

Subscribe to
Bioshares
\$550/
24 issues

More details can be found
on the back page

Companies covered: CGS, CUV, DXB,
IMM, IMU, MSB, MX1, OPT, PAB, PYC,
RAP, TLX, Ellume, Planet Innovation

	Bioshares Portfolio
Year 1 (May '01 - May '02)	21.2%
Year 2 (May '02 - May '03)	-9.4%
Year 3 (May '03 - May '04)	70.6%
Year 4 (May '04 - May '05)	-16.3%
Year 5 (May '05 - May '06)	77.8%
Year 6 (May '06 - May '07)	17.4%
Year 7 (May '07 - May '08)	-35.8%
Year 8 (May '08 - May '09)	-7.4%
Year 9 (May '09 - May '10)	50.2%
Year 10 (May '10 - May '11)	45.4%
Year 11 (May '11 - May '12)	-18.0%
Year 12 (May '12 - May '13)	3.1%
Year 13 (May '13 - May '14)	26.6%
Year 14 (May '14 - May '15)	23.0%
Year 15 (May '15 - May '16)	33.0%
Year 16 (May '16 - May '17)	16.8%
Year 17 (May '17 - May '18)	-7.1%
Year 18 (May '18 - May '19)	-2.3%
Year 19 (May '19 - May '20)	39.5%
Year 20 (May '20 - May '21)	86.8%
Year 21 (May '21 - Current)	8.0%
Cumulative Gain	2097%
Av. Annual gain (20 yrs)	20.7%

Individual Subscriptions (24 issues/year)
\$550 (Inc.GST)
Edition Number 900 (25 August 2021)

Bioshares is published by Blake Industry & Market
Analysis Pty Ltd.
ACN 085 334 292
PO Box 193
Richmond Vic 3121
AFS Licence No. 258032

Mark Pachacz - Editor/Analyst
Email: mark[at]bioshares.com.au
Ph: 0403 850 425

Copyright 2021 Blake Industry and Market
Analysis Pty Ltd. ALL RIGHTS RESERVED.
Secondary electronic transmission, photocopying,
reproduction or quotation is strictly prohibited
without written consent of the publisher.

Bioshares

25 August 2021
Edition 900

*Delivering independent investment research to investors on Australian
biotech, pharma and healthcare companies*

Extract from Bioshares –

Patrys Incurs Six Month Delay as Opportunities Continue to Expand for its Cell Penetrating Technology

Patrys (PAB: \$0.036) has received a six-month setback in its clinical trial program due to supply delays caused by the coronavirus pandemic. The first clinical study with the company's lead drug candidate PAT-DX1 is now expected to start in 2H 2022 (previously 1H2022).

The delay is due to the supply of the cell media that is required to manufacture the company's antibody. The antibody will now be made in Q4 this year, with the final step before clinical trials, toxicology studies, to be conducted in Q1 next year.

However, in the meantime there is a large amount of work going on around the world looking at the unique biology of Patrys' deoxymabs and how they can be harnessed to provide new therapeutic options for cancer patients. James Campbell, CEO, expects this work will lead to multiple publications on Patrys' unique deoxymab technology platform with up to six additional scientific papers to be published within the next 12 months.

The utility of the cell penetrating technology and its potential therapeutic benefit in oncology continues to expand. Patrys has reported preclinical data on PAT-DX1 in treating glioblastoma and metastatic triple negative breast cancer (TNBC). Last month the company released additional data showing that the drug candidate is also effective and slows tumour growth in an animal model of pancreatic cancer by 26% and this resulted in a 47% improvement in median survival in mice.

This is the third difficult-to-treat tumour type in which PAT-DX1 has shown promising efficacy in (albeit in mouse models). Around 15-20% of pancreatic tumours have DNA damage repair mutations, which is where PAT-DX1 has the potential to be effective as a single agent therapy. Similarly around one fifth of triple negative breast cancer (TNBC) tumours have DDR mutations, and in glioblastoma, around 35% of tumours have the PTEN mutation that would potentially make PAT-DX1 an effective oncology treatment as a single agent.

One of the appealing features of PAT-DX1 is that it can make its way into the cancer cell nucleus and interfere with the DNA damage repair process. When targeted against a tumour that already has an impaired DNA damage repair system, it is believed the combined effect PAT-DX1 has on blocking DNA damage repair results in an amplified impact in preventing tumour growth and enhancing survival. Consequently, PAT-DX1 can be used as a single agent in tumours that already have impaired DNA damage repair proc-

Continued over

*****NEW DATES*****

**2021 Bioshares Biotech Summit 1–2 December
Albury NSW**

esses, or in combination with other oncology drugs or radiation that cause damage to DNA and increase the repair burden within the cancer cells.

It has also been shown in a mouse model to that PAT-DX1 is able to cross the blood-brain-barrier. This opens up the possibility of using PAT-DX1 as an effective therapy for brain cancers. To date few drugs and no antibodies are able to cross the BBB according to Campbell.

Recently Patrys added a second antibody to its pipeline, PAT-DX3, which can also cross the blood-brain barrier in a mouse model of primary brain cancer. Unlike PAT-DX1, which is a small antibody fragment, PAT-DX3 is a full-sized IgG antibody. The larger size of PAT-DX3 means it may be provide a better option for use as

a targeting agent as an antibody drug conjugate (ADC) designed to transport other oncology drugs into the brain. Only 1.5% of current drugs can cross the blood-brain-barrier. Campbell said that the advantage of the full-sized antibody is that it offers more binding sites to attach payloads/drugs, compared to PAT-DX1.

Patrys has indicated that it is exploring opportunities for developing antibody drug conjugates (ADCs) using its deoxymab platform, and believes that the tumor-seeking attributes of both PAT-DX1 and PAT-DX3 make them especially well-suited for developing ADCs for cancers where there are no existing targeting antibodies.

Continued over

Comparison: PYC Therapeutics v Patrys

	PYC	PAB
Share price	\$0.15	\$0.036
Market Cap	\$477M	\$66M
Cash	\$51M	\$10.9M
R&D expenditure	\$11.6M	\$2.7M
Net cash outflow FY2021	\$12M	\$3.9M
Source of original research, current collaborators, researchers	Lions Eye Institute (Perth), CSO Prof Sue Fletcher (Co-inventor of Exondys-51 from Sarepta)	Yale University
Preclinical data	Show n CPP* can deliver antisense payload into human cells (in vitro), achieve exon skipping and treat retinal disease. Exon skipping achieved in mice retina using CPP as delivery of RNA	Positive results in mouse model of glioblastoma, TNBC and pancreatic cancer, and shows to cross BBB in mouse studies
Drug candidates cross blood-brain barrier	No	Yes
Stage of development	In vivo ocular PK distribution and tox studies underway	Stable high yield cell line developed. Engineering run of GMP material to be completed CY2021.
Clinical studies	IND to be filed mid 2022	To start 2H CY2022
Target diseases	Retinal diseases, CNS disorders	Solid tumours
Technology	Cell penetrating peptide for RNA delivery	Cell penetrating antibody, deoxymab, derived technology platform (derived from animal model of human lupus)
Lead candidates	VP-001 (retinitis pigmentosa type 11) VP-002 (autosomal dominant optic atrophy)	PAT-DX1 (dimer of binding domains of deoxymab, humanised form). PAT-DX3 humanised form of deoxymab, full IgG antibody
Mode of action	RNA enters cells with proprietary CPPs	Enters cancer cell nucleus and interrupts DNA repair process
Capacity for conjugation with other drugs to bring into cells?	Yes	Yes
Recommendation:	Switch to PAB	Speculative Buy Class B

*CPP - Cell penetrating peptides

Side-by-Side**A Comparison of Cell Penetrating Technology Companies:
PYC Therapeutics v Patrys**

Two ASX listed companies that can be compared are PYC Therapeutics (PYC: \$0.145) and Patrys (PAB: \$0.036). Both are at the pre-clinical stage of development, both are seeking to commercialise unique technologies that have cell penetrating capabilities, and both companies are seeking to move into clinical trials in 2H CY2022. (see table on previous page)

PYC (formerly Phylogica) was built on the platform of abundant peptide libraries that it had developed internally. From that library it found a family of peptides with cell penetrating capabilities.

The company is now working on using the technology to deliver RNA therapeutics (antisense) into cells concentrating on eye diseases. To achieve this it has hired Professor Sue Fletcher who was a co-inventor of the antisense therapy Exondys-51 from Sarepta. The company has shown that it can induce exon skipping in diseased human cells in *in vitro* studies.

The aim for PYC is to build an RNA therapeutics company using its cell penetrating peptides led by the expertise of Professor Fletcher. The market for its lead indication, in retinitis pigmentosa type 11, is estimated at over \$1 billion a year.

Following on from retinal diseases, PYC will also be targeting CNS diseases with the same technology, however it still needs to address the delivery issue into the brain/CNS.

Over the next year key milestones for PYC will be data from rabbits and primates prior to launching a clinical study in retinitis pigmentosa with its lead candidate VP-001. Its second candidate, VP-002, for the treatment of autosomal dominant optic atrophy, is around six months behind the first program according to the company.

PYC is well funded with \$51 million in cash. It is seeking a future US IPO to build its cash base even further. Patrys had \$11.6 million in cash and is funded to get through its first clinical readout. PYC

management is based in California with research out of Perth, while Patrys is based in Melbourne.

Both companies are at similar stages of development and expect to enter the clinic around the same time. An advantage of the Patrys antibody technology is its ability to cross the blood-brain-barrier. The two companies are seeking to leverage their technologies in different directions: Patrys has a focus on oncology, both as a monotherapy or in a conjugated form with other oncology drugs – to take drugs into cancer cells and into the brain; PYC is using its cell penetrating peptides to deliver antisense drugs for a variety of indications, initially in the ophthalmology space.

On a capitalisation basis, we view Patrys as the preferred investment option.

Bioshares recommendation (PAB): **Speculative Buy Class B**
Bioshares recommendation (PYC): **Switch to PAB**

Bioshares

– Patrys cont'd from page 2

Summary

The applications for Patrys' unique antibodies for the treatment of solid tumours can be expected to increase as the company proceeds to its first clinical studies in 2H 2022.

The Phase I study is expected to recruit 12 patients with various solid tumours, particularly with tumour mutations that already have impaired DNA damage repair systems.

Patrys is capitalised at \$69 million.

Bioshares recommendation: **Speculative Buy Class B**

How Bioshares Rates Stocks

For the purpose of valuation, Bioshares divides biotech stocks into two categories. The first group are stocks with existing positive cash flows or close to producing positive cash flows. The second group are stocks without near term positive cash flows, history of losses, or at early stages of commercialisation. In this second group, which are essentially speculative propositions, Bioshares grades them according to relative risk within that group, to better reflect the very large spread of risk within those stocks. For both groups, the rating “Take Some Profits” means that investors may re-weight their holding by selling between 25%-75% of a stock.

Group A

Stocks with existing positive cash flows or close to producing positive cash flows.

- Buy** CMP is 20% < Fair Value
- Accumulate** CMP is 10% < Fair Value
- Hold** Value = CMP
- Lighten** CMP is 10% > Fair Value
- Sell** CMP is 20% > Fair Value
(CMP–Current Market Price)

Group B

Stocks without near term positive cash flows, history of losses, or at early stages of commercialisation.

Speculative Buy – Class A

These stocks will have more than one technology, product or investment in development, with perhaps those same technologies offering multiple opportunities. These features, coupled to the presence of alliances, partnerships and scientific advisory boards, indicate the stock is relative less risky than other biotech stocks.

Speculative Buy – Class B

These stocks may have more than one product or opportunity, and may even be close to market. However, they are likely to be lacking in several key areas. For example, their cash position is weak, or management or board may need strengthening.

Speculative Buy – Class C

These stocks generally have one product in development and lack many external validation features.

Speculative Hold – Class A or B or C

Sell

Corporate Subscribers: Cogstate, LBT Innovations, Opthea, ResApp Health, Pharmaxis, Dimerix, Adalta, Actinogen Medical, Patrys, Antisense Therapeutics, Imugene, Exopharm, Immutep, Neuroscientific Biopharmaceuticals, Invex Therapeutics, Anteris Technologies, Chimeric Therapeutics, Neuren Pharmaceuticals

Disclaimer:

Information contained in this newsletter is not a complete analysis of every material fact respecting any company, industry or security. The opinions and estimates herein expressed represent the current judgement of the publisher and are subject to change. Blake Industry and Market Analysis Pty Ltd (BIMA) and any of their associates, officers or staff may have interests in securities referred to herein (Corporations Law s.849). Details contained herein have been prepared for general circulation and do not have regard to any person’s or company’s investment objectives, financial situation and particular needs. Accordingly, no recipients should rely on any recommendation (whether express or implied) contained in this document without consulting their investment adviser (Corporations Law s.851). The persons involved in or responsible for the preparation and publication of this report believe the information herein is accurate but no warranty of accuracy is given and persons seeking to rely on information provided herein should make their own independent enquiries. Details contained herein have been issued on the basis they are only for the particular person or company to whom they have been provided by Blake Industry and Market Analysis Pty Ltd. The Directors and/or associates declare interests in the following ASX Healthcare and Biotechnology sector securities: Analyst MP: ACR,CGS, CYC, IMM, OPT,CUV,MX1,PAB, PXS,RNO,SOM. These interests can change at any time and are not additional recommendations. Holdings in stocks valued at less than \$100 are not disclosed.

Subscription Rates (inc. GST)

24 issues per year (electronic distribution): **\$550**

For multiple email distributions within \$900 2-3 email addresses
 the same business cost centre, our \$1200 4-5 email addresses
 pricing structure is as follows: \$1500 6-10 email addresses

To subscribe, post/email this subscription form to: **Bioshares**
PO Box 193 Richmond VIC 3121
info@bioshares.com.au

I enclose a cheque for \$ _____ made payable to **Blake Industry & Market Analysis Pty Ltd**, or

Please charge my credit card \$ _____ MasterCard Visa

Card Number

Signature _____ Expiry date _____

Subscriber details

Name _____

Organisation _____

Ph () _____

Emails _____

The information provided in Bioshares, including general investment advice, is provided only for receipt and use in Australia and New Zealand, for subscribers to Bioshares, who are Australian or New Zealand citizens or commercial entities.