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16th Global Annual Oncologists Meeting

Genetics in oncology, liquid biopsy and circulating tumor DNA

Lina Abi Mosleh
Ayass Bioscience Inc., USA

Next generation sequencing (NGS) technology is revolutionizing the diagnosis and treatment of chronic diseases and other fatal conditions, and its emergence as an affordable service is allowing doctors and patients easier access to potentially life-saving genetic data. This technology is cost-effective and delivers accurate and efficient results in a short period of time. NGS can now be incorporated into standard clinical practice. Our custom NGS panels target a group of genes that are known to cause specific genetic diseases or conditions. We have developed panels for cancer that can detect germline as well as somatic mutations in cancer causing genes. Our hereditary cancer panel targets genes that have been previously linked to a predisposition to common and rare forms of cancer such as leukemia, osteosarcoma, breast cancer, prostate cancer, pancreatic cancer, lung cancer, and skin cancer. We also developed two tests for sequencing somatic mutations in tumor driver genes. The first panel targets tumor driver genes using deoxyribonucleic acid (DNA) extracted from tissue biopsies that are flash frozen or paraffin embedded. The most recent addition to our testing menu has been the circulating tumor DNA (ctDNA) panel, more commonly known as liquid biopsy. 'Liquid biopsies' could revolutionize cancer detection by sequencing ctDNA. ctDNA are pieces of DNA from dying cancer cells found in the blood of cancer patients. We are utilizing a minimally invasive method that uses only a few millilitres of plasma from patients to detect mutations in genes commonly found mutated in solid tumor type cancers. The test is intended to identify the presence of circulating tumor DNA and identify mutations in genes associated with cancer at a very low allelic frequency. The test can be used for the monitoring of cancer remission after treatment such as chemotherapy, radiation or surgery as well as direct new therapies that target somatically mutated genes identified through clinical NGS.

Biography

Lina Abi Mosleh has earned her Bachelor's and Master's in Cell Biology from the American University of Beirut in Lebanon. After moving to US, she received her PhD in Molecular Genetics and Biochemistry at the University of Texas Southwestern Medical Center at Dallas. She then completed her Post-doctoral studies on cholesterol homeostasis in mammalian cells in the same laboratory. Subsequently, she went on to serve as a Faculty Member in the Department of Molecular Genetics at University of Texas Southwestern Medical Center at Dallas. In 2015, she was presented with the opportunity to work as a Principal Scientist at Ayass Bioscience, Inc.

lina.a@ayassbioscience.com

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