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Progress Update: Memphasys animal research / development activities – Oxidative Stress measurement to be immediate focus

Australian-based reproductive biotechnology company Memphasys Limited ("Memphasys" or the "Company"), is pleased to provide a progress update on the initiatives undertaken by Memphasys following the appointment of Klean Gene Pty Ltd (Klean Gene) in May 2024 to assist in the evaluation of commercial pathways for its animal applications.

Oxidative Stress measurement identified as lead application

Following a detailed evaluation process of all its research technologies by Memphasys, under the direction of Research Director Professor John Aitken and with the support of Klean Gene, it became evident that the **Oxidative Stress measurement system** be advanced as a priority given its innovative nature and its ability to offer true product differentiation.

Memphasys considers its **Oxidative Stress measurement system** will have important applications in the reproductive animal industry, as well as potentially in other industries. Oxidative stress results from low levels of antioxidant protection, which are linked to infertility in animals (and in humans) and to levels of DNA damage in both sperm and eggs.

The **Oxidative Stress measurement system** offers several advantages:

- **Rapid Point-of-Care Assessment**: **Oxidative Stress measurement system** provides an extremely rapid assessment of antioxidant activity, with the potential of enabling immediate identification of animals requiring antioxidant supplementation and monitoring the consequences of such supplementation.
- **Wide Range of Applications**: **Oxidative Stress measurement system** can be used in various situations within the cattle industry, including monitoring oxidative stress in dairy and beef cattle, guiding nutritional supplementation, and optimising reproductive performance.
- **Commercial Potential**: **Oxidative Stress measurement system** holds substantial commercial merit due to its ability to differentiate itself in the market with unique features and applications that address significant needs in the industry.

Why measuring oxidative stress important

Oxidative stress occurs when there is an imbalance between reactive oxygen species (unstable molecules) and antioxidants in the body. Reactive oxygen species are produced naturally through processes like metabolism, but they can also come from external sources such as pollution, radiation, and heat. Antioxidants neutralise reactive oxygen species, preventing them from causing damage to cells, proteins, and DNA.

When reactive oxygen species outnumber antioxidants, they can cause oxidative stress, leading to cellular and DNA damage. In addition to infertility and damage to both sperm and eggs, this process is also linked to various health issues, including aging, inflammation, and diseases like cancer, diabetes, and neurodegenerative disorders. Maintaining a balance through a healthy diet rich in antioxidants can help manage oxidative stress.

In animal genetics and husbandry, oxidative stress plays a significant role in the health, productivity, and overall well-being of livestock.

Genetic Impact

- **Selection for Resilience:** Breeding programs often focus on selecting animals that are genetically resilient to oxidative stress. This resilience can improve the animal's overall health, disease resistance, and longevity.
- **Genetic Markers:** Researchers identify genetic markers associated with oxidative stress resistance. These markers help in selecting and breeding animals that can better withstand oxidative stress, leading to healthier and more productive livestock.

Study Design and Methodology

In consultation with industry, Memphasys and Klean Gene have identified the need to conduct a study to establish a baseline and thresholds for oxidative stress likely to be associated with meaningful events in reproductive performance. Determination of these events when correlated with reproductive performance could provide significant value to the animal industry.

Memphasys has developed a prototype methodology for oxidative stress measurement which will be applied to such a study. Applying its early-stage oxidative stress measurement prototype, the study design is intended to include both longitudinal and retrospective analyses to identify oxidative stress thresholds in bovines and potential correlations with productive performance.

Memphasys currently exploring industry partnerships and defining appropriate clinical on-farm partners for data and blood collection. Once this process is complete, MEM will provide a detailed update on study progress, including partners, commencement date, and completion date.

This announcement has been approved for release by the board of Memphasys Limited.

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About Memphasys

Memphasys Limited (ASX: MEM) specialises in reproductive biotechnology for high value commercial applications. Reproductive biotechnology products in development include medical devices, *in vitro* diagnostics, and new proprietary media. The Company's patented bio-separation technology, utilised by the Company's most advanced product, the Felix™ System, combines electrophoresis with proprietary size exclusion membranes to separate the most viable sperm cells for human artificial reproduction.

Website: www.memphasys.com

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