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RPL3L-specific ASOs as a therapy for heart disease

Ivan Milenkovic

Centre for Genomic Regulation, Barcelona, Spain

Ribosomopathies are a group of disorders characterized by defects in ribosomal constituents, leading to impaired ribosome biogenesis and function. Most ribosomopathies have tissue-specific clinical phenotypes, suggesting that ribosome dysfunction does not affect all tissue and cell types in the same way. Recently, RPL3L has been characterized as a striated muscle-specific ribosomal protein (RP) paralog of the ubiquitously expressed RPL3, with a dynamic RPL3-RPL3L interplay described in physiological and pathological conditions in the heart. Mutations in the RPL3L-coding gene have been linked to several heart diseases, such as dilated cardiomyopathy and atrial fibrillation, making RPL3L the most recently described ribosomopathy-associated RP. Here, we suggest that the use of *RPL3L*- silencing antisense oligonucleotides (ASOs) could be a promising novel therapeutic approach for currently incurable RPL3L-related heart diseases.