# Quarterly Shareholder Update – December 2018

Dear Shareholder,

Let me start by wishing you a very happy and prosperous 2019. January has been a good time to take stock as we mark the midway point of the financial year, consider the status of the Pharmaxis development programs and look ahead to the milestones that will drive the company forward in the next two quarters.

First, having successfully completed the phase 1 trials for our two LOXL2 inhibitors and the 13-week toxicity studies that further de-risk the compounds, we have a program that is ready to move into phase 2 clinical trials. The successful completion of the data set has provided a number of strategic options. We could move directly into phase 2 ourselves and push for the clinical proof of concept that would add further value to the program. Alternatively, we could find a large pharma partner to drive the drug discoveries into phase 2. It is obvious from the number of licensing and collaboration deals for early stage NASH programs in recent months that demand is strong in this indication, and we also know from our own discussions with Pharma that our program is equally attractive as a treatment for Idiopathic Pulmonary Fibrosis (IPF). Our healthy cash balance puts us in a strong position to take our time, choose the most appealing option and negotiate the best deal for our shareholders. Several potential partners are now completing their scientific review. The next step is to commence the commercial partnering discussions and assess the range and type of deal structures on offer.

Secondly, senior executives from Boehringer Ingelheim took part in the Pharmaxis Investor Research Update in November and at the end of the December quarter we received a formal update on the Pharmaxis drug discovery acquired by Boehringer in 2015. Those of you present at the update or who viewed the presentations online would have seen firsthand the enthusiasm that Boehringer has for the drug and the excitement as we move closer to the NASH study's Phase 2 results which will report in 1H 2019. Boehringer's program is starting to feature in commentators' reviews on the race to get treatments to the market for NASH and, whilst there are a host of competing programs, the unique anti-inflammatory nature of the Boehringer program has captured the imagination of clinicians and the phase 2 results are eagerly anticipated.

These two major milestones will understandably be the focus of the Board and management team in the next two quarters, however there will be other important work being undertaken. Our systemic LOX inhibitor that was also featured during the Investor Research Update in November, will commence its first human clinical trials this Quarter and we are expecting the first interactions with the FDA on the Bronchitol NDA that was submitted in December.

Finally, I pleased to report that Bronchitol was added to Russia's Essential Drugs List effective from 1 January 2019 and national reimbursement was granted by the Russian Ministry of Health.

Pharmaxis remains a strong investment opportunity with many value creating opportunities ahead. I strongly recommend the rest of this update to you.

Sincerely,

# Drug discovery

## Boehringer Ingelheim development of BI 1467335 (formerly known as PXS-4728A)

Boehringer Ingelheim is developing BI 1467335, a drug it acquired from Pharmaxis in 2015, for two indications – the liver disease Non-Alcoholic Steatohepatitis (NASH) and the eye disease diabetic retinopathy (DR). Boehringer initiated phase 2a proof of clinical principle trials for NASH in August 2017 and DR in January 2018. The achievement of these development milestones resulted in Pharmaxis receiving a total of €28 million (A$42 million) in the 2018 financial year.

NASH is an area of significant interest to large pharma companies and in addition to BI 1467334, Pharmaxis has a LOXL2 inhibitor under development for NASH, as outlined below.

Diabetic retinopathy is the leading cause of vision-loss in adults. Of an estimated 285 million people with diabetes mellitus worldwide, approximately one third have signs of DR and of these, a further one third is vision-threatening.

Under the deal signed in 2015, Boehringer has total responsibility for the development program and Pharmaxis receives payments upon achievement of certain development milestones. The total development milestones in the deal (€419m /A$625m), would be payable to Pharmaxis should both indications be approved.

A global project manager from Boehringer presented at the Pharmaxis Investor Research Briefing held in November – the presentation was recorded and is available here.

The NASH trial will complete in the first half of 2019 and the DR trial will complete early in the first half of 2020. We eagerly await the results of these first trials of efficacy in humans.

## LOXL2 inhibitors in the clinic

The Lysyl Oxidase Like 2 (LOXL2) enzyme is fundamental to the fibrotic cascade that follows chronic inflammation in the liver disease NASH, cardiac fibrosis, kidney fibrosis, and idiopathic pulmonary fibrosis (IPF), and it also plays a role in some cancers.

The Pharmaxis drug discovery group developed two small molecule inhibitors to the LOXL2 enzyme and during the quarter the Company announced positive results from the Phase 1 clinical trials for both LOXL2 inhibitor compounds. The double-blind placebo controlled studies each consisted of two stages - the first single ascending dose stage in which healthy subjects were divided into six groups with each individual taking a single dose and each group assigned a different dose; and the second multiple ascending dose stage in which healthy subjects are divided into three groups with each individual taking the same single daily dose for 14 days and each group assigned a different dose.

The excellent drug like properties demonstrated in earlier pre-clinical testing were confirmed. There were no adverse safety findings in either the first or second stages of either of the studies and the pharmacokinetic profile showed the expected dose related increases in exposure.

In addition to studying the safety and pharmacokinetic profile, the clinical trials also investigated the degree to which the drug can inhibit the target enzyme LOXL2 as an indicator for efficacy. Pharmaxis was been able to demonstrate a large and significant inhibition of the LOXL2 enzyme in blood serum for a full 24 hours from a single daily dose over a 14-day period.

Pharmaxis also completed 3-month tox studies in two species each for both compounds in the quarter to further de-risk the program and advance the program for prospective pharmaceutical company partners. In January 2019 Pharmaxis announced that the LOXL2 program was now phase 2 ready.

## Partnering plan for LOXL2 program

Large pharma is interested in the Pharmaxis LOXL2 program as it is one of the very few truly anti-fibrotic mechanisms in clinical development. The excellent pharmacokinetic parameters and the significant and long lasting inhibition of the target LOXL2 enzyme showed that these compounds are best-in-class. The pre-clinical and clinical data for these program compounds has led to increased interest from major pharmaceutical companies looking for good anti fibrotic programs to acquire. The data package which a number of potential partners are currently reviewing was completed with finalisation of the phase 1 trials and the three month tox studies. Commercial discussions are now progressing.

## Drug development pipeline – other programs

In addition to the SSAO inhibitor (BI 1467335) and the LOXL2 program, Pharmaxis has other programs developed from its amine oxidase chemistry platform.

- an oral lysyl oxidase (LOX) program in which the drug candidate inhibits all LOX family members and has potential anti-fibrotic application in severe fibrotic indications. The candidate has positive results in in vivo models of myelofibrosis and pancreatic cancer. In November the Company announced completion of the preclinical package and filed an ethics submission to enable progress into a Phase 1 clinical trial in healthy volunteers. The trial is planned to commence in the first quarter of 2019.
- a dual acting drug inhibiting SSAO and myeloperoxidase (MPO) for the treatment of inflammation.

# Bronchitol and Aridol

Bronchitol® is an inhaled dry powder for the treatment of cystic fibrosis (CF) and has been the subject of three large scale global clinical trials conducted by Pharmaxis. The product is approved and marketed in Europe, Russia, Australia and several other countries.

Aridol® is an innovative lung function test designed to help doctors diagnose and manage asthma. Aridol is approved for sale in Australia, major European countries, the United States and South Korea.

## United States

The Company's US partner Chiesi is responsible for the commercialisation of Bronchitol in the United States. In December Chiesi resubmitted the Bronchitol New Drug Application to the FDA. The resubmission responds to the matters raised by the FDA in its Complete Response Letter issued in March 2013 and includes the results of the phase 3 clinical trial conducted after consultation with the FDA. Pharmaxis expects the FDA review process to take between six and twelve months to conclude.

Subject to approval, Pharmaxis will receive a US$10 million milestone payment on the commercial launch of Bronchitol in the US, mid to high teen percentage royalties and will be the exclusive supplier of Bronchitol for the US market.

## Western Europe

In the EU, Chiesi is the Pharmaxis exclusive Bronchitol distributor for the markets of the UK, Ireland, Germany and Italy.

Pharmaxis also markets Bronchitol in Austria, Denmark and Sweden via its German based logistics provider, and Spain via an exclusive distributor.

## Other territories

Bronchitol is sold in Australia by Pharmaxis and in Turkey, the Czech Republic and Russia by exclusive distributors.

Russia represents a potential significant opportunity for Bronchitol which was approved for both adult and paediatric CF patients in 2016. Pharmaxis has been navigating the process to have Bronchitol reimbursed nationally. Importantly, during the quarter Bronchitol was added to the Essential Drugs List effective from 1 January 2019, and national reimbursement was granted by the Russian Ministry of Health.

## Bronchitol sales

Bronchitol sales for the quarter and half years ended 31 December 2018 and 31 December 2017 are as follows:

| $'000 | Quarter | | Half year | |
|---|---|---|---|---|
| | 2018 | 2017 | 2018 | 2017 |
| **Australia** | 294 | 220 | 543 | 368 |
| **Western Europe** | 44 | 587 | 81 | 1,044 |
| **Russia & Eastern Europe** | (106) | 59 | 33 | 59 |
| **Total** | **$232** | **$866** | **$657** | **$1,471** |

The increase in Australian sales reflects the widened government reimbursement for Bronchitol granted on 1st January 2018.

There were no sales to Chiesi for the UK or Germany in the 2018 quarter or half year. Sales are next scheduled for the March 2019 quarter.

Sales to Russia & Eastern Europe included a credit issued to the Russian distributor for purchased product used for sampling.

There were no sales by Pharmaxis to its Russian distributor during the quarter or half year. Sales are next scheduled for the March 2019 quarter.

Pharmaxis distributors typically order Bronchitol on a six monthly basis.

## Aridol

Following approval in August 2018 by the US Food and Drug Administration of the Pharmaxis manufacturing facility in Sydney, Australia to produce Aridol® for the US market, Aridol was relaunched in the US in December 2018 by Pharmaxis' exclusive distributer in North America, Methapharm Inc., who are experts in the specialist respiratory diagnostic market.

In June 2018 Pharmaxis filed an approval submission to Canadian authorities. The Company expects the approval process to conclude in mid-2019.

## Aridol sales

Aridol sales for the quarter and half years ended 31 December 2018 and 31 December 2017 are as follows:

| $'000 | Quarter | | Half year | |
|---|---|---|---|---|
| | 2018 | 2017 | 2018 | 2017 |
| **Australia** | 117 | 109 | 235 | 212 |
| **Europe** | 252 | 227 | 456 | 413 |
| **USA** | 659 | - | 659 | - |
| **South Korea** | 77 | 200 | 230 | 355 |
| **Total** | **$1,105** | **$536** | **$1,580** | **$980** |

# Corporate

## Pharmaxis Investor Research Briefing

Pharmaxis hosted an investor research briefing on 20 November at its Frenchs Forest facility which featured presentations by a Boehringer Ingelheim global project manager and a research leader from the Garvan Institute of Medical Research. The event also provided an overview of the Pharmaxis drug discovery pipeline including the anti-inflammatory drug currently being developed by Boehringer Ingelheim, work in collaboration with the Garvan Institute of Medical Research on the Company's anti-fibrotic LOX inhibitor targeting pancreatic cancer and the anti-fibrotic LOXL2 inhibitor program.

The briefing was video recorded and you can watch individual presentations or the entire briefing via links on the Pharmaxis website.

## 2018 Annual General Meeting

The 2018 Annual General Meeting was held on 22 November 2018. The Chairman's address to shareholders can be found here, and the presentation by the CEO can be found here.

## Subscribe to our emails

If you would like to be advised directly by email each time Pharmaxis issues a media release, please subscribe at our website.

# Financials

## Key financial metrics

| A$'000 | Three months ended | | Six months ended | |
|---|---|---|---|---|
| (unaudited) | **31-Dec-18** | **31-Dec-17** | **31-Dec-18** | **31-Dec-17** |
| **Income statements** | | | | |
| Sales of Bronchitol & Aridol | 1,337 | 1,402 | 2,237 | 2,451 |
| Milestones from sale of drug | - | - | - | 26,891 |
| Total revenue | 1,718 | 2,433 | 2,950 | 31,344 |
| Total expenses | (6,772) | (17,860) | (15,537) | (25,432) |
| **Net profit (loss) after tax** | **(6,391)** | **(16,829)** | **(12,587)** | **5,920** |
| **Segment results – adjusted EBITDA** | | | | |
| Bronchitol & Aridol | 60 | 13 | (1,789) | (1,447) |
| New drug development | (2,714) | (3,627) | (5,923) | 20,872 |
| Corporate | (1,000) | (14,267) | (9,810) | (11,635) |
| **Total** | **(3,654)** | **(14,267)** | **(9,810)** | **7,790** |
| **Statement of cash flows** | | | | |
| Cash inflow/ (outflow) from: | | | | |
| Operations | (4,071) | (13,023) | (10,280) | 4,639 |
| Investing activities | (229) | (125) | (562) | (235) |
| Financing activities | (455) | (436) | 21,772 | (863) |
| **Total cash generated/(used)** | **(4,755)** | **(13,584)** | **10,930** | **3,541** |
| **Cash at bank** | **42,003** | **25,045** | **42,003** | **25,045** |

## Highlights for the quarter

- Revenue
  - Sales for the quarter included the first shipment of Aridol to the Company's US distributor – A$659,000.
  - There were no major shipments to Bronchitol distributors in the quarter or half year, as discussed above.
  - In comparing the revenue with the prior comparable periods please note the milestone from sale of drug in the December 2017 half year and quarter related to a milestone received from Boehringer Ingelheim on the commencement of a phase 2a clinical trial in NASH.
- Expenses
  - Total expenses increased for the comparable quarter and half year included $9.6 million of costs incurred in the December quarter of 2017 associated with changes to the collaboration agreement with Synairgen.
- Cash
  - During the half year the Company completed a $24 million placement to institutional and sophisticated investors.

- During the quarter the company invested $33,000 ($311,000 for the half year) in patent applications in relation to the LOXL2 program.
- The closing cash position at 31 December 2018 was $42 million.

## Segment information

| A$'000 | Segment information - three months ended | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| (unaudited) | 31-Dec-18 | | | | 31-Dec-17 | | | |
| Income statements | Bronchitol & Aridol | New drug developm't | Corporate | Total | Bronchitol & Aridol | New drug developm't | Corporate | Total |
| **Revenue** | | | | | | | | |
| Sale of Bronchitol | 232 | - | - | 232 | 866 | | | 866 |
| Sale of Aridol | 1,105 | - | - | 1,105 | 536 | | | 536 |
| | **1,337** | **-** | **-** | **1,337** | **1,402** | | | **1,402** |
| Clinical reimbursement | - | - | - | - | 506 | - | | 506 |
| Tax credit | - | - | - | 0 | - | 160 | - | 160 |
| Other revenue | 5 | - | 126 | 131 | 90 | 5 | 119 | 214 |
| | **1,342** | **-** | **126** | **1,468** | **1,998** | **165** | **119** | **2,282** |
| **Expenses** | | | | | | | | |
| Employee costs | (1,484) | (640) | (475) | (2,599) | (1,278) | (758) | (488) | (2,524) |
| Clinical trials | 621 | (426) | - | 195 | 610 | (1,015) | | (405) |
| Drug discovery | - | (1,526) | - | (1,526) | - | (1,894) | | (1,895) |
| Other expenses | (419) | (122) | (651) | (1,192) | (1,317) | (124) | (704) | (2,145) |
| Change in collaboration | | | | | - | - | (9,580) | (9,580) |
| Total expenses | (1,282) | (2,714) | (1,126) | (5,122) | (1,985) | (3,792) | (10,772) | (16,549) |
| **Adjusted EBITDA** | **$60** | **($2,714)** | **($1,000)** | **($3,654)** | **$13** | **($3,627)** | **($10,653)** | **($14,267)** |

### Commentary for the quarter

- Bronchitol & Aridol:
  - Sales of Bronchitol and Aridol are discussed in commentary above.
  - Clinical trial reimbursements and clinical trial costs ceased following completion of study CF303 in 2017.
  - Positive clinical trials expense for the quarter consisted of a $621,000 unexpected refund from the clinical research organisation that managed the CF303 clinical trial and only completed their final reconciliations in December 2018.
  - Other expenses for the quarter included a $719,000 credit ($233,000 expense in the comparative quarter) representing the net transfer of manufacturing labour and overhead to and from inventory as product is first manufactured and then subsequently sold to distributors and customers.
- New drug development:
  - The Company does not expect to qualify for an R&D tax credit in 2019 due to total revenue for the year expected to exceed the $20 million cap.
  - Clinical trial expenses predominantly relate to the 2 phase 1 trials being conducted in the LOXL2 program which completed in the quarter.
  - Drug discovery expenses include work on the LOXL2 program ($571,000 for the quarter; $892,000 in 2017), the systemic LOX program which completed preclinical development during the quarter ($276,000 for the quarter; $361,000 in 2017) and the topical LOX program ($296,000 for the quarter; nil in 2017).

| A$'000 | Segment information - six months ended | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| (unaudited) | 31-Dec-18 | | | | 31-Dec-17 | | | |
| Income statements | Bronchitol & Aridol | New drug developm't | Corporate | Total | Bronchitol & Aridol | New drug developm't | Corporate | Total |
| **Revenue** | | | | | | | | |
| Sale of Bronchitol | 657 | - | - | 657 | 1,471 | - | - | 1,471 |
| Sale of Aridol | 1,580 | - | - | 1,580 | 980 | - | - | 980 |
| | **2,237** | **-** | **-** | **2,237** | **2,451** | | | **2,451** |
| Milestones from sale of drug | - | - | - | - | - | 26,891 | - | 26,891 |
| Clinical reimbursement | - | - | - | - | 1,187 | - | - | 1,187 |
| Tax credit | - | - | - | - | - | 160 | - | 160 |
| Other revenue | 14 | - | 250 | 264 | 177 | 5 | 229 | 411 |
| | **2,251** | **-** | **250** | **2,501** | **3,815** | **27,056** | **229** | **31,100** |
| **Expenses** | | | | | | | | |
| Employee costs | (2,881) | (1,414) | (1,034) | (5,329) | (2,706) | (1,335) | (996) | (5,037) |
| Clinical trials | 621 | (1,062) | - | (441) | (166) | (1,214) | - | (1,380) |
| Drug discovery | - | (3,201) | - | (3,201) | - | (3,439) | - | (3,439) |
| Other expenses | (1,780) | (246) | (1,314) | (3,340) | (2,390) | (196) | (1,288) | (3,874) |
| Change in collaboration | - | - | - | - | - | - | (9,580) | (9,580) |
| Total expenses | (4,040) | (5,923) | (2,348) | (12,311) | (5,262) | (6,184) | (11,864) | (23,310) |
| **Adjusted EBITDA** | **($1,789)** | **($5,923)** | **($2,098)** | **($9,810)** | **($1,447)** | **$20,872** | **($11,635)** | **$7,790** |

## Commentary for the six months

- Bronchitol & Aridol:
  - Sales of Bronchitol and Aridol are discussed in commentary above.
  - Clinical trial reimbursements and clinical trial costs ceased following completion of study CF303 in 2017.
  - Positive clinical trials expense for the quarter consisted of a $621,000 unexpected refund from the clinical research organization that managed the CF303 clinical trial and only completed their final reconciliations in December 2018.
  - Other expenses for the half year included a $383,000 credit ($194,000 expense in the comparative half year) representing the net transfer of manufacturing labour and overhead to and from inventory as product is first manufactured and then subsequently sold to distributors and customers.
- New drug development:
  - The milestone from sale of drug in the December 2017 half year relates to a milestone received from Boehringer Ingelheim on the commencement of a phase 2a clinical trial in NASH.
  - The Company does not expect to qualify for an R&D tax credit in 2019 due to total revenue for the year expected to exceed the $20 million cap.
  - Clinical trial expenses predominantly relate to the 2 phase 1 trials being conducted in the LOXL2 program which completed in the quarter.
  - Drug discovery expenditure for the half year includes the LOXL2 program ($730,000 compared to $1.6 million in 2017), the systemic LOX program which completed preclinical development during the quarter ($1.0 million compared to $0.9 million in 2017) and the topical LOX program ($449,000 compared to nil in 2017).
- Corporate:
  - Note the $9.6 million of costs incurred in the 2017 December half year associated with changes to the collaboration agreement with Synairgen.

## Income statements

| A$'000 | Three months ended | | Six months ended | |
|---|---|---|---|---|
| **(unaudited)** | **31-Dec-18** | **31-Dec-17** | **31-Dec-18** | **31-Dec-17** |
| **Revenue** | | | | |
| Revenue from sale of goods | 1,337 | 1,402 | 2,237 | 2,451 |
| Milestones from sale of drug | - | - | - | 26,891 |
| Clinical trial cost reimbursements | 1 | 506 | - | 1,187 |
| Interest | 250 | 151 | 449 | 244 |
| Drug discovery service fee | - | - | - | - |
| R&D tax incentive | - | 160 | - | 160 |
| Other | 131 | 214 | 264 | 411 |
| Total revenue | **$1,718** | **$2,433** | **$ 2,950** | **$ 31,344** |
| **Expenses** | | | | |
| Employee costs | (2,918) | (2,832) | (5,989) | (5,649) |
| Administration & corporate | (624) | (736) | (1,198) | (1,328) |
| Rent, occupancy & utilities | (349) | (324) | (679) | (601) |
| Clinical trials | 195 | (405) | (441) | (1,380) |
| Drug development | (1,526) | (1,895) | (3,201) | (3,439) |
| Sales, marketing & distribution | (281) | (303) | (534) | (549) |
| Safety, medical and regulatory affairs | (167) | (189) | (478) | (373) |
| Manufacturing purchases | (292) | (288) | (632) | (753) |
| Other | 515 | (354) | 154 | (379) |
| Depreciation & amortisation | (651) | (784) | (1,292) | (1,565) |
| Foreign currency exchange gains & losses | (547) | (27) | (1,245) | 455 |
| Finance costs | (127) | (143) | (2) | (291) |
| Costs in relation to change in collaboration agreement | - | (9,580) | - | (9,580) |
| Total expenses | **(6,772)** | **(17,860)** | **(15,537)** | **(25,432)** |
| **Net profit (loss) before tax** | **(6,391)** | **(16,829)** | **(12,587)** | **5,912** |
| Income tax credit/(expense) | - | - | - | 8 |
| **Net profit (loss) after tax** | **($6,391)** | **($16,829)** | **($12,587)** | **$5,920** |

## Summary balance sheets

| A$'000 | | |
|---|---|---|
| (unaudited) | **31-Dec-18** | **30-June-18** |
| **Assets** | | |
| Cash | 42,003 | 31,073 |
| R&D tax credit receivable | - | - |
| Accounts receivable | 1,796 | 1,787 |
| Inventory | 2,989 | 2,398 |
| PP&E | 11,330 | 12,451 |
| Other | 1,796 | 2,388 |
| | **$59,914** | **$50,097** |
| **Liabilities** | | |
| Accounts payable and accrued expenses | 3,793 | 4,926 |
| Lease liability (Frenchs Forest facility) | 7,735 | 8,268 |
| Financing agreement (not repayable other than as a % of US & EU Bronchitol revenue) | 23,657 | 22,754 |
| Other liabilities | 2,860 | 3,031 |
| | **$38,045** | **$38,979** |
| **Net Assets** | **$21,869** | **$11,118** |