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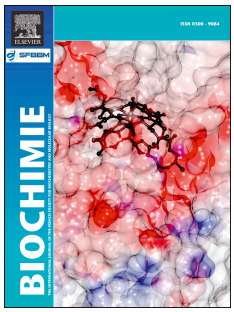

Nucleic acid aptamers in diagnosis of colorectal cancer

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Abstract

Nucleic acid aptamers are promising recognition ligands for diagnostic applications. They are short DNA or RNA molecules isolated from large random libraries through the Systematic Evolution of Ligands by EXponential enrichment (SELEX) procedure. These molecules, with a particular three-dimensional shape, bind to a wide range of targets from small molecules to whole cells with high affinity and specificity. The unique properties of nucleic acid aptamers including high binding affinity and specificity, thermostability, ease of chemical production, ease of chemical modification, target adaptability, simple storage, resistance to denaturation, low immunogenicity, and low cost make them potential diagnostic tools for clinical use. Colorectal cancer is one of the most common types of cancer in humans and the third leading cause of cancer deaths in the world. Due to low response rate to current therapies in advanced stages of the disease, early detection of CRC can be useful in disease management. This review highlights recent advances in the development of nucleic acid aptamer-based methods for diagnosis, prognosis, and theranosis of colorectal cancer.

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