

High-Throughput, Purification-Free, Multiplexed Profiling of Circulating miRNA for Discovery, Validation, and Diagnostics

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Abstract : We have developed the Multiplexed Circulating microRNA assay that allows the detection of up to 68 microRNA targets per sample. The assay combines particlebased multiplexing, using patented Firefly hydrogel particles, with single step RT-PCR signal. Thus, the Circulating microRNA assay leverages PCR sensitivity while eliminating the need for separate reverse transcription reactions and mitigating amplification biases introduced by target-specific qPCR. Furthermore, the ability to multiplex targets in each well eliminates the need to split valuable samples into multiple reactions. Results from the Circulating microRNA assay are interpreted using Firefly Analysis Workbench, which allows visualization, normalization, and export of experimental data. To aid discovery and validation of biomarkers, we have generated fixed panels for Oncology, Cardiology, Neurology, Immunology, and Liver Toxicology. Here we present the data from several studies investigating circulating and tumor microRNA, showcasing the ability of the technology to sensitively and specifically detect microRNA biomarker signatures from fluid specimens.

Keywords : biomarkers, biofluids, miRNA, photolithography, flowcytometry

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