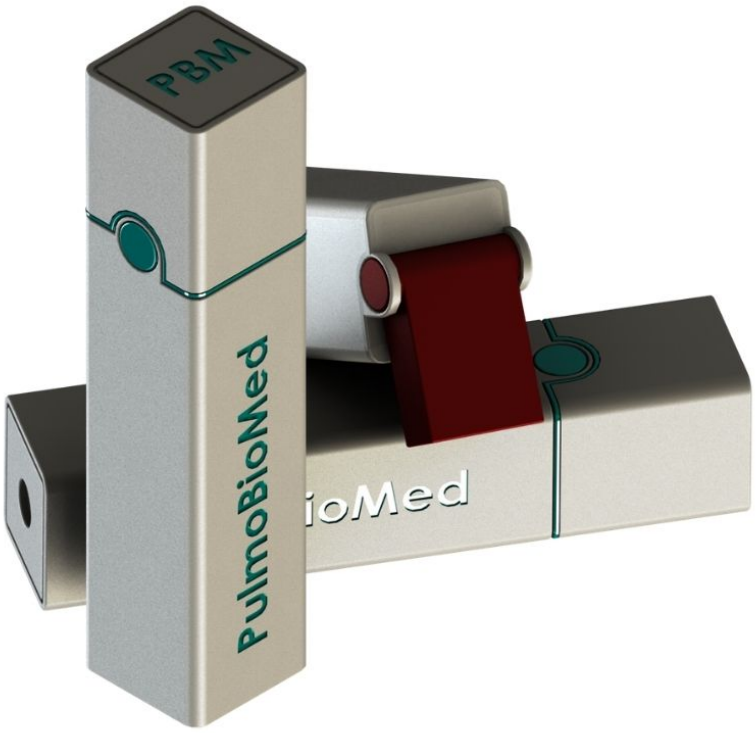
Northumbria University NEWCASTLE



PBM-HALETM (left) is currently being evaluated in European hospitals to demonstrate where aerosolised virus arises from in infected individuals. PulmoBioMed are working to reduce the product into a lipstick-sized device (concept version on the right)

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New Northumbria University spinout - PulmoBioMed - to develop world-leading medical device

Scientists at Northumbria University have worked with the institution's Research and Innovation Services team to launch a medtech spinout company whose lead product for collecting breath samples could revolutionise diagnosis of a range of diseases, including Covid-19.

Northumbria's Associate Professor Dr Sterghios Moschos, founder and

PulmoBioMed's Chief Scientific Officer, is supported by Chief Executive Officer Dr Pete Hotten, 20 years board level management experience, Chief Operating Officer Jonathan Brookes, a Northumbria University alumnus with 15 years working in the medical device industry, and Chair, Dr Huw Edwards, with over 30 years of global experience in emerging diagnostic technologies.

Taking disruptive technology to market

The first of a series of products, PBM-Hale™ is a hand-held aerosol collecting device that allows sampling of the lung in a non-invasive way - by patients simply breathing into it.

To date, all products used for collecting breath samples have issues relating to contamination, sample loss and variability. The PBM-Hale™ technology resolves these issues, with devices currently being trialled in clinical centres across Europe.

Professor George Marston, Pro Vice-Chancellor (Research and Innovation) at Northumbria University, said: "This technology has the potential to deliver huge impact in healthcare on a global scale. We are a university ambitious to get our innovations out to the market to make a difference, and we encourage and support that process. This new business reflects the hard work of our entrepreneurial staff and the pioneering research we are doing at Northumbria University."

The process of taking academic technology to create PulmoBioMed was made possible by support from Northern Accelerator, a collaboration between Northumbria, Durham, Newcastle and Sunderland Universities to commercialise research and boost the region's economy.

Northern Accelerator's 'Proof-of-Concept' funding supported the development of a first functional prototype. Northumbria graduate, Saqib Ali, was appointed as a Design Engineer at PulmoBioMed and carried out the rapid prototyping of PBM-HALE™ using 3D printers within the University's engineering labs.

A second Northern Accelerator initiative, 'Executives into Business', supported the onboarding of the executive team, and a third programme of support, 'Future Founders', provided business training.

PulmoBioMed also benefitted from North by Northwest Partner's 'Innovation to the Commercialisation of University Research' (ICURe) programme, which helped validate the market for the spinout's technology. The company has additionally won funding from Innovate UK to support the first 18 months of business development activities.

PulmoBioMed is now seeking to close a £2.5m initial equity capital raise.

Pivotal partnerships to deliver real world impact

In November, PulmoBioMed entered into a partnership agreement with DeepVerge plc, a company specialising in the use of artificial intelligence to detect, analyse and identify more than 2700 pathogens in clinical research, medical device, environmental and life science equipment. The partnership combines the breathalyser PBM-HALE™ with DeepVerge's 'Microtox BT' – a micro-engineered nano-fluidic chip to detect viruses, bacteria, toxins and parasites in drinking and wastewater and identifies specific targets which includes SARS-CoV-2, within breath condensate samples in less than 90 seconds.

This collaboration is the beginning of a joint development program that will use multiplex bio-marker binding agents to analyse breath for 40 other diseases which include cancer, neurodegenerative, respiratory and metabolic conditions.

Dr Pete Hotten, CEO of PulmoBioMed, said: "PulmoBioMed is already recognised as best-in-class by analytical technology companies who are engaged in joint product development projects with the Company. Our focus is the development and commercialisation of breath sampling technology for integration with multiple partners analytical platforms in parallel with core healthcare applications.

"Future applications in the biosecurity and veterinary sectors will see PulmoBioMed seek to work with key partnerships in order to accelerate product development."

Gerard Brandon CEO of DeepVerge plc, said: "When the scientific team at our York laboratories evaluated the breathalyser PBM-HALE™ device, we decided that there was greater opportunity to get a finished Covid-19 detection

breathalyser system to the market faster by integrating the PulmoBioMed equipment into our Microtox Breath Test system. We are delighted to work with Dr Sterghios Moschos and his team and invest considerable resources in our joint development project and future collaboration on a range of real-time breath sample disease detection systems."

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Contacts

Rik Kendall
Press Contact
PR and Media Manager
Business and Law / Arts, Design & Social Sciences
rik.kendall@northumbria.ac.uk
07923 382339

Andrea Slowey
Press Contact
PR and Media Manager
Engineering and Environment / Health and Life Sciences
andrea.slowey@northumbria.ac.uk
07708 509436

James Fox
Press Contact
Student Communications Manager
james2.fox@northumbria.ac.uk

Kelly Elliott
Press Contact
PR and Media Officer
kelly2.elliott@northumbria.ac.uk

Rachael Barwick
Press Contact
PR and Media Manager
rachael.barwick@northumbria.ac.uk
07377422415

Ruth Lognonne
Press Contact
PR and Media Officer
ruth.lognonne@northumbria.ac.uk
07971274253

Gemma Brown
Press Contact
PR and Media Officer
gemma6.brown@northumbria.ac.uk