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(54) Title: INCREASED PACKAGING EFFICIENCY OF VECTOR FOR CARDIAC GENE THERAPY

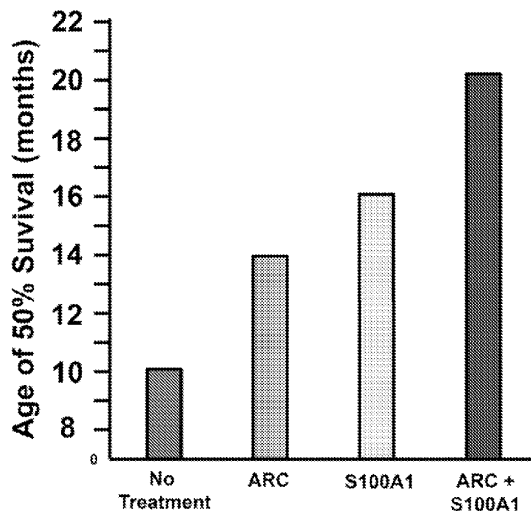


FIG. 17

(57) Abstract: The present disclosure is related to compositions and methods useful in treating heart conditions. The disclosed compositions and methods are based on gene therapies comprising a recombinant AAV vector for delivering two or more transgenes into the heart of a subject, wherein the transgenes encode an S100A1 protein and a cardiac Apoptosis Repressor with caspase recruitment Domain (cARC) apoptotic inhibitor, respectively. In various embodiments, the compositions and methods disclosed herein comprise vectors comprising S100A1 and/or cARC cDNA sequences that are codon-optimized for expression in humans. In various embodiments, the compositions and methods disclosed herein comprise vectors with improved packaging efficiencies. In some aspects, targeting multiple sources of one or more heart conditions can provide synergistic benefits during treatment.

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