00 - 18:00 **Option A: Genomics**
Leads: Paul Lavender (King's College London, UK) & Andrew Beggs (University of Birmingham, UK)

14:00 - 18:00 **Option B: Start Your Journey into Immunomics: Mass Cytometry, Imaging Mass Cytometry and High Dimensional Data Analysis**
Leads: Susanne Heck (Guy's & St. Thomas Trust, UK) & Graham Taylor (University of Birmingham, UK)

14:00 - 18:00 **Option C: Clinical Data Science: Integrating Immunomics, Genomics and Clinical Data**
Leads: Shahram Kordasti (King's College London, UK), Jonathan Irish (Vanderbilt University, UK) & Duncan Murray (University of Birmingham, UK)

WORKSHOP A - GENOMICS

Leads: Paul Lavender (King's College London, UK) & Andrew Beggs (University of Birmingham, UK)

14:00 **Introduction and Concept of Data Layering. Introduction to ChIPseq, ATACseq, DNAmethylation and Long-Distance Chromatin Interactions**

14:30 **10X Genomics Single Cell Transcriptomics and ATACseq**

15:00 **Data Session Participants Analyze Data**

15:30 Coffee Break

16:00 **Analysis of DNA Methylation Using Short Read and Long Read Technologies**

16:30 **Data Session with Partek - Integration of Transcriptomics and DNA Methylation Data**

17:00 **Epigenome Editing and Functional Evaluation of Differential Epigenetic Landscapes**

WORKSHOP B - START YOUR JOURNEY INTO IMMUNOMICS: MASS CYTOMETRY, IMAGING MASS CYTOMETRY AND HIGH DIMENSIONAL DATA ANALYSIS

Leads: Susanne Heck (Guy's & St. Thomas Trust, UK) & Graham Taylor (University of Birmingham, UK)

14:00 **Welcome and Opening Remarks**

14:00 **Introduction to Liquid Mass Cytometry - The Clinical Laboratory Perspective**
Dr Naeem Khan (University of Birmingham, UK)

14:30 **Introduction to Imaging Mass Cytometry**
Dr Richard Ellis (Biomedical Research Centre at Guy's & St. Thomas Trust/King's College London, UK)

15:00 **A New User's Experience to Mass Cytometry: Challenges and How to Overcome Them**
Dr Eleni Syrimi (University of Birmingham, UK)

15:30 **Coffee Break**

16:00 **High-Dimensional Immune Monitoring, Simplified – Easily quantify 37 immune subsets from PBMC or whole blood using mass cytometry**
Thomas A Adejumo (Fluidigm Inc, US)

16:30 **Data Analysis Approaches for Liquid and Imaging Mass Cytometry**
Dr Nedyalko Petrov (Biomedical Research Centre, UK) & Dr Filomena Spada (Biomedical Research Centre, UK)

17:30 **Panel Discussion with All Speakers and Questions from the Audience**

WORKSHOP C - CLINICAL DATA SCIENCE: INTEGRATING IMMUNOMICS, GENOMICS AND CLINICAL DATA

Leads: Shahram Kordasti (King's College London, UK), Jonathan Irish (Vanderbilt University, US) & Duncan Murray (University of Birmingham, UK)

14:00 **Welcome and Introduction, Goals of the Workshop (Kordasti)**

PART 1

14:15 **Introduction to RStudio and R (Irish)**
Download code and start installing any software.

14:30 **Data Science Overview, Discussion of Tools (Irish)**
t-SNE, UMAP, FlowSOM, SPADE, Phenograph, dbSCAN, MEM, and more.

14:45 **Introduce the Science for Irish Examples Covered in Part 2 (Irish)**
Human Patient cGVHD Phenotypes from Fandelman et al., *Haematologica* 2018
Human Blood Cell CyTOF Phenotypes from Diggins et al., *Nature Methods* 2017
Human Macrophage Polarization Phenotypes from Roussel et al., *JLB* 2017, *MiMB* 2019

15:00 **Introduce the Science for Murray Example Covered in Part 2 (Murray)**

15:15 **Introduce the Science for Kordasti Example Covered in Part 2 (Kordasti)**

15:30 Coffee Break

PART 2

16:00 **Presentation from Cytobank: Utilizing Cytobank for Multi-omic, Single Cell Clinical Research Data including CITE-Seq, Cell Imaging, Fluorescence Cytometry, and Mass Cytometry**

16:15 **Q & A on Data Science, Tools, Examples, and Installing (Chairs & Cytobank)**
Take questions from audience; as needed, get everyone caught up on installing tools.

16:45 **Hands on Data Analysis: R Walkthrough for Irish Example Datasets (Irish)**

17:15 **Hands on Data Analysis: Data Analysis Examples (Kordasti)**

17:30 **Hands on Data Analysis: Data Analysis Examples (Murray)**

17:45 **Conclusion and Final Words, Final Questions, Buffer (All)**