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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 - current)	1.4%
Cumulative Gain	711%
Av. Annual gain (17 yrs)	17.1%

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

Extract from *Bioshares* –

IPO Profile – Exopharm

Exopharm is seeking to raise \$7 million to develop a technology for improving the purification of exosomes, which it has called LEAP (Ligand-based Exosome Affinity Purification).

The company intends to issue up to 35 million shares at 20 cents each.

Exopharm was founded in 2013 by Dr Ian Dixon, and later with Dr Gregor Lichtfuss, who are the company's Managing Director and Chief Operating Officer respectively.

On completion of the offer, the founding, early and seed shareholders would own 56.6% of the company. The company raised seed funding of \$1.4 million this year.

Dixon currently serves as part-time executive director of Mediguard (ASX:MGZ) and co-founded Cynata Therapeutics (ASX:CYP), along with Allen Bollands, Roger Aston and Igor Slutkin in 2011.

Exosomes

Exosomes are a type of extracellular vesicle that range in size from 30 to 150 nanometres. Other types include ectosomes (100-1000 nm) and apoptotic bodies (50-5000 nm). It was at first thought that exosomes functioned as disposal vehicles of cellular material. However, more recent research has shown that they have communication functions. Exosomes carry bioactive molecules such as proteins and nucleic acids (RNA, DNA) which are transmitted to nearby or distant cells, which are then involved in instigating other signalling events.

Exosomes can mediate disease progression, and promote cell survival and tissue repair. Some researchers have begun to engineer exosomes to carry specific disease modifying payloads, for example, delivering RNA to knock out the mutant KRAS protein, which is associated with pancreatic and other cancers.

It has been also been proposed that mesenchymal stem cells deliver their effects through the products they secrete, such as exosomes and growth factors. Progress with mesenchymal stem cell therapies has been hampered because of "a lack of correlation between functional improvement, cell engraftment and differentiation at the site of injury."*

Exosomes are secreted in small numbers, which has meant that isolation and purification has been a challenge. The development of this class of biological agents has been limited because of a lack of a viable, cost effective manufacturing process.

Exopharm has developed a method, using affinity chromatography (an established biopharmaceutical manufacturing technology) to overcome this isolation and purification problem, using cultured, autologous cells.

*refer to Paradigm Biopharmaceuticals Prospectus (2015), p32

Continued over

Exopharm has established a research grade manufacturing plant at its Parkville facilities. IPO funds will be used to upgrade the facility's status so that it can provide material for clinical trials.

The company anticipates commencing a small wound healing trial in 2019. The company will also launch pre-clinical studies to evaluate the safety and efficacy of its lead product, Plexaris, which is derived from human platelets. Its second-in-line product, Exomeres, is derived from adult stem cells.

At a later stage, the company has specified dry age-related macular degeneration and osteoarthritis as indications of interest.

Patents

Exopharm's patent portfolio consists of two patent applications, a PCT application (PCT/AU2017/051460) titled 'Methods and compositions for purification and or isolation' and an Australian provisional patent application (2018902162), 'Methods and compositions for purification and/or isolation of microvesicles and exosomes'.

The patent attorneys report in the prospectus provides the comment that the International Search Report and the Written Opinion (relating to the PCT application) concluded that its all claims, except for 1 and claims numbered 15-17, define an invention that is new and contain an inventive step, and that certain claims lack support/enablement.

Other Exosome Companies

The Exopharm prospectus makes no mention of other exosome companies or research programs, except to note that the reason the industry has been held back is because of the purification problem.

We have listed a select number of international companies (see table on the next page) which shows how nascent this technology is at the commercial level, but that investment interest has been building. One exception is the diagnostic company Exosome Diagnostics, which was recently acquired by Bio-Techne Corp for an initial payment of US\$250 million and contingent payments of US\$325 million. The company had brought to market a urine-based test for prostate cancer which has reduced the requirement for biopsies.

At least two other ASX-listed companies currently have, or have had an interest in the exosome. Regeneus' cell secretions product Syngenus, which recently completed an acne trial, is made of up adipose mesenchymal stem cell secretions, including growth factors, cytokines and exosomes.

Paradigm Biopharmaceuticals listed with an exosome program in place in 2015. The company had acquired Xosoma, a company which held a patent application, PCT/AU2014/000953, 'a method of producing exosomes' (using photo-activation). It appears, however, that this patent application has been allowed to lapse.

Details

Offer opens: 14 November 2018
 Offer closes: 4 December 2018
 Listing date: 19 December 2018
 Max funds to be raised: \$7 million
 Listing price: \$0.20
 Capitalisation on listing: \$16.1 million
 Lead Manager: Alto Capital
 Company website: www.exopharm.com

Summary

Exopharm is an early stage research and development company, which can be expected to continue to need capital to progress the development of the LEAP technology from a concept stage to a validated, robust manufacturing process, undertake pre-clinical studies and move therapeutic candidates into clinical trials.

Demonstration that the company has developed a manufacturing process which delivers an industry acceptable COGS for its technology will be a major achievement.

It should be noted that therapeutic products based on the science of exosomes have yet to be brought forward through the clinical trials process and onto the market. On the other hand, the acquisition of Exosome Diagnostics, including its CLIA-waived urine-based prostate cancer exosomal RNA test, points to the diagnostic potential for exosome technologies.

It should also be noted there is a great deal of research that is still to be conducted in order to learn how exosomes mediate and modulate disease states, or have a therapeutic effect.

It would appear that an important risk management task for the company is that its IP needs to be clarified, strengthened and expanded. However, such actions would likely be supported with funds injected into the business from the capital raising.

Investors are required to read the prospectus which can be downloaded from www.exopharm.com prior to subscribing to this offer.

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Select Exosome Companies

Company	Country	Business/Product Focus	Stage	Comments
Alxerion Biotech	USA	THERAPEUTIC Treatments for cancer and as antibiotics	Pre-clinical	Founded in 2017 by MIT researchers
ArunA Bio	USA	THERAPEUTIC CNS and neurodegenerative disorders, inc stroke	Pre-clinical	Re-focusing from neural stem cells to exosomes; recently raised US\$5.3M for neural exosome therapeutic platform
Capricor Therapeutics	USA (Beverly Hills, CA)	THERAPEUTIC Developing CAP-2003, (inflammation and fibrosis, including Duchenne muscular dystrophy)	Pre-clinical	Lic'd from Cedars-Sinai Medical Center; Nasdaq CAPR, Cap'n US\$31 M)
Codiak Biosciences	USA (Cambridge, MA)	THERAPEUTIC exoSTING: exosomes loaded with a 'stimulator of interferon genes' agonist	Pre-clinical	Founded 2015; Dec 2017, Series C, US\$76.5M; funding to date US\$168.5M
Evox Therapeutics	UK	THERAPEUTIC Rare, life threatening diseases, using RNA loaded exosomes	Discovery, optimisation	Sept 2018 - completed £35.5 Series B; 2 partnered programs; Oxford Uni, Karolinski Inst spin out
ExoCoBio	Korea	COSMECEUTICAL/ THERAPEUTIC Stem cell derived exosomes, 30-400 nm sided vesicles containing 30+ growth factors	Investing in GMP manufacturing facilities	Founded Jan 2017; Series A, April 2017, US\$11M; Series B, Sept 2018, \$27M
Exosome Diagnostics	USA	DIAGNOSTIC Urine-based prostate specific test, launched in 2016	Market (Other tests in development)	June 2018 - Acquired by Bio-Techne Corp for US\$250M (in cash) plus contingent US\$325M
Izon Science	NZ (Christchurch)	RESEARCH TOOLS Manufacture of nano-biological separation and characterisation tools	Market	Introduced size exclusion chromatography (SEC) to isolate extra-cellular vesicals in 2013
ReNeuron	UK	THERAPEUTIC CTX-derived exosomes for treating cancer	Pre-clinical	AIM listed Reneuron filed its first exosome patent in 2012. Also began collaboration with Benitec Biopharma in 2015
Versatope Therapeutics	USA (Lowell, MA)	VACCINE/ THERAPEUTIC Exosomes derived from genetically engineered probiotics (E. coli) to deliver vaccines (universal influenza) and therapeutics	Discovery	Founded by Cornell University researchers in 2017

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 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, Bionomics, LBT Innovations, Opthea, ResApp Health, Pharmaxis, Dimerix, Cyclopharm, Adalta, Medibio, Pharmaust, Actinogen Medical, Patrys

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