Bioprocessing Technology Institute
A*STAR
CREATING GROWTH. ENHANCING LIVES.

Seminar Announcement

Integrating glycomics with multi-omics data to further insights into pathways of cancer metastasis

Speaker : Professor Pauline M. Rudd
NIBRT Research Professor of Glycobiology
National Institute for Bioprocessing, Research and Training
Dublin, Ireland
Visiting Investigator, Bioprocessing Technology Institute, A*STAR

Date : Thursday, 23 July 2015
Time : 10.00am
Venue : Creation Theatre, Level 4, Matrix
Host : Dr. Zhang Peiqing
Research Scientist, BTI

Seminar Abstract

Glycosylation and related processes play important roles in cancer development and progression, including metastasis. Several studies have shown that N-glycans have potential diagnostic value as cancer serum biomarkers. We have explored the significance of the abundance of particular serum N-glycan structures as important features of breast tumour biology by studying the serum glycome and tumour transcriptome (mRNA) of 104 breast cancer patients. Integration of these types of molecular data allowed us to study the relationship between serum glycans and transcripts representing functional pathways, such as metabolic pathways or DNA damage response. We identified tri antennary trigalactosylated trisialylated glycans in serum as being associated with lower levels of tumour transcripts involved in focal adhesion and integrin-mediated cell adhesion. These glycan structures were also linked to poor prognosis in patients with ER negative tumours. High abundance of simple monoantennary glycan structures were associated with increased survival, particularly in the basal-like subgroup. The presence of circulating tumour cells were significantly associated with several serum glycome structures like bi and triantennary, di- and trigalactosylated, di- and trisialylated.

Pauline M Rudd[e], Vilde D Haakensen[a, b], Israel Steinfeld[c,d], Radka Saldova[e], Akram Asadi Shehni[e], Ilona Kifer[d], Bjørn Naume[f], Anne-Lise Børresen-Dale[a, b,], Zohar Yakhini[c,d**]*

a) *Department of Genetics, Institute for Cancer Research, Oslo University Hospital*
b) *The K.G. Jebsen Center for Breast Cancer Research, Institute for Clinical Medicine, Faculty of Medicine, University of Oslo, Oslo, Norway*
c) *Department of Computer Science, Technion, Haifa, Israel*
d) *Agilent Laboratories, Agilent Technologies, Tel-Aviv, Israel*
e) *NIBRT GlycoScience Group, National Institute for Bioprocessing Research and Training, Fosters Avenue, Mount Merrion, Blackrock, Dublin 4, Ireland*
f) *Department of Oncology, Oslo University Hospital, The Norwegian Radium Hospital, Oslo, Norway*

About the Speaker

Professor Pauline M. Rudd BSc, LRIC, MA (Oxon), PhD is the Adjunct Professor of Glycobiology at University College, Dublin. She heads the GlycoSciences Research Group at the National Institute for BioProcessing Research and Training in Ireland (NIBRT). She has many links with academic groups, regulators and pharmaceutical companies across the world because GlycoScience is a major area of specialised expertise required to probe the pathways in many diseases and to ensure the safety and efficacy of biotherapeutic drugs, such as monoclonal antibodies for cancer and autoimmune disorders.

Professor Rudd obtained a BSc in Chemistry at the University of London and a PhD in Glycobiology at the Open University, UK. She was a Founding Scientist of Wessex Biochemicals (later Sigma London), Visiting Research Associate at The Scripps Research Institute, CA, Visiting Professor of Biochemistry at Shanghai Medical University PRC, Visiting Scientist at Ben Gurion University of the Negev, Israel and Erskine Visiting Fellow, Canterbury University, Christchurch, New Zealand. She is a Fellow of the Royal Society of Medicine, London and a Visiting Professor at St. George's Hospital, London and an Adjunct Professor at North Eastern University, Boston, NUI Galway and Trinity College Dublin. She is a Visiting Investigator at the Bioprocessing Technology Institute (BTI), in A-Star, Singapore.

She has more than 250 scientific publications and has given over 300 lectures and seminars at international meetings. Her research has focussed on developing novel technologies and bioinformatics programmes to probe disease related glycosylation changes and systems biology, particularly in cancer and immunology. She has held seven FP7 grants with colleagues from many EU countries. In 2010 she was awarded the James Gregory Medal and an Agilent Thought Leader award and in 2012 she received a Waters Global Innovation award. In 2014 she was awarded an Honorary Doctorate at Sahlgrenska Academy in Gothenburg University, Sweden. Before moving her group to Dublin in 2006, Professor Rudd was a member of the Glycobiology Institute for 25 years. When she left she was a Senior Research Fellow and a University Reader in Glycobiology at Oxford University.