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Selection of RNA aptamers against Her-2 expressing breast cancer cells

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Background and Aims: In the present study, we aimed to isolate RNA aptamers that specifically bind to Her-2 expressing breast cancer cell line, in order to use them as a targeting ligand for different purposes.
Methods: A RNA library pool was incubated with target cells (TUBO cell line). Nonbinding sequences were washed off and bound RNAs were recovered from target cells by heating. The recovered pool was incubated with control cells (CT26 cell line) to isolate the sequences that bind to common molecules on the cells surface. Binding sequences were reverse transcribed and amplified by PCR. The process was repeated until the pool was enriched for sequences that specifically bind to target cells. The enrichment process was monitored by flow cytometry binding assay. The enriched pool was cloned and positive clones were sequenced. The sequences were labeled with fluorescence dye and tested to determine appropriate aptamers.
Results: We found five groups aptamer that these selected aptamers showed strong affinity for TUBO cells, but not to CT26 cells.
Conclusions: These aptamers could be useful for development of breast cancer diagnostics and targeted breast cancer therapy.

Keywords: Aptamer breast cancer; Her-2