RNA Therapeutics for Regenerative Medicine and Vaccine Development

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Over the past decade, RNA therapeutics has converged with regenerative medicine, by which an increasing number of RNA species (e.g. microRNA, microRNA sponge, microRNA mimics, long non-coding RNA and single guide RNA, etc) are explored to stimulate tissue regeneration. In addition, in vitro transcribed mRNA has emerged as a novel and effective class of vaccines (e.g. COVID-19 vaccine). Beyond the mRNA vaccine, self-amplifying RNA (SaRNA) can self-replicate inside cells, thus prolonging antigen expression and vaccine efficacy. This presentation will focus on the use of microRNA, microRNA sponge, microRNA mimics, and single guide RNA combined with CRISPR system for stimulating tissue repair. I will also present the self-amplifying RNA vaccine. These results collectively demonstrate the promise of RNA for the development of next generation therapeutic/vaccine.