

PRESS RELEASE

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Making blood-based lung cancer diagnostics a reality

LIH licenses novel blood biomarkers to Aerion Bioscience

In a major leap forward for cancer diagnostics, the Luxembourg Institute of Health (LIH) has licensed its groundbreaking lung cancer biomarkers to Aerion Bioscience, an innovative startup backed by NLC Health. This collaboration aims to revolutionise early lung cancer detection, potentially saving millions of lives worldwide.

Lung cancer is the deadliest cancer worldwide, mainly due to its advanced stage at the time of diagnosis. Indeed, only 15% of newly diagnosed lung tumours are detected at an early stage, with the 5-year survival rate for stage IV tumours being as low as 6%. A non-invasive, highly sensitive and specific method for its early diagnosis is therefore crucial to improve prognosis and patient survival.

The licensed biomarkers, identified by the LIH scientists in 2020, consist in a set of six proteins circulating in the blood stream, which were shown to be involved in processes such as tumour growth, cell invasion, metastasis and altered immune responses. These biomarkers were found to have a strong diagnostic performance even in early-stage lung cancer cases, with very high specificity (0.989) and sensitivity (0.992).

Recognising the ground-breaking value of this discovery, NLC Health created the start-up Aerion Bioscience to fully develop and commercialise this invention, thus providing an innovative and early diagnostic assay for patients. Through the collaboration, Aerion Bioscience is poised to leverage its resources and expertise to expedite the development and deployment of the diagnostic assay, ultimately improving patient outcomes and survival rates.

“Our 6-protein panel holds great promise as a non-invasive, highly sensitive, and highly specific diagnostic assay, capable of detecting lung cancer at different stages of the disease,” explains Dr. Victoria El Khoury, Scientist within the Luxembourg Center of Neuropathology of the LIH Department of Cancer Research (DoCR) and leader of the project. *“If used as a routine test for high- and average-risk individuals, such as smokers and former smokers, our assay may also efficiently complement current lung cancer screening techniques, thereby reducing the number of false-positive cases and preventing unnecessary additional invasive tests”*, she adds.

“By partnering with Aerion Bioscience and NLC Health, we are excited to see our research translate into tangible solutions that have the potential to make a meaningful difference in the lives of lung cancer patients,” states Dr Jérémie Langlet, manager of the Business Development Office at the LIH.

“The collaboration between LIH, Aerion Bioscience, and NLC Health exemplifies a synergistic approach to innovation, combining academic expertise with entrepreneurial drive to address pressing healthcare challenges. Early detection is our most powerful weapon against lung cancer. By investing in innovative screening technologies and ensuring widespread access, we can transform prognoses, save countless

lives, and ultimately conquer this major public health threat”, concludes Dr Axel Schumacher, CEO of Aerion Bioscience.

Funding and collaborations

The blood-based biomarkers were identified in a study by Dr Victoria El Khoury, Dr Yeoun Jin Kim, Anna Schritz and Dr Guy Berchem in the framework of the Lung Cancer programme of the Partnership for Personalised Medicine (PPM), led by Dr Yeoun Jin Kim and Dr Victoria El Khoury and initiated in 2008 by Dr Guy Berchem. The original study was published on June 19th 2020 in the international journal “Cancers”, with the full title “[Identification of a Blood-Based Protein Biomarker Panel for Lung Cancer Detection](#)”. It was carried out in collaboration with the Integrated Biobank of Luxembourg (IBBL), the Department of cardiac surgery of the “Institut national de chirurgie cardiaque et de cardiologie interventionnelle” (Luxembourg), the Hopitaux Robert Schuman - Zithaklinik (Luxembourg), the Centre Hospitalier de Luxembourg (Luxembourg), the Collaborative Center for Translational Mass Spectrometry, Translational Genomics Research Institute (USA), the Fred Hutchinson Cancer Research Center (USA), the Department of Cancer Biology, Mayo Clinic (USA), the Norton Thoracic Institute, St. Joseph’s Hospital and Medical Center (USA) and the Department of Biomedicine of the University of Bergen (Norway). The work was funded by the Luxembourg Ministry of Higher Education and Research (MESR), under the Partnership for Personalized Medicine (PPM) programme.

About the Luxembourg Institute of Health (LIH)

The Luxembourg Institute of Health (LIH) is a public biomedical research organisation focused on precision health and invested in becoming a leading reference in Europe for the translation of scientific excellence into meaningful benefits for patients.

The LIH places the patient at the heart of all its activities, driven by a collective obligation towards society to use knowledge and technology arising from research on patient derived data to have a direct impact on people’s health. Its dedicated teams of multidisciplinary researchers strive for excellence, generating relevant knowledge linked to immune related diseases and cancer.

The institute embraces collaborations, disruptive technology and process innovation as unique opportunities to improve the application of diagnostics and therapeutics with the long-term goal of preventing disease.

About Aerion Bioscience

Aerion Bioscience BV is revolutionizing cancer detection and human longevity through cutting-edge neural-symbolic AI. Our groundbreaking platform is spearheading the fight against lung cancer—the world’s deadliest cancer—with a game-changing, non-invasive blood test. By harnessing a powerful, validated 6-protein biomarker panel, we’re dramatically improving survival rates and reshaping the landscape of early detection.

Our mission is clear: empower physicians with next-generation screening tools for high-risk individuals, fundamentally altering the trajectory of cancer treatment. At Aerion Bioscience, we’re not just advancing biomarker research—we’re redefining it, paving the way for a future where cancer is caught early and lives are extended. Join us in our relentless pursuit of a world where cancer no longer claims lives prematurely.

About NLC Health

NLC Health Ventures is the leading European early-stage healthcare investor and the world’s largest venture builder in healthtech. NLC identifies the best healthcare inventions and brings them to market, acting as the connecting link between technology innovation and entrepreneurship in biotech, medtech, and digital industries. NLC collaborates with academic and healthcare institutions and corporations. With its growing team of more



than 80 professionals, four captive funds, and over 110 portfolio ventures built across 11 countries, we bring science to life and make the early-stage investible.

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