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Bicatalytic mediated synthesis of siRNA

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PURPOSE OF THE ABSTRACT

Biocatalysis has transformed chemical synthesis of small molecule APIs in recent years by shortening routes, lowering waste and by reducing costs. Enzymes are now seeing applications beyond small molecules, such as exploited in oligonucleotide synthesis. Novel technologies are required to overcome the challenges that are faced with manufacturing commercial quantities of oligonucleotide drug substances which are required for treating large patient populations[1]. The current preferred method for oligonucleotide production utilizes the well-established solid-phase synthesis platform to produce milligram and kilogram quantities[2]. However this platform, being a linear process can have limitations around scalability and purity of the product . This presentation will highlight a hybrid strategy that utilizes RNA ligase enzymes in combination with the classical solid phase synthesis as a path forward to overcome some of these limitations and can be used for large scale manufacture. This hybrid approach complements existing oligo synthesis technologies and utilizes engineered RNA ligases and is supported by polynucleotide kinase enzymes and nucleases.

FIGURES

FIGURE 1

FIGURE 2

KEYWORDS

RNA ligase | oligonucleotide synthesis | Industrial biocatalysis

BIBLIOGRAPHY

[1] Sasso, J.M., et al, J. Med. Chem. 2022, 65 (10), 6975-7015

[2] Andrews B.I., et al, J. Org.Chem. 2021 86 (1), 49-61