METHODS AND COMPOSITIONS FOR CONTROLLING GENE EXPRESSION BY RNA PROCESSING

Tech ID: 22273 / UC Case 2012-055-0

PATENT STATUS

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<td>Germany</td>
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<td>602013044596.6</td>
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<td>2880171</td>
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<td>9,745,610</td>
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BRIEF DESCRIPTION

Genetic systems often behave unpredictably due to structural interactions between DNA, RNA and protein components as well as functional interactions with host factors and metabolites. Due to these complexities, the ability to program gene expression quantitatively based on the characteristics of individual components is very limited. In nature, the control of the activity of an RNA transcript is crucial to its function. For example, the transcription, translation, and degradation of an mRNA is crucial to any gene expression event, and all three processes are controlled by a combination of elements including promoters, ribosome binding sites (RBSs), and cis-regulatory signals encoded in untranslated regions (UTRs). Methods and/or tools to facilitate the combination of various regulatory elements originating from various different sources to predictably control the activity of any desired RNA would be beneficial for numerous biotechnology applications. However, regulatory elements can unpredictably interact with each other through the formation of RNA structures and the recruitment of factors that affect global transcript accessibility and stability.

UC Berkeley researchers have developed methods and compositions for identifying appropriate combinations of regulatory elements simply and quickly. The invention allows for the combination of multiple regulatory elements in a fashion that predictably affects RNA activity.

SUGGESTED USES

» A synthetic RNA-processing platform (e.g., assembly of promoters, ribosome binding sites, cis-regulatory elements and riboregulators into single- and multigene operons)

PUBLICATION

RNA processing enables predictable programming of gene expression

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Methods and Compositions for Using Argonaute to Modify a Single-Stranded Target Nucleic Acid
- Cas9 Variants With Altered DNA Cleaving Activity
- Cas12-mediated DNA Detection Reporter Molecules
- Cas13a/C2c2 - A Dual Function Programmable RNA Endonuclease
- RNA-directed Cleavage and Modification of DNA using CasX (CRISPR-CasX)
- Methods For High Signal-To-Noise Imaging Of Chromosomal Loci In Cells Using Fluorescent Cas9
- A Dual-RNA Guided Cas2 Gene Editing Technology
- RNA-directed Cleavage and Modification of DNA using CasX (CRISPR-CasX)
- Small Cas9 Protein Inhibitor
- Split-Cas9 For Regulatable Genome Engineering
- NANOPORE MEMBRANE DEVICE AND METHODS OF USE THEREOF