



L- R: Professor Andy Long, Professor Sterghios Moschos, Dr Huw Edwards and Professor Sir Peter J. Barnes (Photo credit: PulmoBioMed)

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## Northumbria University spin-out raises £1.4m for lung test to aid early diagnosis of asthma

[PulmoBioMed](#) - a [Northumbria University](#) spin-out which has developed a new lung test that could lead to earlier diagnosis of asthma and other conditions - has raised £1.4m to help commercialise its technology.

The investment round was led by the [North East Venture Fund](#), supported by the European Regional Development Fund and managed by Mercia Ventures,

and included Northumbria University, SFC Capital and private investors in the USA, EU and UK. The company has also secured a £700,000 grant from Innovate UK to help it demonstrate the benefits of its technology.

PulmoBioMed's breath sampling technology offers a fast, non-invasive way to obtain fluid samples from the deep lung without contamination from fluids from the mouth. Most sampling devices cannot distinguish between the two, so may result in an unclear or misleading diagnosis, while other methods are highly invasive and cannot be performed frequently, or suffer contamination from the environment. Therefore, it can take time before patients receive a correct diagnosis and are given effective treatment.

PulmoBioMed's hand-held device, PBM-Hale™, captures the breath as the patient exhales. It then separates large aerosol droplets which come from the mouth from fine droplets which come from the deep lung. Clinical studies have shown that it provided uncontaminated deep lung samples in just two minutes that helped detect and quantify lung infections and inflammation in 100% of symptomatic cases.

The PBM-Hale™ device is easy to use and over 40 times cheaper than endoscopy, an invasive technique where a tube is inserted into the lung with a one in seven risk of injury.

PulmoBioMed was founded in 2020 by Professor Sterghios A. Moschos, a molecular biologist with over 20 years' experience who achieved international renown as leader of the team that developed a point-of-need test for Ebola virus disease in 2015 during the outbreak in West Africa. He is backed by a team of experts including Professor Sir Peter J. Barnes FRS, a world authority on airways disease, and Dr Huw Edwards, the founding CEO of the British *In Vitro* Diagnostics Association.

PulmoBioMed has already completed one successful UK government contract and won a number of accolades including the 2021 BioNOW investability competition. The company initially plans to target the US market and focus on asthma diagnosis, though the device is suitable for diagnosing other conditions including pneumonias. It could also improve outcomes for lung cancer patients by providing a better way to detect returning tumours and identify the best treatments.

The company is in discussion with a number of potential customers. The

funding will enable it to develop a cost-effective manufacturing process to scale up production and register its product in the US. It also plans to relocate to new premises in Newcastle city centre and create seven new jobs in the year ahead.

Dr Sterghios Moschos, founder and CEO, said: “PulmoBioMed was founded during the pandemic to address the need for reliable breath-based diagnostics. We have solved fundamental problems to enable quick and non-invasive deep lung sampling, with minimal training, and as frequently as necessary. Over 300 million asthma patients suffer slow diagnosis and millions of others are hospitalised every year with pneumonias that are impossible to diagnose with current tests. By helping clinicians understand their patient’s disease and select treatments that work, PBM-Hale, has the potential to transform respiratory care.”

Alex Simpson of Mercia Ventures added: “PulmoBioMed’s success demonstrates the rise of the healthtech industry in regions like the North East. World-class innovations are no longer confined to the ‘golden triangle’ of Oxford, Cambridge and London – regional companies like PulmoBioMed are emerging as important players, thanks in part to the strength of regional universities and support available from funds such as the NEVF alongside private investors.”

### **Taking innovative technology to market**

Northumbria University has a growing pipeline of IP arising from its research. Commercialisation activity is supported by an [award-winning team](#), backed also by [Northern Accelerator](#), a collaboration between the North East’s Universities to commercialise research and boost the region’s economy.

PulmoBioMed has benefitted from a range of Northern Accelerator support. Their ‘Proof-of-Concept’ funding supported the development of a first functional prototype of PBM-Hale™. Saqib Ali, Industrial Designer at PulmoBioMed and Northumbria graduate 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 won additional funding from Innovate UK to support the first 18 months of business development activities.

Professor Andy Long, Vice-Chancellor and Chief Executive at Northumbria University, said: "PulmoBioMed's technology has the potential to deliver enormous impact in healthcare on a global scale and we are thrilled to see this recognised through strong investor confidence in this Northumbria spinout. This investment success reflects the calibre of the University's growing pipeline of IP arising from our world-class research and highly entrepreneurial teams. It further evidences our commitment to driving economic growth in the region, boosting the development of new businesses and supporting the creation of new high-quality jobs here in the North East."

**-ENDS-**

## **Note to Editors**

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**About Northumbria University** – University of the Year 2022 (Times Higher Education Awards)

Northumbria is a research-intensive university that unlocks potential for all, changing lives regionally, nationally and internationally.

Find out more about us at [www.northumbria.ac.uk](http://www.northumbria.ac.uk)

## About Northern Accelerator

Northern Accelerator is a partnership between the universities of Durham, Newcastle, Northumbria, Sunderland, Teesside and York. It brings together academics and business leaders, with a host of funding and support, to form sustainable businesses that create more and better jobs.

The North East's universities have a strong track record of producing innovative spin-out businesses that have grown into thriving global companies such as Kromek and Applied Graphene Materials. Recent success stories of spin-outs that have flourished due to Northern Accelerator's help include Atelerix and Magnitude Biosciences. They secured significant funding to expand their businesses and are now operating in international markets.

Northern Accelerator activity is funded by **Research England** and **UK Shared Prosperity Fund via the In-TUNE partnership**.

Research England is a council within UK Research and Innovation, which oversees UKRI's England-only functions about university research and knowledge exchange (<https://re.ukri.org/>). The Connecting Capability Fund (CCF) supports university collaboration in research commercialisation.

In-TUNE project is by the UK Government through the UK Shared Prosperity Fund with the North of Tyne Combined Authority and Durham County Council, and is delivered by Durham University, Sunderland University, Newcastle University, Northumbria University and CPI.

The UK Shared Prosperity Fund is a central pillar of the UK government's Levelling Up agenda and provides £2.6 billion of funding for local investment by March 2025. The Fund aims to improve pride in place and increase life chances across the UK investing in communities and place, supporting local business, and people and skills. For more information, visit <https://www.gov.uk/government/publications/uk-shared-prosperity-fund-prospectus>

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### **About PulmoBioMed Ltd.**

PulmoBioMed Ltd. is a medical device company based in Newcastle-upon-Tyne, UK, spun out of Northumbria University in 2020 under InnovateUK iCURE Follow-On Funding support. Our mission is to turn breath into the window to our health.

We research, develop, manufacture, and sell products that can be used in the diagnosis and research of lung disease, and improvement of lung health. The first of such solutions, PBM-Hale™, is a hand-held device that collects fluid samples from the deep lung, entirely non-invasively. To ensure no contamination, the technology separates saliva and upper respiratory tract sample fractions before supplying a deep lung sample in a sealed vial. Lung health and disease can therefore be easily and readily interrogated by analysing all biomarkers commonly found in liquid or gas phase lung samples.

Clinical studies have been completed in both a European Centre of Excellence hospital and a Brazilian favela primary care centre. The results were comparable, with exceptionally positive healthcare professional and patient feedback. The company is now scaling manufacture and operations to complete USFDA registration and commence sales to the US market in 4Q24. For more information visit <https://www.pulmobiomed.com>.

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## **About Mercia Ventures**

Mercia Ventures is a proactive venture capital investor focused on being the first-choice partner for growth. Mercia Ventures makes equity investments of up to £ 10 million across all sectors, with specialisms in Software, Consumer, Healthcare and Deep Tech.

Mercia Ventures is part of Mercia Asset Management PLC and sits alongside its wider private equity, debt and proprietary balance sheet capital operations. The Group has 11 offices in the UK and Mercia Ventures' national footprint and 48-strong investment team draw on their experiences as founders, PhD scientists, software engineers, corporate financiers and management consultants to help our partner companies successfully achieve their ambitions. Mercia Asset Management PLC currently has c.£1.4billion of assets under management and, since its IPO in December 2014, has a portfolio of over 400 start-ups from pre-seed to Series B. Mercia Asset Management PLC is quoted on AIM with the epic "MERC".

The Group raises its own Venture Capital Trusts (VCTs) and Enterprise Investment Scheme (EIS) Funds and details about open offers can be found on Mercia's website.

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### **About The North East Fund**

The North East Fund is a suite of five venture capital and loan funds which was established in April 2018, to invest £130m in around 600 North East businesses in the period to December 2023. The fund managers provide business development advice and investment finance to small and medium-sized enterprises based in the seven Local Authority areas of North East England: Northumberland, North Tyneside, Newcastle, South Tyneside, Gateshead Sunderland and County Durham. The programme encourages investment in and the commercialisation of new technologies, including low-



carbon technologies, as well as stimulating new business creation, private investment and entrepreneurialism in the North East, to create over 2,500 new jobs. The North East Fund has overall responsibility for the programme, which is delivered through five separate funds, each managed by independent, FCA-regulated fund managers. Details of these, and up-to-date information on the progress of the programme, are available on The North East Fund's website: [www.northeastfund.org](http://www.northeastfund.org)

The North East Fund has been established with funding from the North East of England European Regional Development Fund programme, the European Investment Bank and from returns on previous North East-based, publicly supported investment funds. It is jointly owned by the seven North East local authorities.

### **About the European Regional Development Fund**

The North East Fund will receive up to £66,500,000 of funding from the England European Regional Development Fund as part of the European Structural and Investment Funds Growth Programme 2014-2020. The Department for Levelling Up, Housing and Communities is the Managing Authority for the European Regional Development Fund. Established by the European Union, the European Regional Development Fund helps local areas stimulate their economic development by investing in projects which will support innovation, businesses, create jobs and local community regenerations. For more information visit <https://www.gov.uk/european-growth-funding>.

### **About the European Investment Bank**

The European Investment Bank (EIB) will lend up to £60,000,000 to the North East Fund programme. The European Investment Bank is the long-term lending institution of the European Union owned by its Member States. It makes long-term finance available for sound investment to contribute towards EU policy goals. For more information, visit: <http://www.eib.org/about/index.htm>

### **About Innovate UK**

Innovate UK, part of UK Research and Innovation is creating a better future

by inspiring, involving and investing in businesses developing life-changing innovations.

We provide targeted sectors with expertise, facilities and funding to test, demonstrate and evolve their ideas, driving UK productivity and economic growth. Join our network and communities of innovators to realise the potential of your ideas and accelerate business growth. Innovate UK: inspiring business innovation. For more information, visit: <https://www.ukri.org/councils/innovate-uk/>

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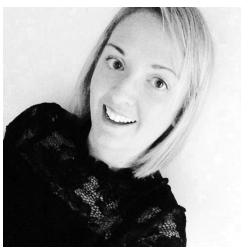
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