OMICS Group
Conferences
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5th International Conference on
Biomarkers & Clinical Research

April 15-17, 2014   St. Hilda's College - University of Oxford, UK

The application of archival human tissues in oncoproteomics- An insight into the colorectal cancer proteome

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Mass spectrometry (MS)-based oncoproteomics is a rapidly developing method for the large scale analysis of the proteomes of human samples. It is believed that progress in oncoproteomics is likely to result in the discovery of cancer biomarkers. Searching for proteins specific to the particular type of cancer requires a comprehensive analysis of numerous samples.

Tissue material, in addition to body fluids and cell lines, is an invaluable source of information on the proteome of healthy and sick individuals. An important advantage of the use of tissue material in clinical proteomics is the ability to identify "in situ" the changes caused by cancer. The analysis of pathologically changed tissue and their environment allows the tracking of the series of changes at the protein level occurring during tumorgenesis, tumor progression and metastasis. Additionally, the characteristics of tumors protein composition allow knowledge about the cancer development and biology to be deepened.

The recent approach was to analyze the proteome of formalin fixed and paraffin embedded colonic adenomas, colorectal cancer and adjacent normal tissues in order to identify the panel of new colorectal cancer biomarkers. Our study resulted in the identification of more than 10.000 proteins from microdissected tissues. The proteomic approach used in this study allowed the evaluation of the abundances of key player proteins in the development and progression of colorectal cancer. Moreover, these observations highlight an improved understanding of the carcinogenesis of colorectal cancer.

Biography

Kamila Duś-Szachniewicz studied Molecular Biology at the University of Wrocław, Poland and in 2008-2009 at the University of Ferrara, Italy. Since 2010, she is a Ph.D. student in the Department of Pathology at the Wrocław Medical University, Poland. In 2011-2012 she worked as fellow at the Department of Proteomics and Signal Transduction at the Max-Planck Institute of Biochemistry (Martinsried, Germany) where she identified candidate biomarkers forcolonic adenoma and colorectal cancer. Her current research consists in the proteomic characterization and validation of novel potential colorectal cancer markers for early diagnosis and molecular therapeutics target.

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J Mol Biomark Diagn 2014
ISSN: 2155-9929, JMBD an open access journal

Biomarkers-2014
April 15-17, 2014

Volume 5, Issue 2

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