doi: 10.4172/1948-5956.10000S4

OMICS Group Conferences
Accelerating Scientific Discovery

International Conference & Exhibition on
Cancer Science & Therapy
15-17 August 2011 Las Vegas, USA

Methylation biomarkers – From discovery to clinical use

Tomasz K Wojdacz

University and University Hospital of Aarhus, Denmark

Methylation is a process of "turning off" the genes, which is implicated in the pathology of cancer and in many other disorders. The methylation-based biomarkers are highly promising candidates for both early diagnosis and treatment of many diseases. There are four primary fields of use for the in-vitro diagnostic biomarkers:

1. Diagnosis

2. Prognosis/Prediction

3. Prevention

4. Pharmacoepigenomics

The methylation biomarkers have already been shown to fulfill the requirements of each of the above categories. Therefore vast majority of research in the field focuses currently on discovery and validation of methylation based biomarkers for clinical use. The initial steps of the identification/discovery procedure should normally employ two technologies: the technology allowing for genome wide screening for disease related methylation changes and the single PCR based methodology. The technologies allowing scanning for the genome wide methylation changes normally display high level of intra experimental data variation and therefore cannot be directly applied in diagnostic settings. Therefore the PCR based technologies has to be used to: firstly validate the genome wide screening findings and secondly to develop a test that can be applied in diagnostic settings. We have successfully combined state of the microarray technology: Roche/NimbleGene MicroArrays and the Methylation Sensitive High Resolution Melting (MS-HRM), for methylation biomarkers development and validation. The new workflow allowed us to discover and successfully perform clinical validation of 20 novel breast cancer methylation biomarkers. Overall, the technical specifications of our new workflow meet requirements for the complete platform for methylation biomarkers discovery, validation and diagnostic application.

Biography

Tomasz K Wojdacz holds an MSc degree in biotechnology and PhD in medical sciences. His research work focuses on epigemetics and development of methylation biomarkers for clinical applications. His work also involves leading entrepreneurship initiatives between scientists and commercial partners. Dr Wojdacz currently holds position at the University of Aarhus, Denmark. The Danish Chamber of Commerce has recently recognized Dr Wojdacz's work on providing a link between academic world and biomedical industry partners and awarded Tomasz with prestigious Reinholdt W Jorck and Hustrus price. Dr Wojdacz's has also been awarded with Lundbeck Foundation Talent award 2010.