

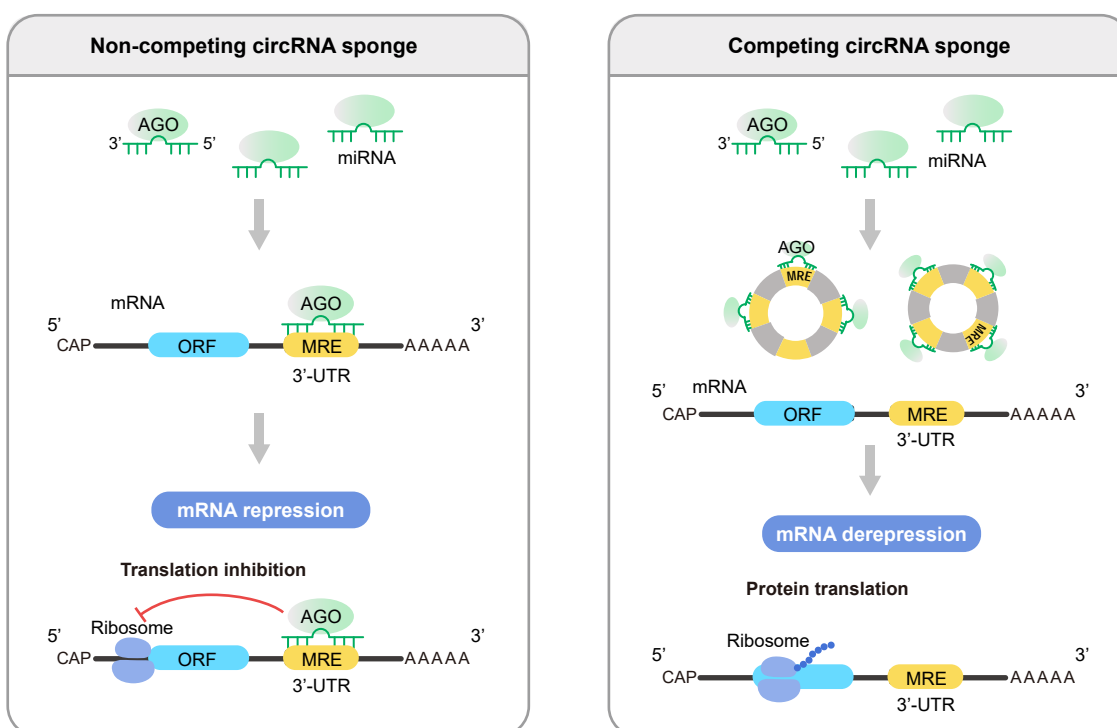
## Circular RNA Sponge

Circular RNA sponge, also known as circRNA sponge, is a synthetic RNA molecule derived from *in vitro* transcription (IVT) and circularization by permuted intron exon (PIE) or enzymatic ligation. circRNA sponge acts as a competitive inhibitor of specific miRNA. It contains multiple binding sites (MREs) for sequestering and "sponging" miRNA, thus preventing miRNA interaction with endogenous target mRNA. Compared to linear RNAs, circRNA sponges lack 5' cap and 3' poly(a) tail and are more resistant to exonucleolytic degradation resulting in higher intracellular levels for miRNA target derepression. circRNA sponges overcomes the toxicity exhibited by anti-miRNA oligonucleotides (AMO) and dosage constraint by the plasmid-based miRNA sponge. circRNA sponges does not require nucleoside modifications and are inherently non-immunogenic. **A multitude of circRNA sponge reagents is coming soon.**

### Applications of circular RNA sponge

- Gene regulation engineering
- Functional studies of miRNAs
- Biomarker discovery and diagnostics
- Therapeutic interventions

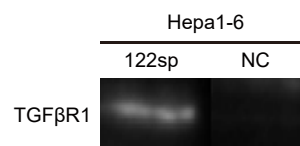
### circRNA sponge miRNA inhibition process



### Data

- **miR-122-5p circRNA sponge absorbs miR-122 and derepress TGFβR1 transcription in mouse cells**

Western blot analysis of TGFβ receptor 1 (TGFβR1) in Hepa1-6 cells with treated artificial circRNA sponge for miR-122 (122sp) and untreated negative control (NC). The silencing of miR-122 by circRNA sponge in Hepa1-6 increase TGFβR1 expression.



- **miR-122-5p circRNA sponge affinity pulldown assay**

E-Gel™ EX 2% Agarose Gel of circRNA pulldown.

**Lane 1:** The binding complex, miR-122-5p circRNA sponge 313nt and biotinylated miR-122-5p, was pulled down by Streptavidin Magnetic Microspheres.

**Lane 2:** miR-122-5p circRNA sponge alone not pulled down by Streptavidin Magnetic Microspheres.

