Up-regulation of protein expression through use of RNA polymerase binding aptamers (RAPS)

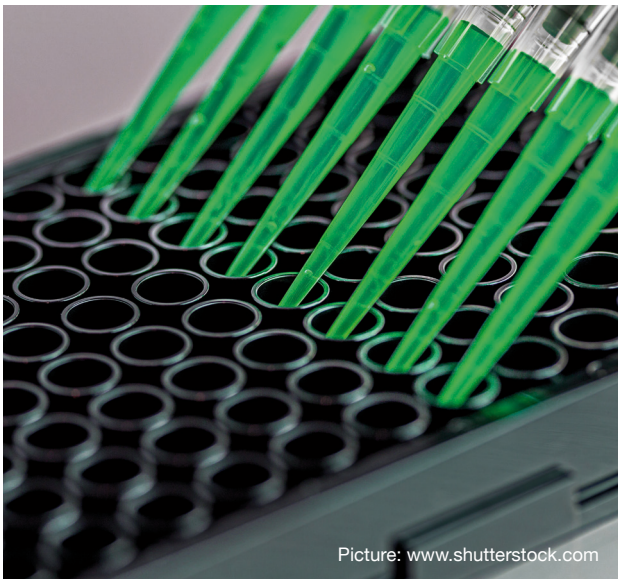
Yield of recombinant proteins expressed in bacterial systems can be greatly enhanced by incorporation of specific RNA sequences.

BACKGROUND

Protein expression yields in easy-to-use bacterial hosts such as *E. coli* can be frustratingly low and vary widely from protein to protein. One reason for low expression levels is the tendency for transcription to terminate prematurely due to poor processivity of the polymerase.

TECHNOLOGY

We have found a way to significantly enhance RNA-polymerase processivity. A selection of specific RNA sequences (RNA Aptamers) having affinity to RNA polymerase were identified by directed evolution (SELEX) and have been demonstrated to up-regulate protein expression when incorporated in cis into RNA transcripts. These simple short sequences are easily engineered into untranslated regions of bacterial expression vectors and can improve rates of expression of proteins such as Cas9, PTEN, and YFP, thus saving costs and time.



Picture: www.shutterstock.com

BENEFITS

- Significant improvements in protein expression levels
- Overcomes effects of RNA hairpins and other termination signals during transcription
- Alternative to use of T7 polymerase-based expression systems

AVAILABLE FOR

- License Agreement
- Collaboration
- Contract Research

INVENTORS

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DEVELOPMENT STATUS

TRL 3 – proof of concept

IPR

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Nationalized in Europe, USA, China, Korea and Singapore

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