Cost-effective Method to Quickly Produce and Purify Large Quantities of Biologically Active ncRNAs

Tech ID: 24318 / UC Case 2014-279-0

CONTACT

Pooja N. Bhayani
pnbhayani@ucdavis.edu
tel: .

INVENTORS

- Chen, Qiuxia
- Li, Meimei
- Wang, Weipeng
- Yu, Aiming

OTHER INFORMATION

KEYWORDS

Biomarkers, Chimeric RNA, E. coli, RNA delivery, RNA production, RNA purification, Therapeutics

CATEGORIZED AS

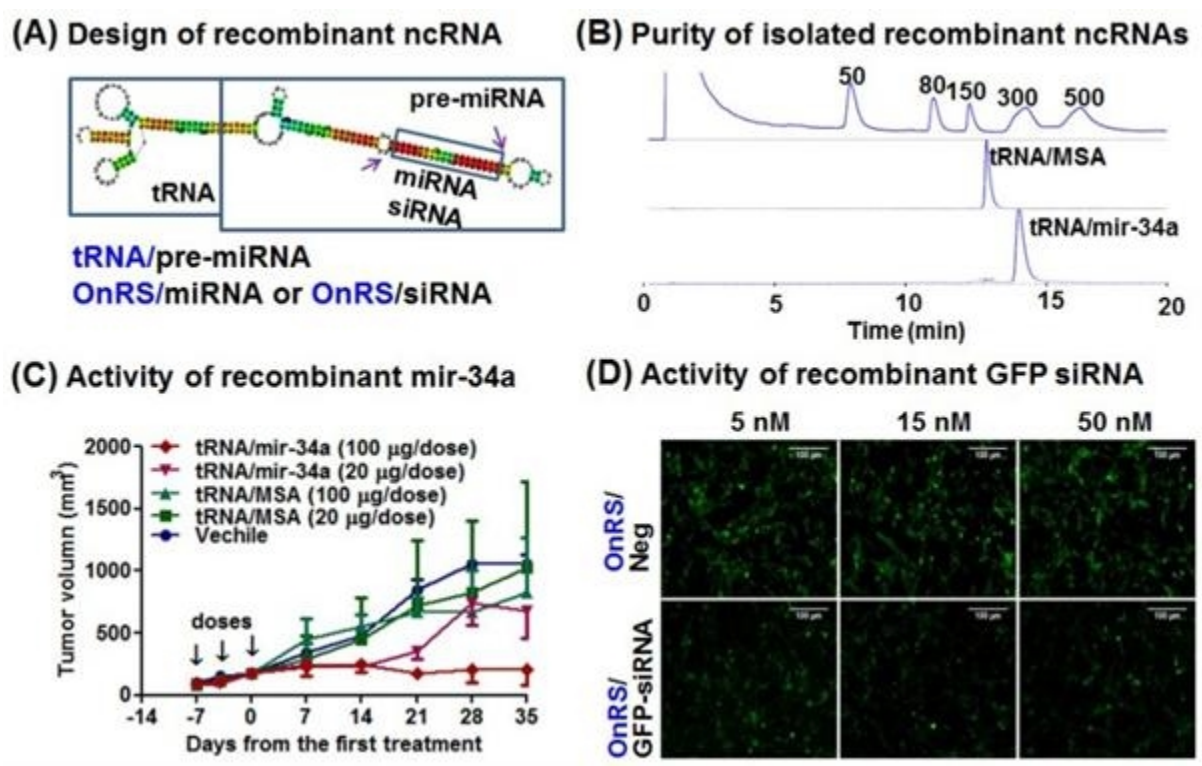
- **Biotechnology**
  - Genomics
  - Health
  - Other
- **Materials & Chemicals**
  - Biological
- **Medical**
  - Delivery Systems
  - Diagnostics

ABSTRACT

Researchers at the University of California, Davis have developed a method to develop and purify large quantities of ncRNA for basic and translational research, as well as for therapeutics delivery.

FULL DESCRIPTION

The discovery of the role of chimeric, non-coding, RNAs (ncRNA) in the control of various cellular processes has greatly expanded researchers' understanding of cellular genetics. Advances include insights into developing novel therapeutic strategies. As one example, tumor-suppressive ncRNAs that are depleted in carcinoma tissues may be reintroduced into cancer cells to manage tumor progression. Unfortunately, existing methods of ncRNA production - such as chemical synthesis - are very expensive and run the risk of altering the RNA's structure and its associated biological activity. The lack of an efficient method for producing large quantities of inexpensive, naturally-occurring and biologically-functional ncRNA agents hinders basic research on ncRNA structures. It also limits potentially critical, translational research on ncRNA-based therapies.



Researchers at the University of California, Davis have developed a method to cost-effectively design, produce, and purify large amounts of chimeric, non-coding, RNA agents using recombinant RNA technology. This method involves using E.coli and tRNA scaffolding. This production approach allows for high levels of ncRNA expression and stability in a recombinant host cell. The resulting ncRNA can be purified with high homogeneity, and used to help control biological processes. The ncRNA can also become a "stealth" carrier for the delivery of therapeutic RNA agents or RNA biomarkers.

APPLICATIONS

- Increases availability of ncRNA for basic and translational research
- Potential carrier of biomarkers or therapeutics

FEATURES/BENEFITS

- Provides a source of inexpensive, high-purity, ncRNA
- Increases opportunities for the delivery of therapeutic or biomarkers using stealth RNA

carriers

▶ Gene Therapy
▶ Research Tools
▶ Therapeutics
▶ **Research Tools**
▶ Nucleic Acids/DNA/RNA

RELATED CASES

2014-279-0

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,619,156	04/14/2020	2014-279

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- New label-free method for direct RNase activity detection in biological samples
- Bioengineered RNA Molecules for Cancer Therapy

University of California, Davis
Technology Transfer Office
1 Shields Avenue, Mrak Hall 4th Floor,
Davis,CA 95616

Tel:
530.754.8649
techtransfer@ucdavis.edu
https://research.ucdavis.edu/technology-transfer/
Fax:
530.754.7620