RNS Number : 1748Y
Braveheart Investment Group plc
03 May 2023

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3 May 2023

Braveheart Investment Group plc
("**Braveheart**" or the "**Company**")

Update on investments

Braveheart Investment Group (AIM: BRH), announces an update on two companies within its investment portfolio, Paraytec Limited ("Paraytec") and Kirkstall Limited ("Kirkstall").

Paraytec (Braveheart owns 100% per cent of the company)

Paraytec develops high performance specialist detectors for the analytical and life sciences instrumentation markets. In addition, it has been undertaking a programme with the University of Sheffield to develop rapid tests ("CX300") for identifying cancer and pathogens, including viruses.

CX300 development programme and clinical study

The collection of patient specimens for the Covid-19 clinical study at Sheffield NHS Trust Hospital has been successfully completed. Initial results to compare performance of Paraytec's CX300 instrument with PCR tests indicate up to 100% correlation with patients who tested positive by PCR.

The study identified that many patients who tested positive by PCR do not grow the virus when their sample is cultured, suggesting they were not actually infectious at the time of testing positive by PCR. Since PCR detects fragments of viral DNA, which are present in patients both before and long after the infectious phase, a person can receive a positive PCR test result for the virus but not be infectious. The global PCR and realtime PCR testing market size is forecast by The Business Research Company to grow to $26.12 billion by 2027 at a compound annual growth rate of 5.8%.

From Paraytec's initial results in the laboratory, without any of the potential process automation, the CX300 is three times quicker than conventional PCR tests at delivering a test result. It is expected to be able to distinguish patients that are likely to be infectious from those who are not, though they would test positive with a conventional PCR test.

The independent clinical statistical analysis and report is expected to be completed in June, at which time a further update will be provided.

CE Marking

On 2 May 2023, the CX300 instrument passed independent testing for CE marking, which certifies its compliance with required safety standards for a laboratory use instrument. It will now be marketed for sale for researchers to use in a range of applications.

Potential follow-on projects

Paraytec has been exploring potential follow-on projects and potential use cases for the CX300. Applications already being evaluated by Professor Carl Smythe's team at Sheffield University include:

- To accelerate the **diagnosis of sepsis** by identifying, within 1 hour, which of the three most common sepsis-causing pathogens is present in a blood sample. Proof of concept is scheduled before the end of the year.

- **Lipid nanoparticles** are used to deliver drugs and vaccines such as the Pfizer Covid-19 vaccine into living cells. The CX300 has the potential to reduce both the time and cost of this work, and therefore speeding up the development of new treatments.

- **Extra-cellular vesicles** are a natural form of Lipid nanoparticle. Cancer cells excrete extra-cellular vesicles and researchers want to characterise them. There is intense interest in this area with 7,500 papers published on the subject last year. Current methods are either expensive or difficult, the CX300 has the potential to reduce both the time and cost of this work, which would speed up the development of new treatments.

- **Vaults** are large intracellular objects linked to drug resistance. Little is known about them, and currently there is no method of analysing vaults. The CX300 has the potential to enable this analysis, enabling researchers to study them.

- **Adeno-associated viruses** In gene therapy, virus-like particles such as adeno-associated viruses are used to

- **Adeno-associated viruses.** In gene therapy, virus-like particles such as adeno-associated viruses are used to encapsulate the new gene and deliver it into the body. There is potential for the CX300 to be used by gene therapy manufacturers to assess the quality of their adeno-associated virus products both during research, development and manufacturing.

- **Protein aggregation analysis**. Proteins are used in the production of many drugs and diagnostics. Medical protein producers need to know if the material is denatured or aggregated, there are many methods to determine this, however they typically have low sensitivity. The CX300 has the potential to greatly increase this sensitivity and assist in the production of better drugs and diagnostics.

- **Specific Immune cells in blood.**There is the potential to use the CX300 to inexpensively detect immune cells. These are used when diagnosing and monitoring diseases, such as when studying cancer auto-immunity and immunodeficiency.

- **Micro clots** cause various problems including possible involvement in long Covid. Sufferers with circulatory problems caused by micro clots need to be diagnosed. There is currently no simple method of quantitative detection. The CX300 has the potential to offer a simple fast quantitative method of detection of micro clots aiding medical diagnosis.

Kirkstall (Braveheart owns 80% of the company)

Kirkstall operates in the market known as 'organ-on-a-chip', where it has developed Quasi Vivo™, a system of chambers for cell and tissue culture in laboratories. Its patented technology is used by researchers in the growing New Approach Methodologies ("NAMs"), which enable human-relevant drug safety decisions to be made without the need for animal testing.

Kirkstall's newly developed QV1200 product was launched in February 2023 and has already attracted strong interest from actual and potential academic and commercial customers. The QV1200 combines all of the most useful features of the previous Kirkstall products: it is easy to set up; it allows single and multi-organ experiments; its has an air-liquid interface (e.g. for use on lung experiments) and a liquid-liquid interface (e.g. for use on blood brain barrier experiments); and it has a standard microplate compatible with lab equipment and uses standard wells used in cell experiments. In addition, the QV1200 has an increased throughput, allows for cell imaging and uses improved bio compatible materials. The QV1200 culture chambers are single use, which will provide Kirkstall with the ability to seek repeat sales from each customer.

Since 1999, animals have been recognised as sentient beings by the EU, and following Brexit, this was ratified in UK law by the Animal Welfare (Sentience) Act 2022. The United States of America recently passed the FDA Modernization Act 2.0 which clarifies the use of alternative testing methods by pharmaceutical companies. Testing of cosmetics on animals has been illegal in the UK since 2013, and the Organ-on-a-Chip technology is designed to reduce or replace the use of animals in research and testing.

Commenting on these updates, Trevor Brown, CEO of Braveheart, said:"Shareholders have had to be patient for longer than we had anticipated but with both Paraytec and Kirkstall now making material progress towards the commercialisation of their technologies your directors are optimistic that their patience will be rewarded."

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