PHYLOGICA

BREAKTHROUGH PEPTIDE THERAPEUTICS

ASX ANNOUNCEMENT

Breakthrough animal model results

Phylogica (PYC) announces successful results from its latest tests to assess the effectiveness of its Cell Penetrating Peptide (CPP) platform to deliver drugs into the eye.

Highlights

- The delivery of large drugs into cells is one of the major challenges in the pharmaceutical industry. PYC is using its proprietary CPP platform to safely deliver drug cargoes into cells.

- PYC's 'second generation' CPPs have **successfully delivered an Anti-Sense Oligonucleotide (ASO) drug cargo into our target cell layer** within the retina in animal studies

- One of **PYC's CPPs performed substantially better** than the current CPP benchmark for clinical development[1]

- These animal studies represent achievement of the major pre-clinical milestone on the drug development pathway and clearly demonstrate the **outperformance of PYC's delivery technology in an animal**

- With these results, PYC has:

    - **a clearly established competitive advantage** in the treatment of blinding genetic eye diseases (affecting more than 10 million individuals in the US alone[2] and causing an annual financial burden of more than US$35 billion[3]); and
    - a platform technology that **scales across many other areas of high unmet medical need** (priority indications in other tissues include motor neuron disease in the brain)

- We have achieved this result through testing of only a small fraction of our 'second generation' CPPs – we will now evaluate the remainder of these candidates in human retinal cells and animal models **as we progress to selection of our leads for clinical development**

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[1] The reference peptide for clinical development is an oligo-arginine peptide with a chemically stabilised backbone (RXR4). The peptide resembles a CPP known as 'PepK' which represents the CPP with the greatest body of evidence to support clinical development of Anti-Sense Oligonucleotide delivery.

[2] Yerxa B., Progress in Inherited Retinal Disease Drug Discovery and Development: A Foundation's Perspective, NCBI

[3] Herper M. The Cost Of Creating A New Drug Now $5 Billion, Pushing Big Pharma To Change, 2013: https://www.forbes.com/sites/matthewherper/2013/08/11/how-the-staggering-cost-of-inventing-new-drugs-is-shaping-the-future-of-medicine/#2d55d28f13c3

27 June 2019: Delivering drug cargoes inside cells is the rate-limiting step in the development of new therapies that are both potent (highly effective) and specific (with few side effects). Multiple Pharmaceutical/Biotechnology companies are advancing drugs that are delivered inside cells by Cell Penetrating Peptides (CPPs) through clinical trials today.

Animal studies demonstrate that Phylogica's CPPs deliver substantially more drug cargo inside their target cell than the current CPP benchmark for clinical development (see footnote 1 above). This result is significant given that the rate-limiting step for the development of delivery technologies is the amount of cargo that can be safely delivered inside a cell.

The results have been achieved in our 'flagship' program directed towards delivering a promising class of drug cargo known as an Anti Sense Oligonucleotide (ASO) into the retina of mice. The retina is a tissue at the back of the eye which can be affected by a variety of blinding diseases. The treatment of inherited retinal diseases is the priority setting for the clinical development of our platform.

Technical details

The results were achieved following injection of the drug molecule (CPP-ASO) into the vitreous of mice and demonstrate that the CPP facilitates both:

i) the successful delivery of the ASO cargo across 8 different layers of cells (ie. trafficking ***to*** the target cell – see Figure 1 below); and
ii) uptake of the ASO by the target cell of interest (i.e. successful ***delivery into*** the target cell – in this case the Retinal Pigment Epithelium – see Figure 2 below).

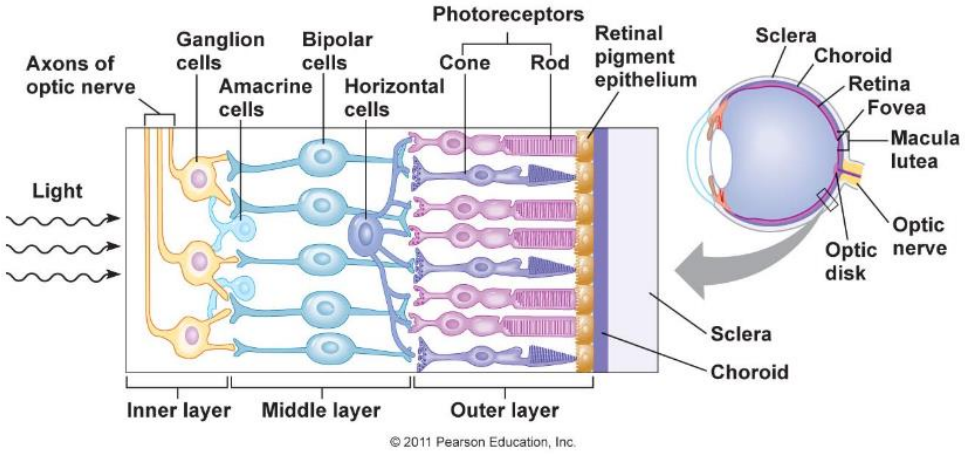

Figure 1. Cellular layers within the retina[4]. The CPPs are injected into the vitreous of the eye (represented in blue in the right hand image of the eye). The CPPs travel through the 'Inner layer', 'Middle layer' and 'Outer layer' of cells in order to reach the target cell (Retinal Pigment Epithelium or RPE) and deliver the ASO cargo inside this layer of cells.

[4] Image courtesy of Pearson Education

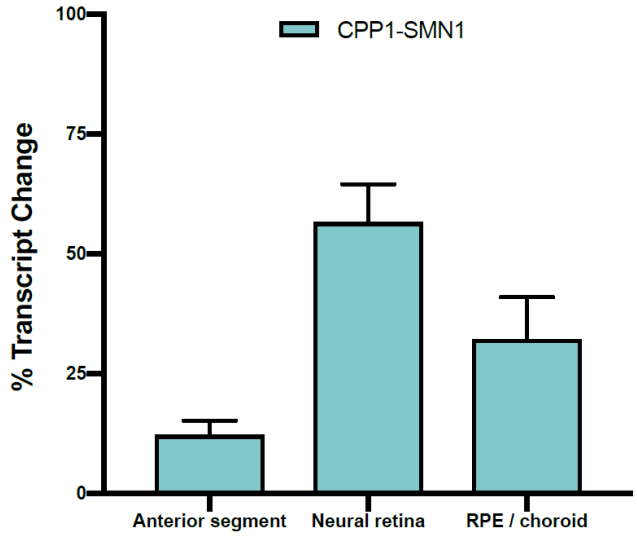

Figure 2. Delivery of the SMN1 (Survival of Motor Neuron 1) ASO cargo into three different segments of the eye by Phylogica's CPP at a single dose of 1.6 micrograms per eye at 5 days post-administration. Higher levels of 'transcript change' or exon skipping[5] by the SMN1 ASO indicate more effective delivery of the cargo by the CPP.

The animal studies described above demonstrate the efficacy of Phylogica's drug molecule at a dose that is substantially lower than competitive approaches for ASO administration in the vitreous without the benefit of PYC's CPP delivery technology[6]. The lower the dose required to achieve a therapeutic effect, the less likely the patient will experience side effects.

Importantly, there was no evidence of toxicity observed for the CPP that achieved the outcome described above after systemic administration at a dose of 30mg/kg in a separate mouse model. The clinical benchmark peptide, by contrast, demonstrated toxicity when administered at the lower dose of 20mg/kg. The absence of observed toxicity following direct administration of PYC's CPPs into the bloodstream bodes well for expansion into additional indications in other target tissues.

Studies of localised toxicity within the eye are pending (see 'Next steps' below).

Next steps

Our immediate next steps are to:

1) Evaluate the remainder of our second generation CPPs in animals (more results are expected over coming months);
2) Complement this data with the additional requirements of a comprehensive data pack in our lead indication (toxicity, immunogenicity, biodistribution, experiments in human cells, 'retina in a dish' models etc.); and
3) Progress into larger animal studies as we move towards the clinic.

[5] Exon skipping is the outcome achieved by the Anti-Sense Oligonucleotide (ASO) when it is effectively delivered into the nucleus of the cell. It describes the process of gene editing which results in the production of a different (i.e. non-diseased) protein by the cell's own 'protein making machinery'

[6] See, for example, 'Splice-Modulating Oligonucleotide QR-110 Restores CEP290 mRNA and Function in Human c.2991+1655A>G LCA10 Models' and https://ir.wavelifesciences.com/static-files/8b92f45e-af09-4a4a-bcd9-85c742d6e7f1

Commercial development

Phylogica's platform technology can be used to deliver a wide range of drugs to multiple target tissues within the human body. There are, therefore, a multitude of opportunities to apply the technology in the treatment of many different diseases.

Phylogica plans to take a dual track approach to exploit this commercial potential by:

1) Delivering third party cargoes through licensing arrangements; and
2) Internal development of a pipeline of molecules for clinical evaluation.

Shareholder Update

Shareholders are invited to join the Company at the Harry Perkins Institute (North campus located next to Sir Charles Gairdner Hospital) at 9am on Wednesday 24 July in Seminar Room 612a for a discussion of these results and their relevance to the future direction of the company.

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About Phylogica

Phylogica Limited (ASX: PYC) is a biotech company focused on commercialising its intracellular drug delivery platform and screening its peptide libraries to identify drug cargoes for development against a wide range of disease targets. Phylogica controls access to the world's most structurally diverse source of peptides which have the ability to act as effective drug delivery agents and drug cargoes, penetrating cell walls to reach previously 'undruggable' targets across a range of disease types. Phylogica's platform of proprietary cell penetrating peptides has been validated across multiple animal models for the ability to deliver a diverse range of drug cargoes into cells. The company has collaborations with

several pharmaceutical companies including Roche, Medimmune, Pfizer, Janssen and Genentech.

Forward looking statements

Any forward-looking statements in this ASX announcement have been prepared on the basis of a number of assumptions which may prove incorrect and the current intentions, plans, expectations and beliefs about future events are subject to risks, uncertainties and other factors, many of which are outside Phylogica's control. Important factors that could cause actual results to differ materially from assumptions or expectations expressed or implied in this ASX announcement include known and unknown risks. Because actual results could differ materially to assumptions made and Phylogica's current intentions, plans, expectations and beliefs about the future, you are urged to view all forward-looking statements contained in this ASX announcement with caution. Phylogica undertakes no obligation to publicly update any forward-looking statement whether as a result of new information, future events or otherwise.

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