



Reactive Oxygen® research wins prestigious innovation award

By Matoke Holdings Ltd, April 4, 2017



Doctoral student Thomas Hall, Professor Liam Grover and Dr Sophie Cox, University of Birmingham

Scientists developing a powerful, new technology that could transform our ability to fight drug-resistant infections, reduce suffering and save lives have won a prestigious innovation award.

University of Birmingham researchers are working with British biotech company, Matoke Holdings Ltd, inventors of Reactive Oxygen® technology, that destroys superbugs such as MRSA and *Pseudomonas aeruginosa* which cause major hospital-based and community infection.

The novel antimicrobial treatment speeds up recovery, prevents infection and reduces the need for antibiotics and surgery, including amputations.

Dr Sophie Cox and doctoral student Thomas Hall, from the School of Chemical Engineering, beat stiff competition to scoop the £5,000 prize for the most innovative collaboration with an external partner in the Enterprising Birmingham Innovation Competition 2017. The talented team is led by Professor Liam Grover, a leading researcher in biomaterial science.

Reactive Oxygen® is a novel strategy for the treatment of bacterial infections that has already reached early clinical use in wound care (1,2). It can destroy the deadliest drug-resistant bacteria and is safe to use on human tissue. It is also highly effective against biofilms or colonies of bacteria that are difficult to treat with antibiotics (3)

The scientists are investigating different delivery mechanisms, such as sprays, to expand clinical uses.

Ian Staples, founder and CEO of Matoke Holdings Ltd, said: “The World Health Organisation recently highlighted the urgent need to find new solutions to major drug-resistant pathogens, this is further evidence of the incredible potential of Reactive Oxygen® technology to help tackle the global antibiotic crisis.

“No Gram-positive, Gram-negative or multi-drug resistant bacteria has survived contact with this safe and effective technology.

“We will continue to seek funds to invest in leading scientists, such as the team in Birmingham, to exploit the full potential of Reactive Oxygen® technology to fight drug-resistant infections and save lives.”

Reactive Oxygen species (ROS) occur naturally in the body as a host defense against infection and has multiple roles – killing invading microbes, messaging repair cells and stimulating new tissue growth

Mr Staples added: “Matoke Holdings Ltd has developed a patent applied and granted bioengineered technology platform to deliver extremely low, controlled levels of reactive oxygen to infected tissue, over a sustained period of time. This process mimics the natural production of ROS delivered by the mitochondria, or powerhouse, of living cells.

“This process is one of nature's core defence mechanisms to destroy pathogenic infections as well as working as an immune system signalling mechanism.

“The research in the School of Chemical Engineering at the University of Birmingham, in partnership with Matoke Holdings Ltd, is a fundamental advance in delivery system development to take our technology into areas where antibiotics are increasingly failing.”

Dr Cox said: “We will be using this award money to accelerate the impact of this exciting research. This award is recognition of all the hard work Tom has put into this PhD so far and an acknowledgement of the high quality of his research.”

Mr Hall added: “I think the judges really understand what we are working to achieve and how important it is. The close relationship between ourselves and Matoke made all the difference.”

The showcase event, when finalists presented their innovative ideas and collaborations, was held at the Elgar Concert Hall at the University of Birmingham on Wednesday March 29. The judging panel included Richard Bishop, investor in growth businesses, Chis Granger, director of finance, University of Birmingham, Dr Chris Moore, partner HGF Intellectual Property Specialists and Dr Brijesh Roy, Investment Manager, Mercia Technologies PLC.

NOTES TO EDITORS

About Antimicrobial Resistance

The World Health Organisation (WHO) has stated antimicrobial resistance is one of the biggest threats to global health. Drug resistant infections kill an estimated 700,000 people a year worldwide & could rise to 10 million by 2050 if no action is taken. The more antibiotics used, the less effective they become as bacteria become resistant to them. Leading scientists and public health officials have warned that if antibiotic resistance continues at its current rate, simple infections will once again become life-threatening. Common surgeries, such as Caesarean-sections and hip replacements, could become too dangerous to perform. In the UK alone antibiotic resistance kills an estimated 3,000 people a year and costs the NHS £180m

About Matoke Holding Ltd

British biotech company Matoke Holdings Ltd is focused on developing a novel therapy – Reactive Oxygen® – for the treatment & prevention of infection. It mimics the human immune response, destroys even the most deadly bacteria and is safe to use.

Matoke Holdings Ltd helped fund the Birmingham PhD programme and draw up a framework for the research. The university scientists regularly met with clinical and regulatory experts as well patent attorneys from their industry partner. The biotech company continues to steer the research so that pilot product formats can be taken through the full medicinal route to market, making a real difference to global health.

Matoke Holdings Ltd has funded the high cost of filing patent applications for all the innovative antimicrobial products driven by the research.

About Reactive Oxygen

Reactive Oxygen Species (ROS) – mainly hydrogen peroxide - is a naturally-occurring host defence against infection. ROS kill bacteria by physically disrupting the cell structures, including proteins, DNA and cell membranes. In addition to their antimicrobial activity, ROS are pivotal in the normal wound-healing response. The founders of Matoke Holdings Ltd observed its antimicrobial effect in nature and, with the help of scientists, invented a new way to precisely control its ability to fight infection.

Reactive Oxygen® technology is a novel solution to controlling bacterial growth (preventing and treating). The technology allows for the accurate delivery of low levels of hydrogen peroxide – a reactive oxygen species – at a controlled antimicrobial potency and therapeutic dose to the infection site for a sustained period.

RO™ antimicrobial agents are rapidly active against all Gram-positive and Gram-negative bacteria tested, including multi-drug resistant, such as MRSA, *Pseudomonas aeruginosa* and E coli.

SurgihoneyRO™, a bioengineered honey, is the first RO™ agent to reach early clinical use. It has an EU CE mark and is an approved medical device for wound care with proven safety and efficacy. Other non-honey gels and delivery methods are being developed.

REFERENCES

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