

Application Note

Discover miRNA biomarkers in serum or plasma using miScript® miRNA PCR Arrays

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Changes in miRNA expression levels are indicative of a number of biological and disease states, and the stability of miRNAs in serum and plasma makes them attractive noninvasive biomarker candidates for cancer and other diseases. Here, we use the miRNeasy Serum/Plasma Kit in conjunction with the miScript PCR System in a pilot experiment to identify potential biomarkers for lung cancer.

Discover biomarkers for cancer, diabetes and more

QIAGEN provides a sample-to-result solution for miRNA expression profiling using serum and plasma samples (Figure 2). Total RNA is isolated using the miRNeasy Serum/Plasma Kit in conjunction with the miRNeasy Serum/Plasma Spike-In Control. miRNA expression is then quantified using the miScript PCR System, which consists of the miScript II RT Kit, miScript SYBR® Green PCR Kit and miScript miRNA PCR Arrays. miScript miRNA PCR Arrays contain miRNA-specific assays (miScript Primer Assays) organized into biological and disease-focused panels using a state-of-the-art bioinformatics algorithm and text mining tools. In addition to facilitating screening of the whole miRNome, specific solutions have been developed for miRNA expression profiling using RNA from serum or plasma samples (Table 1). In this example, the Human Serum & Plasma 384HC miScript miRNA PCR Array has been used to profile miRNA expression changes in total RNA from lung cancer serum (Figure 1).

Table 1. miScript miRNA PCR Arrays for profiling miRNA expression in serum or plasma samples

miScript miRNA PCR Array	Use
miRNome	Profile the expression of the entire collection of available miScript Primer Assays
Serum & Plasma	Profile the expression of the 84 miRNAs most commonly reported to be differentially upregulated in serum or plasma samples in cancer and other diseases
Serum & Plasma 384HC	Profile the expression of the 372 miRNAs with detectable expression in serum and plasma samples that are profiled with the miScript PCR System

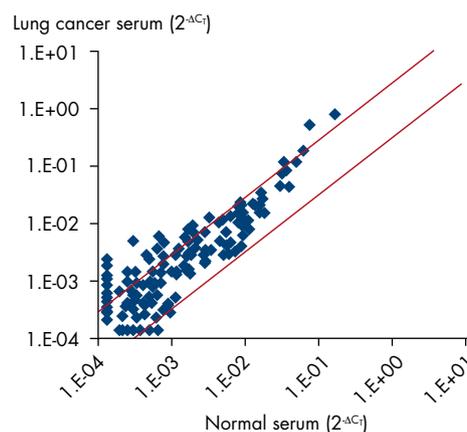


Figure 1. miRNA expression changes identified in serum from lung cancer donors using Human Serum & Plasma 384HC miScript miRNA PCR Array. Total RNA was isolated from 200 μ l normal and lung cancer serum samples (3 each) using the miRNeasy Serum/Plasma Kit. The Human Serum & Plasma 384HC miScript miRNA PCR Array, in combination with the miScript PCR System, was used to profile mature miRNA expression by real-time PCR. The miRNeasy Serum/Plasma Spike-In Control was used for normalization. In total, the expression of 183 mature miRNAs was detected. Included in the miRNAs that exhibited significant upregulation are hsa-miR-25-3p, hsa-miR-223-3p and hsa-miR-17-3p, which have previously been shown to be blood-based markers for patients with lung cancer (1).

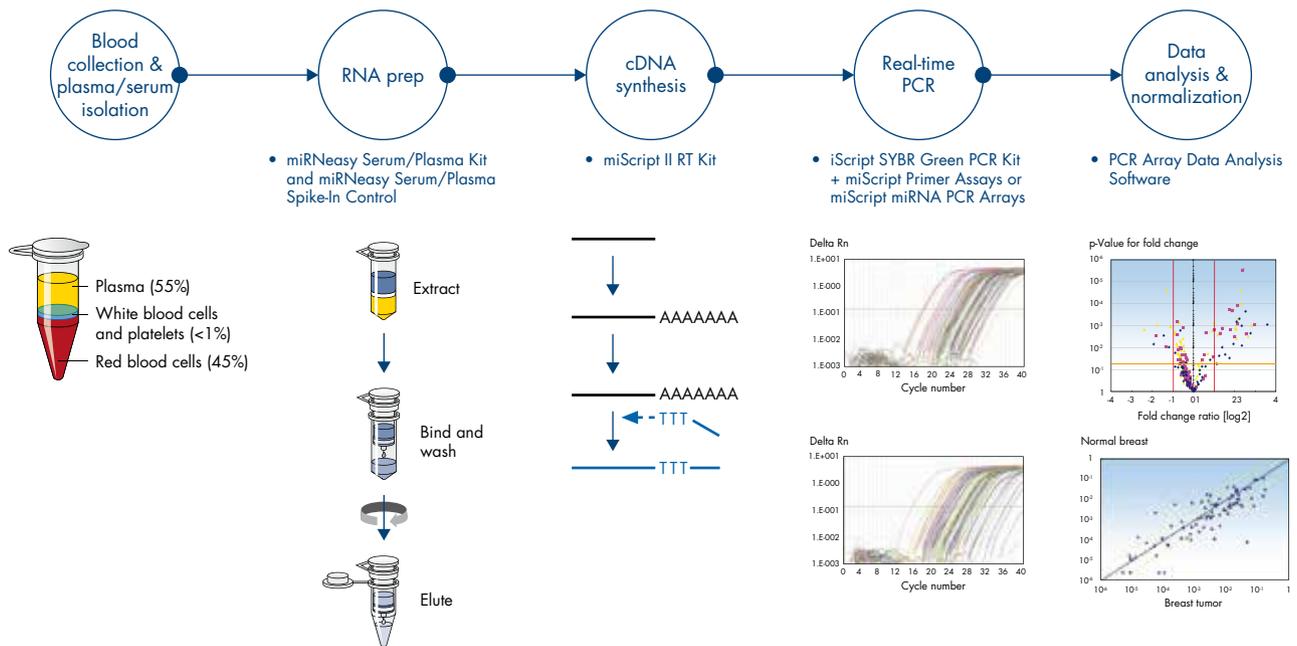


Figure 2. QIAGEN workflow for miRNA profiling in serum and plasma samples.

Reference

1. Chen X, et al. (2008) Characterization of microRNAs in serum: a novel class of biomarkers for diagnosis of cancer and other diseases. *Cell Res.* **18**, 997.

Ordering Information

Product	Contents	Cat. no.
miRNome miScript miRNA PCR Array	Full miRNome coverage	Varies
miScript miRNA PCR Array	Pathway- or disease-focused panels of miRNA assays	Varies
Custom miScript miRNA PCR Array	Custom panels of miRNA assays	Varies
miRNeasy Serum/Plasma Kit (50)	Columns, plasticware and reagents for 50 preps	217184
miRNeasy Serum/Plasma Spike-In Control	10 pmol lyophilized <i>C. elegans</i> miR-39 miRNA mimic	219610
miScript SYBR Green PCR Kit (200)	Reagents for 200 x 50 µl PCR reactions	218073
miScript Primer Assay (100)	miRNA-specific primer for 100 x 50 µl PCR reactions	Varies*
miScript II RT Kit (12)	Reagents for 12 x 20 µl cDNA synthesis reactions	218160

* Visit GeneGlobe to browse and order these products (www.qiagen.com/GeneGlobe).

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