

Lab-on-a-Chip, Label-Free miRNA Detection

Tech ID: 22948 / UC Case 2013-131-0

BACKGROUND

MicroRNAs (miRNAs) are small non-coding RNA molecules of about 21 to 23 nucleotides in length, which function in the regulation of gene expression. Over 2000 types of mature miRNAs have been found to date and new miRNAs continue to be discovered by research laboratories around the world. miRNAs are linked to over 100 diseases, including many types of cancers, chronic and immune diseases, and can thus be used as biomarkers for diagnosis. Further, circulating miRNAs, secreted by diseased tissues or produced due to immune responses, exist in blood and biofluids, so they are particularly promising for diagnosis with minimal invasiveness. However, it is technically challenging to measure many miRNAs, some differing from each other by one or a few nucleotides, and link their levels to various disease conditions. More generally, the medical community presently lacks devices for miRNA-based assays that are suitable for clinical applications.

TECHNOLOGY DESCRIPTION

University researchers have developed methods and devices for on-chip, label-free, high-specificity and high-sensitivity miRNA detection using specific probes and optical signatures, without PCR or sequencing. The invention provides a platform technology that can be applied to all types of miRNAs and may find broad application in clinical oncology. The detection scheme is minimally invasive compared to the current methods. The invention can function as the back-end detection component of any lab-on-a-chip miRNA diagnostic device or research tool.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	9,862,987	01/09/2018	2013-131

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OTHER INFORMATION

CATEGORIZED AS

- Medical
- Devices
- Diagnostics

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