

UWA technology licensing/ partnering opportunity:

CodeBreakers™

PUF PROTEIN-BASED RNA BINDING AND MODULATION TECHNOLOGY

Researchers at the University Of Western Australia Perkins Institute Of Medical Research have discovered a universal code for protein-RNA recognition, presenting the possibility of a platform for developing designer-RNA binding protein reagents for the study and manipulation of RNA

BACKGROUND

Modulating and understanding gene expression is a key focus of modern biomedical research, however, the tools available for manipulation of RNA in particular have been limited to date. Antisense and RNA interference technologies are only able to reduce abundance or expression of target RNAs, and activities are typically reliant on cytoplasmic silencing machinery.

Engineering of RNA-binding proteins is a highly attractive alternative, as recognition motifs may be fused directly to effector domains, enabling selective binding of a specific RNA target to investigate or manipulate any aspect of its metabolism. However, before now mechanisms of RNA-protein interaction have been shown to be diverse and unpredictable.

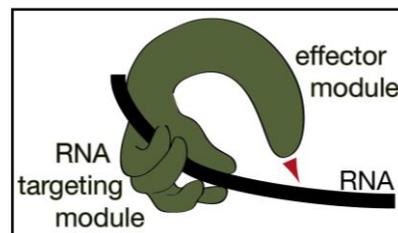
Now, the discovery of the RNA recognition code of the Pumilio and FBF homology protein (PUF) family of RNA-binding proteins allows for the engineering of programmable sequence-specific RNA binding proteins to selectively bind and modulate any RNA of interest.

ADVANTAGES

Specificity: PUF domain proteins binding 8-16 nucleotides may be designed to target any RNA of interest including messenger RNAs and non-coding RNAs

Modularity: PUF domain proteins may be fused to diverse effector domains for multiple applications

- RNA degradation
- RNA stabilization
- RNA transportation
- RNA labelling
- RNA mutation introduction or repair



APPLICATIONS

- Development of designer-RNA binding protein reagents to make possible the study of gene regulation at the RNA level (RNA localization, nuclear export, alternative splicing etc.) and structure/function relationships in RNA and proteins
- A possible platform for the development of peptide therapeutics for the correction of mutations at the RNA level, for example in mitochondrial disease

COMMERCIALISATION

We are seeking interest from industry partners to develop this technology under licence. For further information please contact:

Dr Louis Pymar, Project Manager Commercialisation, Research Development and Innovation
e: louis.pymar@uwa.edu.au t: +61 8 6488 4363