

Phylogica Ltd

(PYC \$0.027) Speculative Buy

EUROZ

Analyst	Date	Price Target
Ben Laird	6 th March 2018	\$0.059/sh

Ongoing FPP validation update

Investment case

Recently released data regarding the successful in vitro delivery of the Cre enzyme into kidney cells is an example of PYC putting the foundations in place to achieve broad based third party validation of their core FPP technology in a timely and cost effective manner. By tracking the Cre system PYC can significantly reduce the testing time required to determine where PYC's FPPs and their associated cargos are being distributed in the human body. This will ultimately allow PYC to develop and screen FPP and third party drug candidates more efficiently.

While internally generated data, like the in vitro Cre results is important, in our view PYC's share price will ultimately be driven by third party validation in the form of new collaboration deals.

We maintain our Spec BUY recommendation with a price target of \$0.059/sh.

Key points

- PYC recently released positive in vitro data regarding "proof of concept" cargo, Cre.
- Cre is an enzyme routinely used in clinical research because once delivered to a cell or organ it induces a distinct colour change in the target tissue.
- The data showed a) PYC's FPP can deliver a biologic cargo into kidney cells in vitro, b) FPP1746-Cre can penetrate the nucleus of the cell and c) PYC's FPP is more effective in delivering Cre than current delivery standard TAT.
- The data should be viewed as a step towards PYC establishing procedures to help screen FPPs and biologic cargoes for prospective third party collaborators more efficiently.
- PYC are focusing their funding resources on broadening the number of potential FPPs that could be used in conjunction with third party cargoes to produce new drug candidates.
- In the medium term PYC plan to achieve this by demonstrating, in a targeted manner, in vivo validation for as many different cargoes as possible, across an array of cells types.
- The logic being that the greater the breadth of in vivo validation, the greater the chances of gaining third party interest in collaboration deals.
- If new collaboration deals can be signed on reasonable terms, with credible third parties it will produce short term cash flow but more importantly it will ultimately lead to the market ascribing greater value to the PYC drug discovery platform in our view.
- PYC's current cash balance stands at ~ \$7m. PYC had \$4.9m end Dec Q 2017 and received a \$2.17m R&D tax credit in Jan 2018. This cash balance, assuming future tax credits sees PYC funded until end CY'18.

Phylogica Ltd	Year Ended 30 June	
Share Price	0.027	A\$/sh
Price Target	0.059	A\$/sh
Valuation	0.059	A\$/sh

Shares on issue	2136	m, undiluted
Options on issue	48	m
Market Capitalisation - undiluted	58	A\$m
Enterprise Value	51	A\$m
Debt	0	A\$m
Cash (end FY'17)	7.1	A\$m

Turnover	1.6m	sh/day
12 Mth Hi-Lo	0.012-0.049	cps
Balance date	June 30th	

Directors & Management

Ms Stephanie Unwin	CEO
Dr Robert Hayes	CSO
Dr Paul Watt	NED
Dr Bernard Hockings	NED
Dr Rohan Hockings	alt NED

Shareholders

Bernard Hockings	27.5%
David Sietsma	6.2%
Australian Land	7.6%
Anthony Barton	4.7%

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Share Price Chart



Disclosure

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This analyst declares that he has a beneficial interest in Phylogica Ltd.

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PYC's Strategy

In vivo validation is the key

- A key validation hurdle to gain "Big Pharma" or Bioscience fund interest in a drug technology is positive in vivo (animal) data.
- To date PYC, with various collaborators have achieved this using their functional penetrating peptides (FPPs) for several separate cargoes, across a range of different cell types that could be applicable in massive markets. This includes:
 - a. In collaboration with Professor Pilar Blancafort from the Harry Perkins Institute PYC have demonstrated inhibition of breast tumour growth in mice via a FPPa-Omomyc combination
 - b. In collaboration with Professor Sue Fletcher from Murdoch University PYC have demonstrated restoration of dystrophin levels via FPP mediated delivery of oligonucleotides to muscle and the diaphragm in mice with Duchenne Muscular Dystrophy (DMD).
 - c. In collaboration with Telethon Kids Institute (TKI) PYC have demonstrated a significant increase in the survival rate in mice with subcutaneous melanoma via the administration of a FPP-peptide vaccine
- While not in vivo validation PYC also has a live ongoing collaboration with Genentech that is aiming to isolate Phylomers from PYC's proprietary library that when couple with existing antibiotics can kill multi-drug resistant bacteria. Two milestone payments have been received thus far with the next evaluation period due end CY'19.
- The table below outlines PYC's current and planned cargo types and target cells for FPPs and the current level of validation. The circled box is where the Cre enzyme results fit into the matrix.

FPP01 validation matrix

	Peptides	Scaffolds	Enzymes	Antibodies	Oligo-nucleotide	Cancer Vaccine	Protein	Expand to new cargoes
Breast tumour	In vitro validation	In vivo validation	Conceptual	Conceptual	Conceptual	Conceptual	In vivo validation	Expand to new cargoes →
Blood cancer	In vitro validation	Conceptual	Conceptual	Conceptual	Conceptual	Conceptual	Conceptual	
Bone cancer	In vitro validation	Conceptual	Conceptual	Conceptual	Conceptual	Conceptual	Conceptual	
Heart	In vitro validation	Conceptual	Conceptual	Conceptual	In vivo validation	Conceptual	Conceptual	
Muscle	In vitro validation	Conceptual	Conceptual	Conceptual	In vivo validation	Conceptual	Conceptual	
Diaphragm	In vitro validation	Conceptual	Conceptual	Conceptual	In vivo validation	Conceptual	Conceptual	
Liver	In vitro validation	Conceptual	Conceptual	Conceptual	In vivo validation	Conceptual	Conceptual	
Dendritic cells	Conceptual	Conceptual	Conceptual	Conceptual	Conceptual	In vivo validation	Conceptual	
Kidney cells	Conceptual	Conceptual	In vivo validation	Conceptual	Conceptual	Conceptual	Conceptual	
Expand to new targets ↓								

Legend:
 Conceptual (light orange)
 In vitro validation (medium orange)
 In vivo validation (dark orange)
 Not applicable (grey)

Source: Phylogica Ltd

- As outlined briefly above, an example of the potential breadth of applications of PYC's FPP delivery technology was the recent demonstration of positive results in an animal (in vivo) melanoma model in the new vertical (for PYC) of Immunotherapy.
- PYC's FPP when joined with a tumour antigen has extended the average survival of mice in the melanoma model by 100% when compared to the control group.
- PYC and their collaboration partner have now filed an Australian patent for FPPs in their library that when coupled with a cancer vaccine (or an Antigen) will induce an immune response.
- These results will form the basis for further experiments in 2018 that will aim to evaluate a range of FPPs in the application of cancer vaccination experiments.

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Share price catalysts

Partnership deals with credible third parties:

- Now that PYC has pivoted away from in-house drug development the key stock price drivers going forward will be announcements with regard to new alliances/collaborations.
- These potential deals will serve to enhance PYC's investment proposition on several fronts:
 1. A near term injection of cash which would serve to extend the existing funding runway
 2. If success can be demonstrated across a broad base of applications we see a situation where PYC can trade at greater than the sum of its parts as the market buys into the "drug delivery platform" concept.
 3. The greater the number of collaborations the greater the spread of validation and funding risk for PYC

More Data from existing collaborations:

- We expect a rolling flow of information from PYC's various existing collaboration agreements over the next 6-12mths. The key focus being on in vivo validation.

Recent "Big Pharma" Interest in the drug delivery platform space

- In May 2017, unlisted UK biotech Bicycle Therapeutics struck a deal with Bioverativ (recently spun out of Biogen) to apply their particular peptide drug delivery platform technology to the treatment of haemophilia and sickle cell disease.
- This was one application of a platform with multiple possible parallel opportunities.
- Bicycle realised a US\$10m upfront payment with up to US\$410m of milestone payments to run initial screening and in vitro validation that could lead to pre-clinical trials. This is a relatively larger up-front cash transaction for such an early stage collaboration.
- The reason Bicycle Therapeutics could attract such terms is because the drug delivery platform had been validated in terms of other programs attracting significant third party commercial interest with some entering phase 1 clinical trials.
- While we do not assert that PYC should have comparable status now. It does serve to illustrate the value multiplier that can occur upon platform validation. This is now the singular focus of PYC management.

Valuation

Weighing up the multiple credible collaborations currently underway and the potential for new deals vs the early stage nature of existing partnerships we ascribe a nominal value of \$120m for PYC's peptide platform, FPPs and other drug candidates.

If PYC can land new collaboration deals with improved up front metrics to the previous \$1-2m level or further milestone payments for existing collaboration deals can be realised, we could look increase our price target.

We maintain our Spec BUY recommendation with a price target of \$0.059/sh.

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