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2D-based proteomics of breast cancer tissues

Despite the extensive progress on the omics strategies realized in the last decade, the 2D procedure followed by spot excision and mass spectrometric identification remains one of the best method to obtain a reliable quali-quantitative proteomic portrait of a cell. In recent years, our research group has collected and cryo-preserved a large number of surgical fragments from patients operated for breast cancer with the intention of generating proteomic biomarkers potentially useful for clinical applications. In this presentation we report some data obtained by the analysis of 120 tissue samples of breast cancers. To correct for the known heterogeneity of breast cancer tissues due to variations in cellular contents versus stromal proteins, the expression levels of individual protein spots were normalized to the actin content. The protein spots identity was assessed by mass spectrometry and when necessary immunologically validated. To date we have identified about 400 proteins including isoforms which were classified into 14 major functional groups. Among these, "ubiquitous" and "sporadic" proteins were observed. A major portion of ubiquitous proteins expressed at high levels in the majority of patients belong to the group of glycolytic enzymes. Among the sporadic proteins which were absent or present at very low levels in many patients and highly expressed in others were some proteins of the motility group of the heat shock machinery and some S100 proteins. We suggest that some of these proteins represent potentially useful biomarkers for sub-classification of breast cancers and follow up of patients.

Biography

Ida Pucci Minafra is the Director of the Research Centre "Centro di Oncobiologia Speimentale" affiliated to the University of Palermo and operating at the "La Maddalena" Cancer Center. She has been full Professor of Cytology and Histology, Director of the Dipartimento di Oncologia e Applicazioni Cliniche (University of Palermo), President of the Società Italiana per lo Studio del Connettivo. She has been visiting researcher/visiting professor at several Institutions among which the City University of New York, the Institut de Biologie et Chimie des Protéines of Lyone and the Hebrew University of Jerusalem. She has more than 75 publications and has been Editorial Board Member of reputed journals.

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