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Authors: Qian Kuang, Chunli Li, Zhiwei Qiu, Guifen Jie, Shuyan Niu, Tingyu Huang

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# Three-way DNA junction structure combined with enzyme-powered cascade amplification for ultrasensitive electrochemiluminescence detection of microRNA via smart DNA walker

*Qian Kuang<sup>a</sup>, Chunli Li<sup>a</sup>, Zhiwei Qiu<sup>a</sup>, Guifen Jie<sup>\*a</sup>, Shuyan Niu<sup>a</sup>, Tingyu Huang<sup>b</sup>*

<sup>a</sup> Key Laboratory of Sensor Analysis of Tumor Marker, Ministry of Education; Shandong Key Laboratory of Biochemical Analysis; Key Laboratory of Analytical Chemistry for Life Science in Universities of Shandong; College of Chemistry and Molecular Engineering, Qingdao University of Science and Technology, Qingdao 266042, PR China.

<sup>b</sup> Linyi University, Linyi 276000, PR China

\*Corresponding author.

E-mail address: guifenjie@126.com

## Highlights

- Three-way junction structure was applied to highly selective detection of miRNA.
- A novel free-running DNA walker was used to the amplified ECL detection of miRNA.
- The cascade amplification strategy was applied for ultrasensitive miRNA detection.
- A highly sensitive miRNA-21 detection with low limit of 1.5 fM was achieved.

## Abstract

In this work, a target-triggered three-way junction (3-WJ) structure was combined with enzyme-powered cascade amplification strategy for ultrasensitive electrochemiluminescence (ECL) detection of microRNA via free-running DNA walker. In the presence of target microRNA-21 (miRNA-21), a three-way junction structure was formed to trigger enzyme-aided

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