Altamira Therapeutics Announces Publication of Preclinical Data Showing Successful Treatment of Abdominal Aortic Aneurysm with SOD2 mRNA Delivered by SemaPhore Nanoparticles

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Hamilton, Bermuda, July 19, 2024 (GLOBE NEWSWIRE) --

- Study shows significant reduction in aorta dilation, delayed rupture and lower mortality in established animal model of abdominal aortic aneurysm
- Altamira's SemaPhore™ nanoparticles delivering SOD2 mRNA successfully to mitochondria in aorta wall
- Positive outcomes suggest potential use of treatment in management of small abdominal aortic aneurysm and prevention of ruptures

Altamira Therapeutics Ltd. ("Altamira" or the "Company") (Nasdaq:CYTO), a company dedicated to developing and commercializing RNA delivery technology for targets beyond the liver, today announced the preprint publication of a study demonstrating effective treatment of abdominal aortic aneurysm (AAA) in an animal model.[1] The study was conducted by a research group from Washington University, St. Louis MO, and the University of South Florida, Tampa FL. It showed that treatment with SOD2 mRNA delivered systemically with peptide-based nanoparticles (SemaPhore™ by Altamira) to AAA mice resulted in a significant reduction in aorta dilation ($p<0.05$), delayed rupture and a highly significant improvement in survival rates ($p<0.01$) compared to untreated controls.

AAA is a localized abnormal enlargement (bulge) of the abdominal aorta, i.e. the part of the main artery which runs through the belly. The rupture of an AAA may be life-threatening; more than 50% of patients die before they reach the emergency room, and those who survive have very high morbidity.[2] The prevalence of AAAs increases with age and is 4-6 times more common in men than in women; it develops in approximately 1% of men between 55 and 64 years of age, and increases by 2 to 4% per decade thereafter.[3] Surgery is the main treatment for large AAAs or those that are growing rapidly.

AAA is an inflammatory disease involving oxidative stress caused by excessive levels of reactive oxygen species (ROS). Although the use of antioxidants would appear a promising treatment strategy, clinical efficacy has turned out to be mostly unsatisfactory. By targeting SOD2 (superoxide dismutase 2), an enzyme known for its capacity to eliminate ROS, the researchers used a different approach. They delivered SOD2 mRNA through systemic injections of Altamira's peptide-based SemaPhore nanoparticles in an established murine AAA model and were thus able to boost mitochondrial SOD2 expression, reduce levels of oxidative stress and in turn mitigate the expansion of small AAA and largely prevent rupture. The research group concluded: "This nanotherapeutic mRNA delivery approach may find translational application in the medical management of small AAA and the prevention of AAA rupture."

"Using SOD2 mRNA to modulate oxidative stress appears a very promising approach in various challenging cardiovascular disorders such as abdominal aortic aneurysm or atherosclerosis and in other inflammatory or degenerative disease where ROS is a critical disease driver", commented Samuel Wickline, M.D., Chief Scientific Adviser of Altamira and one of the co-authors of the study. "Importantly, the SemaPhore nanoparticles allowed for systemic delivery of the mRNA payload with efficient uptake and SOD2 expression in the aortic wall. Moreover, there was a good safety profile with no sustained accumulation or SOD2 expression in major organs, and no change in hematologic parameters or liver / kidney function. Last, but not least, the nanoparticles showed good stability over time."

About Altamira Therapeutics

Altamira Therapeutics (Nasdaq: CYTO) is developing and supplying peptide-based nanoparticle technologies for efficient RNA delivery to extrahepatic tissues (OligoPhore™ / SemaPhore™ platforms). The Company currently has two flagship siRNA programs using its proprietary delivery technology AM-401 for KRAS driven cancer and AM-411 for rheumatoid arthritis, both in preclinical development beyond in vivo proof of concept. The versatile delivery platform is also suited for mRNA and other RNA modalities and made available to pharma or biotech companies through out-licensing. In addition, Altamira holds a 49% stake (with additional economic rights) in Altamira Medica AG, its commercial-stage legacy asset Bentrio®, an OTC nasal spray for allergic rhinitis. Further, the Company is in the process of partnering / divesting its inner ear legacy assets. Founded in 2003, Altamira is headquartered in Hamilton, Bermuda, with its main operations in Basel, Switzerland. For more information, visit: https://altamiratherapeutics.com/

Forward-Looking Statements

This press release may contain statements that constitute "forward-looking statements" within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. Forward-looking statements are statements other than historical facts and may include statements that address future operating, financial or business performance or Altamira's strategies or expectations. In some cases, you can identify these statements by forward-looking words such as "may", "might", "will", "should", "expects", "plans", "anticipates", "believes", "estimates", "predicts", "projects", "potential", "outlook" or "continue", or the negative of these terms or other comparable terminology. Forward-looking statements are based on management's current expectations and beliefs and involve significant risks and uncertainties that could cause actual results, developments and business decisions to differ materially from those contemplated by these statements. These risks and uncertainties include, but are not limited to, the success of strategic transactions, including licensing or partnering, with respect to Altamira's legacy assets, Altamira's need for and ability to raise substantial additional funding to continue the development of its product candidates, the clinical utility of Altamira's product candidates, the timing or likelihood of regulatory filings and approvals, Altamira's intellectual property position and Altamira's financial position, including the impact of any future acquisitions, dispositions, partnerships, license transactions or changes to Altamira's capital

structure, including future securities offerings. These risks and uncertainties also include, but are not limited to, those described under the caption "Risk Factors" in Altamira's Annual Report on Form 20-F for the year ended December 31, 2023, and in Altamira's other filings with the Securities Exchange Commission ("SEC"), which are available free of charge on the SEC's website at: www.sec.gov. Should one or more of these risks or uncertainties materialize, or should underlying assumptions prove incorrect, actual results may vary materially from those indicated. All forward-looking statements and all subsequent written and oral forward-looking statements attributable to Altamira or to persons acting on behalf of Altamira are expressly qualified in their entirety by reference to these risks and uncertainties. You should not place undue reliance on forward-looking statements. Forward-looking statements speak only as of the date they are made, and Altamira does not undertake any obligation to update them in light of new information, future developments or otherwise, except as may be required under applicable law.

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[1] Yan et al. (2024), Systemic delivery of murine SOD2 mRNA to experimental abdominal aortic aneurysm mitigates expansion and rupture, bioRxiv: 2024.06.17.599454. 10.1101/2024.06.17.599454

[2] Shaw et al. (2024), Abdominal aortic aneurysm, StatPearls. https://www.ncbi.nlm.nih.gov/books/NBK470237/

[3] Aggarwal et al. (2011), Abdominal aortic aneurysm: A comprehensive review, Exp Clin Cardiol 16(1): 11–15.