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numares and Mayo Clinic Laboratories announce collaboration to develop new diagnostic tests using distinctive nuclear magnetic resonance technology

REGENSBURG, Germany, and ROCHESTER, Minn. — [numares](#) and [Mayo Clinic Laboratories](#) have announced a collaboration to develop clinical diagnostic tests that will measure clusters of risk factors as opposed to individual biomarkers. The unique testing will use nuclear magnetic resonance (NMR) technology, focusing on cardiovascular disease, kidney disease and liver cancer — among a few other specific diseases.

“We hope to exchange knowledge and investigate these new diagnostic paths to improve patient lives by leveraging NMR spectroscopy to quantify patient metabolites and diagnose certain conditions,” says [Volker Pfahlert](#), Ph.D., CEO of numares. The envisioned solutions will measure and analyze metabolic “constellations” (clusters of risk factors) derived from clinical diagnostic tests performed on patient samples, such as blood or urine. As such, these solutions can be used to monitor a patient’s overall health to help diagnose, treat or prevent diseases.

The numares model

For many medical questions, a single biomarker of sufficient utility does not exist. However, sometimes, combinations of several biomarkers — considered in relation to each other — can provide clinically actionable information. To find meaningful combinations of biomarkers, metabolites must be accurately and precisely quantified, as is done with NMR technology.

Identifying relevant biomarkers and their relationships to each other requires a huge amount of data processing. The numares approach uses artificial intelligence (AI) to analyze data from clinical studies and machine learning to distinguish which metabolite constellations are meaningful, and then models mathematical equations for the interpretation of the biomarker sets. “Our unique approach is similar to finding constellations in the sky,” says Dr. Pfahlert. “The medical information is not so much about the brightness and color of each individual star as it is about the position of each star in relation to the others.”

AXINON[®] renalTX-SCORE[®]-U100 is the first commercially available and CE-marked product using metabolic constellations. This test helps physicians identify kidney transplant recipients at risk of transplant rejection, based on a constellation of metabolites measured in the patient’s urine. The company also has efforts underway exploring metabolite constellations for the diagnosis of bladder cancer, the early detection of liver cancer, and a more accurate noninvasive measurement of kidney function.

Mayo Clinic Laboratories to validate testing

[Mayo Clinic Laboratories](#) is the global reference laboratory of Mayo Clinic. The organization provides advanced laboratory testing and pathology services to support 4,000 health care organizations around the world.

“The approach of identifying ‘constellations’ of metabolites for diagnostics will play an important role in the future of precision medicine,” says [Allan Jaffe, M.D.](#), division chair for Clinical Core Laboratory Services in the Department of Laboratory Medicine and Pathology at Mayo Clinic. “Collaborating with numares, we want to convert the diagnostic capability of these metabolic constellations into clinical tests that will help patients who have undiagnosed diseases.”

The first test Mayo Clinic Laboratories will offer using numares' technology is the measurement of lipoproteins. "LDL cholesterol, the notorious 'bad' cholesterol associated with heart disease, is contained within LDL particles which are a better indicator of risk," says [Jeff Meeusen, Ph.D.](#), co-director of Cardiovascular Laboratory Medicine at Mayo Clinic. "The numares lipoprotein method measures both LDL cholesterol and LDL particles."

Bernhard Schirmers, Ph.D, chairman of the supervisory board and partner of numares' lead investor SHS Beteiligungsgesellschaft, says, "This strategic collaboration underpins the potential of our NMR approach to take large amounts of relevant data and find meaningful results. We have two organizations, combining talents, to help patients who are on medical journeys but have not found answers yet."

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About numares

numares, based in Regensburg, Germany, is a fast-growing innovative diagnostics company that applies machine learning to metabolic data to develop advanced analytical tests for high-throughput use in clinical diagnostics and life science research. The company's *AXINON*[®] system employs nuclear magnetic resonance (NMR) spectroscopy to create a spectrum standardized by *Magnetic Group Signaling (MGS)*[®] to evaluate metabolic constellations. *MGS*[®] is a proprietary technology that enables NMR for highly standardized and rapid throughput testing. Metabolic tests stand as an important pillar in precision medicine to address unmet needs in cardiovascular diseases, nephrology, oncology and neurology. You will find more information at <http://www.numares.com>.

About Mayo Clinic Laboratories and the Department of Laboratory Medicine and Pathology

The [Mayo Clinic Department of Laboratory Medicine and Pathology](#) and its reference laboratory [Mayo Clinic Laboratories](#) provide advanced laboratory testing and pathology services to support 4,000 health care organizations around the world. Revenue from this testing supports medical education and research at Mayo Clinic, a nonprofit worldwide leader in medical care, research and education for people from all walks of life. Complemented by collaborations with diagnostic and biotechnology companies, the department maintains a robust diagnostic test-development program, launching more than 150 new tests each year.

About Mayo Clinic

Mayo Clinic is a nonprofit organization committed to clinical practice, education and research, providing expert, comprehensive care to everyone who needs healing. [Learn more about Mayo Clinic](#). [Visit the Mayo Clinic News Network](#).

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