CAS13A RNP WITH SPLIT GRNA FOR MIRNA DETECTION

Tech ID: 33583 / UC Case 2024-141-0

PATENT STATUS

Patent Pending

BRIEF DESCRIPTION

UC Berkeley researchers have developed systems and methods of using a split guide RNA (gRNA) to extend the lower size range of RNA detectable by Cas13a. When Cas13a is in complex with a split gRNA and capture RNA (capRNA), it can directly detect single-stranded RNA ranging from 8-24 nucleotides. The Cas13a split gRNA system is sensitive, enabling detection of femtomolar levels of RNA, and specific to sequence mismatches and gaps. We show that the split Cas13a RNP can detect miRNAs from extracted cell RNA. To detect a new RNA target, only the sequence of the capRNA needs to be modified; the same Cas13a RNP can be used for all targets. The capRNA can be tuned to maximize sensitivity of specificity, depending on the desired application. The split gRNA system expands the current use of Cas13a in molecular diagnostics and opens the door for its use in miRNA discovery.

SUGGESTED USES

- miRNA detection
- Diagnostics

ADVANTAGES

- Can directly detect single-stranded RNA ranging from 8-24 nucleotides
- Sensitive, enabling detection of femtomolar levels of RNA, and specific to sequence mismatches and gaps
- System is simple yet flexible

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INVENTORS

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OTHER INFORMATION

CATEGORIZED AS

- **Biotechnology**
  - Health
- **Medical**
  - Diagnostics

RELATED CASES

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ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

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