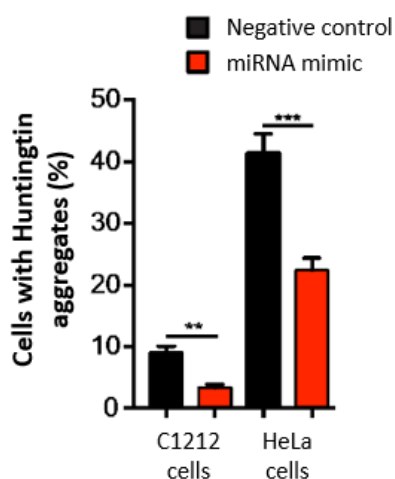


# Prevention of Toxic Protein Aggregation with a MicroRNA

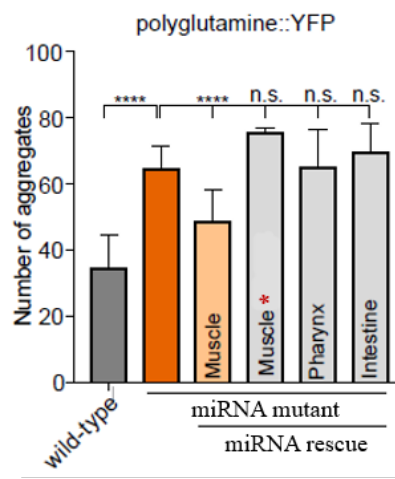
**THERAPEUTIC: CNS**

Product Type	MicroRNA (miRNA)
Indication / ROA	Huntington's disease (HD), Parkinson's disease; Injectable
Target / MoA	Regulates the GTPase-activating protein associated with autophagy pathway and enables toxic protein aggregates to be efficiently removed; Administration of the miRNA alone or concomitantly with a standard-of-care cytokine regulates GTPase-activating protein activity.
Development Stage	Lead optimization
Brief Description & Differentiation	<p>Highly conserved regulatory axis through which the miRNA controls the accumulation of aggregation-prone proteins in <i>C.elegans</i> and mammalian cells. The miRNA protects against proteotoxic stress and toxic protein aggregation.</p> <ul style="list-style-type: none"> <li>• miRNA role genetically and functionally validated.</li> <li>• Abrogates the detrimental effects of <math>\alpha</math>-synuclein and heat stress on behavior and physiology (<i>C.elegans</i>).</li> <li>• Protection against the accumulation of mutant huntingtin in HeLa cells and neurons (mammalian cells).</li> <li>• Highly conserved miRNA and tissue-specific (muscles and brain).</li> </ul>
Research Team	Prof Roger Pocock
Intellectual Property	Provisional patent application has been filed covering methods of treatment and the use of the miRNA for promoting autophagy and reducing toxic protein aggregation.
Key Publications	<p>Nehammer <i>et al.</i> Specific microRNAs regulate heat stress responses in <i>Caenorhabditis elegans</i>. <i>Sci Rep.</i> 5, 8866 (2015).</p> <p>Kagias K, Pocock R. microRNA regulation of the embryonic hypoxic response in <i>Caenorhabditis elegans</i>. <i>Sci Rep.</i> 5, 11284 (2015).</p>
Future	Efficacy, safety, and pharmacology in multiple disease models. Improvement of delivery method.

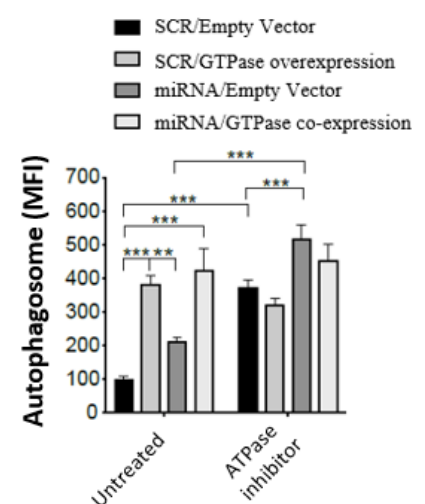
## Key Data



**Figure 1.** Overexpression of the miRNA mimic reduces toxic protein aggregates.



**Figure 2.** Mutation of the miRNA seed sequence (\*) in *C.elegans* abrogates rescue from body wall muscle only.



**Figure 3.** Human miRNA regulates autophagy by controlling GTPase-activating protein expression.