



Conference Proceeding

# DNA Aptamers Evolved against Breast Cancer Cells and Their Applications

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## Abstract

Breast cancer is the most commonly cause of death among women in the world. Different breast cancer subtypes show distinct response to therapy and prognosis, which blocks its effective treatment. Therefore, to identify its subtypes in the early stage is very important. In this study, six SK-BR-3 breast cancer cell-specific ssDNA aptamers were evolved by Cell-SELEX in vitro. The K<sub>d</sub> values of the selected aptamers against the target cells were all in low-nanomolar range, which suggested their favorable binding affinity. Besides, the specificity of these aptamers was investigated by flow cytometry and confocal microscopic imaging, which demonstrated that these aptamers could not only distinguish SK-BR-3 breast cancer cell line from MDA-MB-231, MCF-7 breast cancer cell lines and MCF-10A human normal mammary epithelial cell line, but also distinguish SK-BR-3 breast cancer cells from other cancer cells and normal cells. All these results demonstrated that these aptamers ideal tools for identifying breast cancer molecular subtypes in the early stage, which are also potential candidates for the diagnosis and targeted therapy of breast cancer.

**Keywords:** Aptamer; Cell-SELEX; Breast cancer; Subtype; Targeted therapy; Diagnosis

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