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The role of proteomics in discovery of tumor biomarkers

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Protein-based biomarker analysis has become one of the most popular researched areas, especially in cancer research. In recent years, researchers have focused on identifying suitable biomarkers to increase the chance of cure for different types of cancer by detecting and screening. It is well known that cancer is a multifactorial disease that occurs from change of genetic and protein post-transcriptional steps. These changes result in alterations of the levels of proteins and their functions and distributions in cells and tissues. Tumor biomarkers can be molecules, metabolites, or proteins that are produced by the body in response to a tumor. The proteins are used to measure and evaluate the detection and screening of different types of cancer. Their levels are altered quantitatively and/or qualitatively in pre-cancerous or cancerous conditions. Even though, many of prognostic cancer biomarkers have been discovered, few of them can be used as a diagnostic biomarker clinically for early detection: PSA is used for early detection of prostate cancer, CEA is used for colorectal cancer, CA-125 is used for ovarian cancer, and AFP is used for liver tumors. Consequently, proteomic approaches for the discovery of protein tumor biomarkers will likely provide the clinical tumor biomarkers that will be used for early detection of cancer, thus reducing suffering and killing cancer in the following years.

Biography

Sevgi Gezici is currently a research assistant and PhD student in Turkey. She received her Master's in Molecular Biology and Genetics. She has focused on proteomics that detect new potential cancer protein biomarkers in her PhD thesis. Now she is at Texas A&M University, working in the Laboratory for Biological Mass Spectrometry as an invited researcher. She has received scholarships for her MSc and PhD from TUBITAK, which is the best research center in Turkey.

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