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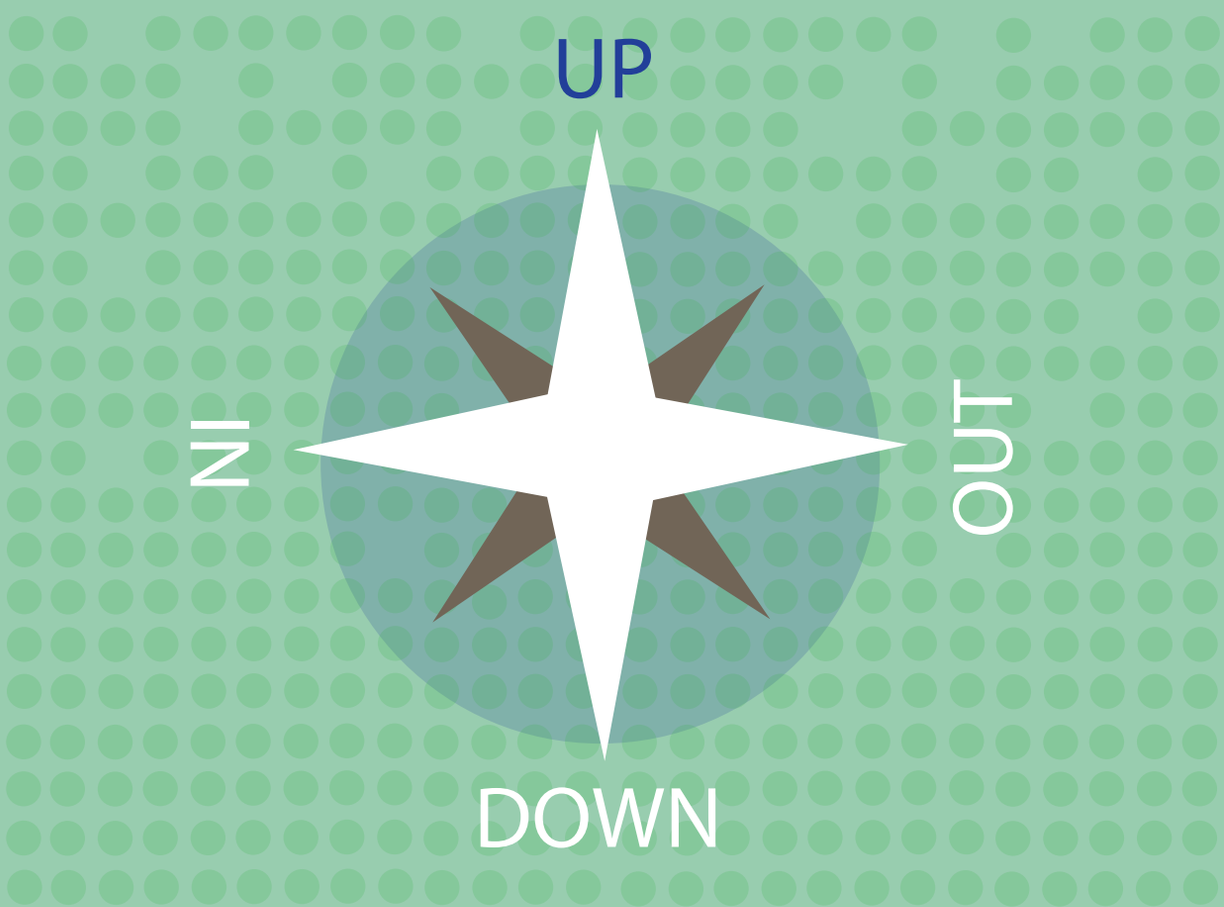
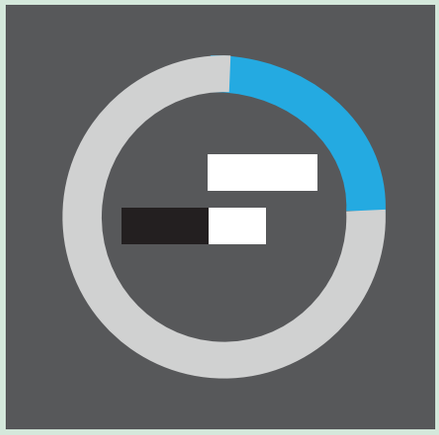



Take your research in a new direction

# SINEUP™ TRANSLATION CONTROL SYSTEM FOR GENE KNOCKUP

# SINEUP™ System

## Unique Mechanism of Action



SINEUP™ non-coding RNA technology represents a breakthrough for the study and manipulation of eukaryotic genes. SINEUP™ allows up to 10-fold increases in expression levels of target proteins by enhancing the efficiency of translation. Transcription of the target gene is unaltered.

## No Alteration to Target

Similar to RNAi, which can be used to knock-down (down-regulate) protein levels, SINEUP™ technology does not rely on the direct manipulation of the target gene. Instead, SINEUP™ elements enhance the rate of translation initiation of the target gene mRNA.

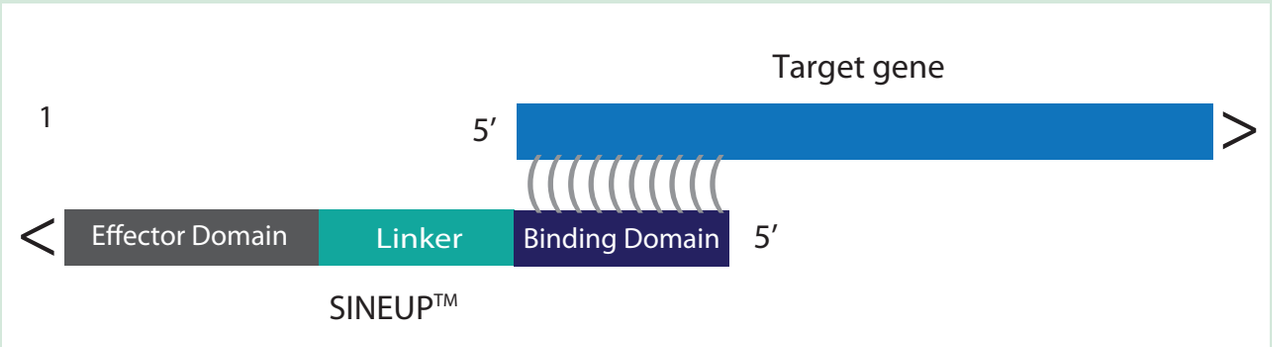
## Large Effects

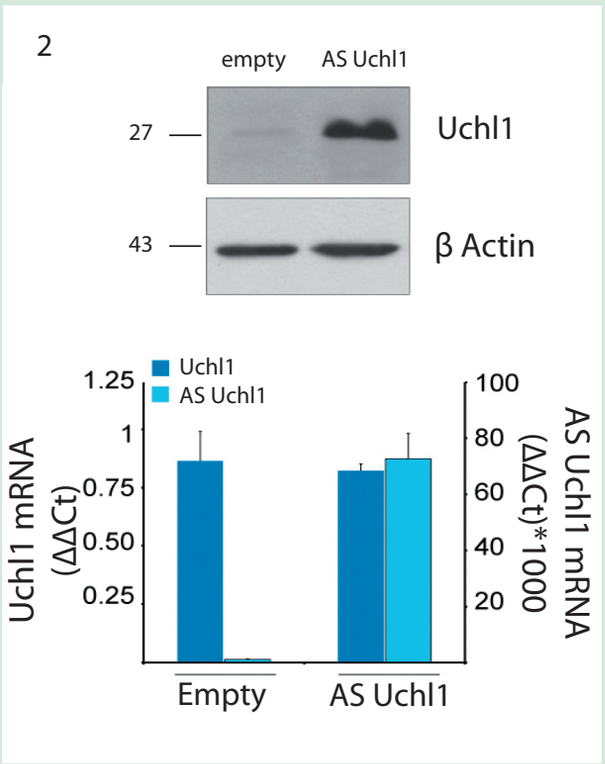
Initial characterization of the system, published in Nature (and unpublished data), have demonstrated increases in protein levels as high as 10-fold. mRNA levels are unaffected. SINEUP™ technology provides an additional layer of control over protein synthesis which can be combined with existing tools.

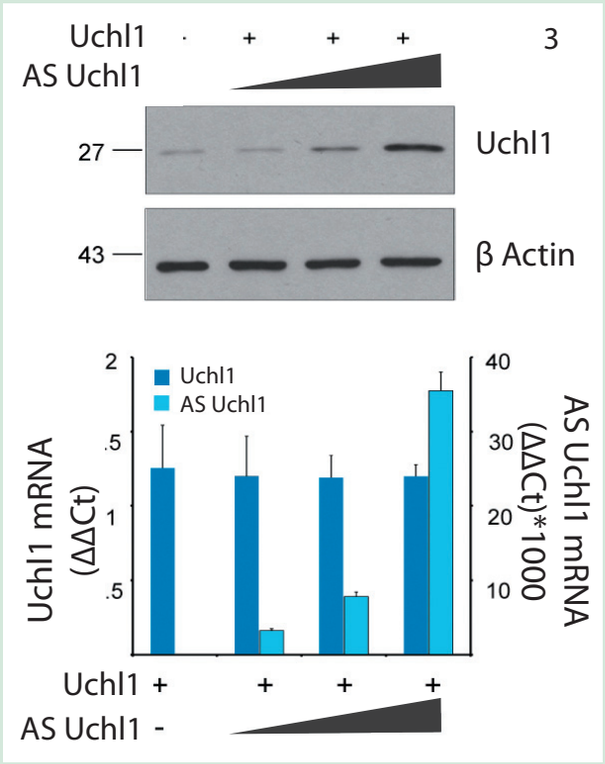
## Works Across a Range of Gene Targets and Cell types

The cellular machinery that generates up-regulation of protein expression with SINEUP™ constructs has been shown to work for multiple genes and to be present in a range of mammalian cell types including murine and human cells.

# SINEUP™ Technology



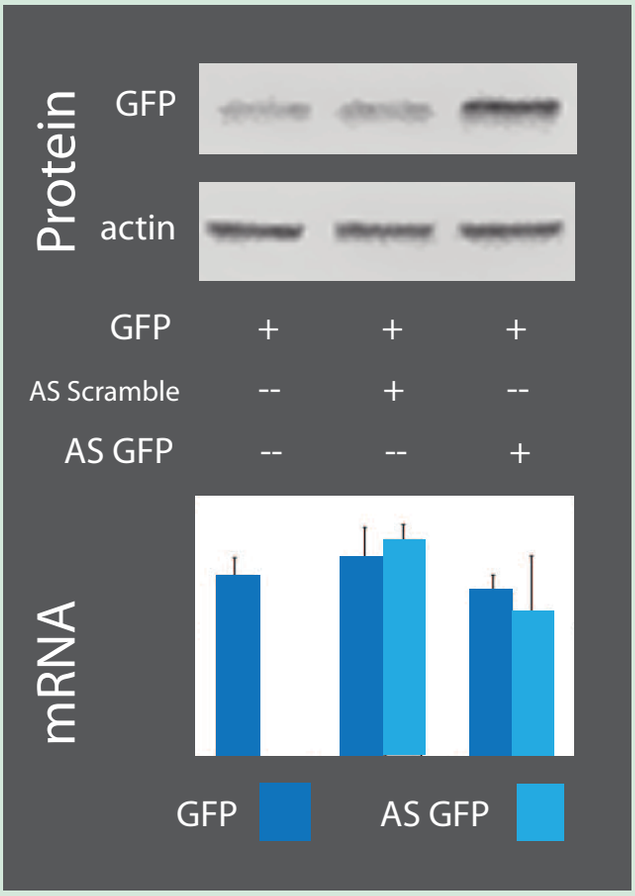




(1) SINEUP™ constructs express non-coding RNAs containing a short target gene specific binding domain linked to a common 1105 nt effector domain incorporating a SINEB2 element. The technology was developed following identification and characterization of a long non-coding RNA transcript which contains an antisense sequence to the Uchl1 gene linked to a SINEB2 repeat.
(2) Increased expression of the AS Uchl1 SINEUP™ from a transfected construct results in increased expression of Uchl1 protein without any increase in Uchl1 mRNA levels.
(3) Expression levels of Uchl1 protein can be titrated by modulating expression of an AS Uchl1 SINEUP™ construct.

# Knockup your Gene

The ability of SINEUP™ constructs to increase protein expression is not restricted to Uchl1. In HEK293 cells, a SINEUP™ construct incorporating a binding domain complimentary to GFP RNA increases levels of GFP protein with no increase in GFP mRNA levels.

SINEUP™ can be combined with other genetic tools that act at the mRNA level to increase the overall amount of protein expression that is achievable from a given cell type.




## Further Details

Long non-coding antisense RNA controls Uchl1 translation through an embedded SINEB2 repeat . Carrieri *et al* (2012) **Nature** 491, 454–457

| Product | Cat No |
|---|---|
| SINEUP™ ED | GE01 |

A sequence verified effector domain (ED) and linker in a general cloning vector (pUC19) ready for subcloning to the expression vector of your choice and insertion of a gene specific binding domain (BD).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