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Targeting oncogenic microRNAs in Triple Negative Breast Cancer using a CRISPR/Cas9-based approach

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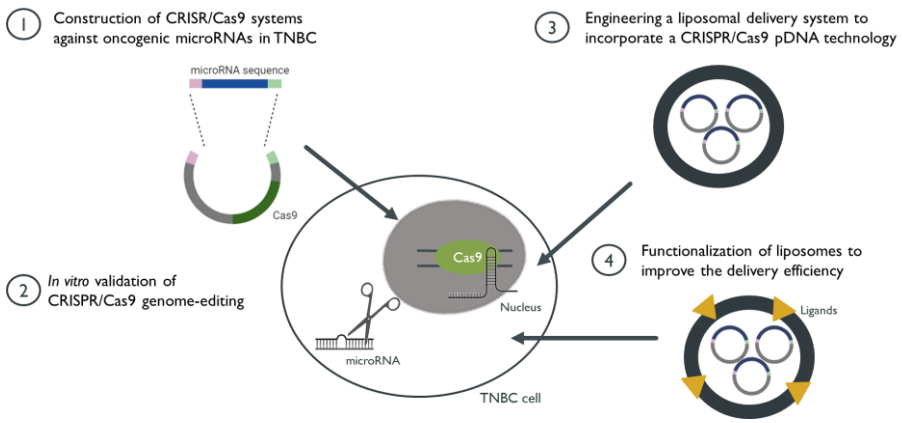

Abstract

Triple-negative breast cancer (TNBC) is the most aggressive subtype of breast cancer. Lack of effective targeted therapies, significant genetic heterogeneity and poor response to conventional chemotherapies are the major reasons contributing to poor prognosis and highly mortality rates. Given to emerging findings, oncogenic microRNAs (miRNAs) are proving to be useful potential therapeutics in different types of cancer. Many methods for miRNAs loss-of-function have been developed, such as antagomirs and sponges; however, the results of these strategies are not highly satisfied. Due to the drawbacks of the current methodologies used for miRNA inhibition, the CRISPR/cas9 system emerged as a robust and efficient alternative strategy. Therefore, a CRISPR/cas9-based approach against oncogenic miRNA-155 were generated and validated into a TNBC cell line. The CRISPR/Cas9 system was incorporated into cationic liposomes in order to be efficiently deliver it intracellularly in TNBC models *in vitro*.

Keywords: TNBC ; miRNAs ; CRISPR/Cas9 ; Liposomes