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# Engineering Enzymes for an End-to-End Nucleic Acid Manufacturing Platform

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## PURPOSE OF THE ABSTRACT

Codexis' CodeEvolver® directed evolution technology has been applied to improve enzymes for specialized functions for well over a decade. The fully integrated workflow leverages computational (design) tools, advances in high-throughput gene & protein synthesis (build), and biochemical screening (test) in combination with cutting-edge data analytics (learn) to optimize enzymes and drive increasing complexity in developing novel biocatalysts for pharma manufacturing, the life sciences, and biotherapeutics.

In the life sciences, new solutions are needed to address growing needs for scalable, sustainable, and economical manufacturing of high-quality therapeutic oligonucleotides. We are deploying CodeEvolver® to develop a (novel) enzyme-catalyzed oligonucleotide manufacturing process for de novo synthesis of nucleic acid sequences. The synthesis platform leverages a proprietary Terminal Deoxynucleotidyl Transferase (TdT) engineered to efficiently incorporate 2'-and backbone modified nucleotides in an iterative process. The TdT action is complemented with engineered enzyme solutions for remaining steps in oligo synthesis and reagent production, together offering a complete, highly integrated solution to meet the demands of future nucleic acid synthesis.

## FIGURES

## FIGURE 1

## FIGURE 2


## KEYWORDS

Oligonucleotide | Nucleic acid | TdT polymerase engineering | enzyme cascade


## BIBLIOGRAPHY