# ASX ANNOUNCEMENT & MEDIA RELEASE

## Exopharm's Plexaris product engineered to deliver anti-cancer drug, potentially reducing dangerous side effects

### HIGHLIGHTS

- Plexaris EVs loaded with the anti-cancer drug doxorubicin kills lung cancer cells at a dose considerably lower than doxorubicin alone, in vitro testing shows
- Exopharm announces the launch of its engineered exosome (EEV) development and partnering program, which leverage exosomes' ability to deliver medicinal cargos to specific cells in a wide range of therapeutic applications.

25th May 2020

**Melbourne, Australia:** Exopharm Limited's (ASX:EX1) Plexaris™ product can effectively deliver therapeutic drugs into target cells, testing has shown.

An in vitro study using Plexaris (platelet derived EVs) loaded with the approved anti-cancer drug doxorubicin killed considerably more cancer cells than a similar dosage of the drug by itself. The broad potential of Exopharm's EEV projects is demonstrated by the anti-cancer Exopharm product "Plexodox™".

Plexodox anti-cancer EEV

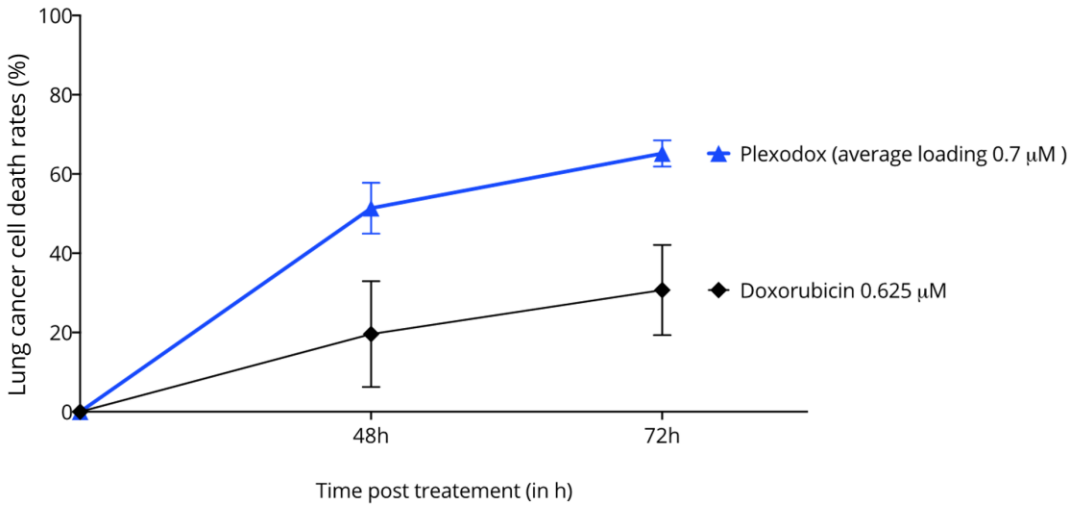


*Figure 1. Cancer cell death following treatment with doxorubicin and Plexodox. The difference measured was statistically significant ($p < 0.05$) at the 72h mark.*

Doxorubicin is widely used for in chemotherapy, but treating patients with doxorubicin causes adverse events (including myelosuppression, cardiotoxicity, alopecia, nausea, and vomiting) and dose levels are often limited by the adverse patient response. Plexodox has

the potential to both increase the doxorubicin anti-cancer cell killing while reducing the unwanted side-effects, thereby increasing the therapeutic window.

Plexodox testing suggests that rapid uptake by cancer cells was key to the statistically significant enhancement of potency observed compared to the drug alone. "Cancer tumours are sometimes referred to as internal wounds that never heal. Platelets are drawn to wound sites, so there is good reason to believe that Plexodox will preferentially deliver doxorubicin to tumours," said Dr Andrew Coley, Head of Innovation at Exopharm.

Doxorubicin drug sales worldwide exceed $1 billion annually. It is often sold in a liposomal formulation, which extends the drug's post-administration half-life in circulation and reduces its cardiotoxicity. However, liposome drug delivery nanoparticles are synthetic constructs and can be targeted by the immune system, triggering an adverse immune response, immunotoxicity and liposome clearance.

"Cancer patients are commonly transfused with platelets to counteract side-effects from chemotherapy already, so we know that allogeneic platelets are not only safe, but therapeutic. Plexodox combines two treatments into one. Our approach is, rather than treat the patient for side effects, let's use platelet EVs to get doxorubicin where it belongs: inside cancer cells," said Dr Chris Baldwin, Chief Commercial Officer at Exopharm.

Plexaris is already being tested in humans, in the PLEXOVAL Phase I trial for wound healing. Plexodox's potential as a potentially superior doxorubicin delivery system is a significant additional new opportunity for Exopharm's Plexaris product. Exopharm is progressing Plexodox and other anti-cancer uses of Plexaris.

Limitations of the reported testing include:

- In vitro results have yet to be confirmed in animal models.
- Additional testing as part of a development program would be required before Plexodox would be proposed for human trials.

## Glossary

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| Doxorubicin | Off-patent chemotherapy drug with known side-effects |
| In vitro | In vitro means studies performed with microorganisms, cells, or biological molecules outside their normal biological context. |
| Liposome | An artificial spherical vesicle manufactured to deliver pharmaceuticals |
| Lung cancer cells | Refers to cells grown from the Calu-3 adenocarcinoma cell line |
| Plexaris | Exopharm's platelet-derived extracellular vesicle medicine currently in human safety trials. |
| Plexodox | Exopharm's formulation of doxorubicin within Plexaris. |

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| Statistical significance | Statistical significance is a measure of how likely a test result is likely to be due to chance – e.g. a P-value of 0.05 means there is a 5% likelihood that the result is a false positive and a 95% likelihood that it is real. A P-value of 0.0001 means there is a .01% likelihood that the result is a false positive and a 99.99% likelihood that the result is real. In general, the larger the study size, or the larger the effect, the lower the P-value. |

By the Board - this announcement has been authorised for release by the board.

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**ABOUT EXOPHARM**

Exopharm Limited (ASX:EX1) is a clinical-stage Australian regenerative medicine company developing therapeutic exosome products as alternatives to stem-cell therapies.

Exosomes are small particles naturally produced by cells, which deliver therapeutic 'cargoes' to other cells to reduce inflammation and promote regeneration. Exosomes are plentiful in our youth but decline with age. Recent research points to exosomes as a way to extend the number of healthy, functional years (extending health span).

Exosomes secreted by stem cells could be used instead of stem-cell therapy with equal or greater benefit – and without the problems of stem-cell therapies. They could be used to deliver targeted 'novel' drugs and have potential as diagnostics.

While trillions of exosomes are produced by stem cells, the real challenge is to 'purify' them as drug products. Exopharm owns a purification technology called Ligand-based Exosome Affinity Purification (LEAP). LEAP technology and associated know-how places Exopharm at the forefront of this emerging field worldwide. Exopharm is at clinical stage with pending and current trials for wound healing, dry aged-related macular degeneration and osteoporosis.

Exopharm was founded in 2013 by Dr Ian Dixon, co-founder of the ASX-listed stem-cell therapy developer Cynata Therapeutics. He was also a director of Cell Therapies, which produced adult stem cells for ASX-listed stem cell company Mesoblast. Exopharm listed on the ASX in December 2018.

**FORWARD LOOKING STATEMENTS**

This announcement contains forward-looking statements which incorporate an element of uncertainty or risk, such as 'intends', 'may', 'could', 'believes', 'estimates', 'targets', 'aims', 'plans' or 'expects'. These statements are based on an evaluation of current corporate estimates, economic and operating

conditions, as well as assumptions regarding future events. These events are, as at the date of this announcement, expected to take place, but there cannot be any guarantee that such events will occur as anticipated or at all given that many of the events are outside of Exopharm's control or subject to the success of the Development Program. Furthermore, the Company is subject to several risks as disclosed in the Prospectus dated 6 November 2018.

**INHERENT RISKS OF INVESTMENT IN BIOTECHNOLOGY COMPANIES**

There are a number of inherent risks associated with the development of biopharmaceutical products to a marketable stage. The lengthy clinical trial process is designed to assess the safety and efficacy of a drug prior to commercialisation and a significant proportion of drugs fail one or both of these criteria. Other risks include uncertainty of patent protection and proprietary rights, whether patent applications and issued patents will offer adequate protection to enable product development, the obtaining of necessary drug regulatory authority approvals and difficulties caused by the rapid advancements in technology. Companies such as Exopharm are dependent on the success of their research and development projects and on the ability to attract funding to support these activities. Investment in research and development projects cannot be assessed on the same fundamentals as trading and manufacturing enterprises. Therefore, investment in companies specialising in drug development must be regarded as highly speculative. Exopharm strongly recommends that professional investment advice be sought prior to such investments.