PHARMAUST SHAREHOLDER UPDATE

14 September 2020 – Perth, Australia: PharmAust Limited (ASX:PAA), a clinical-stage oncology company, is pleased to update shareholders on the continuing development of the business and progress with its primary drug candidate, monepantel (MPL).

HIGHLIGHTS:

- Canine compassionate use treatment with MPL tablets ongoing and next trial aiming to treat a further 8 patients with B-Cell Lymphoma
- Discussions with prospective oncologists in Europe will continue with the aim of undertaking a phase I/II trial in humans
- The Company is increasing its focus on COVID-19 with EU and US collaborators expressing interest in preparing the ground for clinical evaluation of MPL in humans
- The Company will report soon on a further indication for MPL for which preparations are in place for clinical evaluation in humans
- Despite losing the Unity contract during the year, Epichem achieves sales of $3.54 million and net profit of $213k
- Epichem embarks on biofuels proprietary project, converting carbon-based feedstock into valuable organic compounds
- Bank balance of over $4.2 million, enabling pursuit of various preclinical and clinical commitments

Background

Our business strategy has focussed on repurposing and commercialising monepantel (MPL) for new indications. MPL has been shown to have anti-cancer activity in numerous model systems as well as in our target species (canines and humans). In addition, as an existing approved product with many years of global sales and with extensive toxicology, safety and manufacturing data available, the regulatory hurdles are often more conducive to fast tracking new uses of the drug.

The molecule itself has been determined to impact the regulation of what is known as the mTOR pathway; this pathway is part of a complex network of cell signalling and transduction pathways in mammals. mTOR controls a variety of cellular functions including cell growth, autophagy (lysosomal degradation of a cell's own contents) and protein translation and transcription. Other mTOR inhibitors such as rapamycin have been used in cancer therapy for some years and the relevance of mTOR in cancer is well published.

Future of MPL as an Anti-Cancer Drug

As previously announced, in our recent phase II trial in canines with B-Cell Lymphoma, the most prevalent canine cancer, we observed both tumour regression as well as stable disease. The Company considered this data as a sound platform to springboard into undertaking dose optimisation and eventually phase III.

The necessity for dose optimisation became apparent from the fact that the high dose of MPL adopted for the study was associated with a degree of inappetence (loss of appetite) in some dogs. However, the pet dog with the lowest blood levels of MPL had no inappetence and the

best tumour outcome: a greater than 60% regression of all tumours, with some tumours showing complete regression. As announced on 21 January 2019, diet plays a strong role in MPL uptake into the blood. Data demonstrate that inappetence will be resolved by targeting lower dosing at mealtimes in the next trial, with these lower dosing levels correlating with maximum anti-cancer activity. The Company remains convinced of the value of dose optimisation.

Although the formal trial was concluded when the principal investigator determined that the hypothesis and end points had been met, some veterinarians from the trial are continuing to treat pet dogs with cancer under compassionate use, outside of the trial. These veterinarians are keen to continue working with PharmAust in future formalised studies.

If our strategy is correct and we can demonstrate that MPL is consistently effective in tumour regression in most canine patients, this will likely strengthen our negotiating position with both third party veterinary and human pharmaceutical companies.

We now plan to contact a wider group of leading global pharmaceutical companies to discuss both veterinary and human collaborations and engage in discussions with them on identifying the optimal cancers to target. We can engage with different groups on different cancer treatments using MPL or in combination. This greatly broadens our areas of activity and potential for mutually beneficial multiple collaborations and partnerships. Alternative parties have already approached PharmAust for discussions.

Furthermore, as the “composition of matter” patents held by third parties on MPL begin to expire fairly soon, we will have more flexibility in seeking partners given the much longer life of our patents covering cancer, neurodegenerative diseases and COVID-19.

Factors Supporting PharmAust’s Focus on MPL as an Anti-Cancer Drug:

1. The successful reformulation of MPL by BRI/Catalent into a robust and suitable tablet formulation.
2. Demonstration of MPL activity against naturally occurring B-cell lymphoma in dogs; especially the demonstration of a > 60% reduction in tumour burden and complete regression of one cancerous lesion in one dog.
3. Demonstration of activity against a key cancer marker in humans and canines.
4. Demonstration of, and better understanding of, the very good safety profile in animals tested to date, as well as the human participants in the clinical trial conducted at the Royal Adelaide Hospital.
5. Extensive preclinical R&D package evaluating MPL in many cancers and in many species.
6. Publications in peer-review journals of both human trial (currently “In Press”) and anti-cancer activity of MPL in pre-clinical models.
7. The fact that MPL is already approved for the treatment of parasitic infections in food chain animals, confirming that the drug has received extensive regulatory scrutiny.
8. The independent capacity of PharmAust to produce GMP-quality MPL in kilogram quantities and the availability of novel analogues.
9. The availability of a comprehensive regulatory package, facilitating data cross reference discussions with regulatory bodies.

The market will be kept informed on our progress in canine cancer.

Future of MPL as an Anti-COVID-19 Drug

As noted above, the mTOR metabolic pathway is central to mammalian metabolism and growth and as such lends itself to manipulation for other diseases. This we have recently done as regards the treatment of SARS-CoV-2, the virus that causes COVID-19. MPL's impact on viral replication in both human and monkey cells leaves little doubt that PharmAust needs to pursue the therapeutic value of MPL in the treatment of this devastating viral disease. Having undertaken our studies at the Walter and Elisa Hall Institute for Medical Research in Melbourne and then confirmatory work at 360biolabs Pty Ltd, which provides quality assured services in virology and immunology, we are confident that we are seeing meaningful anti-viral activity.

The Company is now in dialogue with both European and US laboratories that can undertake preclinical work in preparation for a phase I trial in humans.

A vaccine for COVID-19 is yet to be developed. The only anti-viral drug on the market currently approved for the treatment of COVID-19 infection is remdesivir (Gilead Science, Inc). Remdesivir is not a cure and in a clinically controlled trial it reduced time to recovery of hospitalised patients in intensive care from 15 to 11 days. With this success, early predictions were for annual sales of US$2-7.7 billion by 2022.

MPL may have a distinct advantage over many other drugs in development given that it has already been used in human clinical trials and is a very well-known drug with a high safety profile. Remdesivir is an intravenous therapy whereas MPL can be administered orally in tablet form. This means patients could be treated earlier when they first test positive rather than intensive care patients hospitalised with COVID-19.

Factors Supporting PharmAust's Focus on MPL as an Anti-COVID-19 Drug:

1. Precedent published literature is mixed, but suggestive that if targeted appropriately, inhibition of mTOR pathways may act in an anti-viral capacity.
2. Now with more certainty, PharmAust has demonstrated MPL's activity against virus amplification during infection of African green monkey kidney cells *in vitro.*
3. Now with more certainty, PharmAust has demonstrated MPL's activity against COVID-19 secondary infectivity in both African green monkey kidney cells and human lung cells *in vitro.*
4. Demonstration that *in vitro*, MPL's anti-viral activity can be attained at blood concentrations that are readily attainable using the tablet.
5. MPL's strong safety profile in the clinic and in animal models including the veterinary cancer studies will support development through Phase I/II trials for the tablet as a COVID-19 anti-viral therapeutic.

Factors Supporting PharmAust's Focus on MPL as an Anti-Neurodegenerative Disease Drug:

1. Precedent published literature implicates mTOR pathways in the control of neurological diseases.
2. PharmAust has published pre-clinical research demonstrating that MPL impinges upon molecular cascades relevant to correct induction of autophagic flux relevant to the clearance of misfolded neurodegenerative causing proteins.
3. PharmAust has demonstrated MPL's capacity to cross the blood-brain barrier, making MPL a rare drug that inhibits mTOR signalling while being able to act directly on the brain following oral administration as a tablet.

4. MPL's strong safety profile in the clinic and in animal models including the veterinary cancer studies will support development through Phase I/II trials for the tablet.
5. PharmAust will report on progress with neurological diseases soon.

Epichem Pty Ltd

Epichem, a fully owned subsidiary of PharmAust, is a profitable and award winning medicinal and synthetic chemistry company with expertise and capability in drug development, discovery and design. Epichem provides specialised products and technical expertise to a worldwide customer base in the pharmaceutical, mining, agriculture and animal health sectors.

Epichem also manufactures Pharmaceutical Reference Materials and fine chemicals and supports the PharmAust drug development pipeline with lead drug development and validation, drug candidate pipeline manufacture and analysis, drug reformulation, GMP synthesis and stability support as well as drug inventory dispensing to clinical trial centres.

Epichem continues to support the PharmAust drug development pipeline with lead drug development and validation, drug candidate pipeline manufacture and analysis, drug reformulation, GMP synthesis and stability support as well as drug inventory dispensing to clinical trial centres. Epichem finished the financial year strongly, exceeding projected revenue forecast of $3.32 million to achieve $3.54 million with a net profit of $214k. This is particularly noteworthy in light of the Unity Ltd contract coming to an end sooner than expected and the COVID-19 pandemic.

Epichem continues to pursue opportunities to create its own IP portfolio with the assignment of specific projects to individual chemists. This will also allow Epichem to maximise the R&D Tax Incentive as well as act as an R&D project incubator for PAA.

Epichem recently entered into a HoA to develop and commercialise the biomass/feedstock oxidative process that can turn waste into fuels. The technology is a world-first because of its potential to turn a wide range of waste and biomass feedstock into valuable fuels, fine chemicals, agricultural growth stimulants and ethanol. The Company sees this as a low cost but high potential initiative in a very scalable and disruptive business that may have multiple uses and customers.

Interview with Dr Roger Aston

Executive Chairman, Dr Roger Aston provided an update on the status of the development of monepantel last week, including discussion on the non-exercise of option to develop Monepantel for veterinary cancers. If you would like to view a recording of this interview it can be found here *https://pharmaust.com/pharmaust-videos/*

Summary

In summary, despite our redirection with the recent non-exercise of the Option Agreement for the treatment of canine cancers by a major veterinary pharmaceutical business, we remain highly confident that we can attract one or more global commercialisation and marketing partners for the rollout of MPL in anti-cancer uses (probably different partners for veterinary and human uses) and the other areas now targeted by us (viral and neurodegenerative) during or following the next planned clinical trials. Furthermore, our recent announcements on the use of MPL in the treatment of cancer and the work on reducing COVID-19 viral burden give PharmAust further confidence that this active molecule can find a place in established medicine.

As a business we have a proprietary product with a number of commercial target opportunities as such, we will strive to deliver commercial opportunities for MPL for our shareholders.

This announcement is authorised by the Board

Enquiries:

Dr Roger Aston
Executive Chairman & CEO
Tel: 0402 762 204
rogeraston@pharmaust.com

Dr Richard Mollard
Chief Scientific Officer
Tel: 0418 367 855
rmollard@pharmaust.com

About PharmAust (PAA):
PAA is a clinical-stage company developing targeted cancer therapeutics for humans and animals. The company specialises in repurposing marketed drugs lowering the risks and costs of development. PAA's subsidiary, Epichem, is a successful contract medicinal chemistry company.

PAA's lead drug candidate is monepantel (MPL), a novel, potent and safe inhibitor of the mTOR pathway – a key driver of cancer. MPL has been evaluated in Phase I clinical trials in humans and dogs; was well tolerated and produced a significant reduction in key prognostic biomarkers. Monepantel has shown activity in Phase II clinical trials in pet dogs with cancer. PAA is positioned to commercialise MPL for treatment of human and veterinary cancers as it advances the drug in further Phase II and III clinical trials.