



Altamira Therapeutics Announces Publication of Peer-Reviewed Article on Peptide-Based RNA Delivery for Extrahepatic Targets

May 31, 2023 8:30 PM EDT

HAMILTON, BERMUDA / ACCESSWIRE / May 31, 2023 / Altamira Therapeutics Ltd. (NASDAQ:CYTO), a company dedicated to developing therapeutics that address important unmet medical needs, today announced the publication of a peer-reviewed article in the International Journal of Molecular Sciences (IJMS) reviewing the challenges in the safe and effective delivery of RNA molecules to target cells beyond the liver.

The paper titled, *Peptide-Based Nanoparticles for Systemic Extrahepatic Delivery of Therapeutic Nucleotides* is authored by researchers from the University of Washington, St Louis, the University of California Los Angeles and Dr. Samuel Wickline, Altamira's Chief Scientific Adviser. It is available through [open access](#).

The article highlights some of the challenges that need to be overcome when seeking to deliver oligonucleotides (siRNA, antisense, etc.) or messenger RNA (mRNA) therapeutically. These challenges include inherently poor stability of the RNA and limited entrance to the cell. While a variety of delivery technologies exist which overcome these challenges such as lipid nanoparticles, ligand conjugates, or virus-based vectors, these are mostly confined to targets within the liver. In addition, once taken up by the cell, efficient release of the RNA from the endosome into the cytoplasm is another challenge.

The authors present several peptide-based RNA delivery technologies which aim to overcome these challenges. In particular, they describe the multidisciplinary efforts which, after many years of research, led to the development of the p5RHH peptide at the University of Washington, which was later out-licensed to Altamira Therapeutics and is being further developed as its OligoPhore™ / SemaPhore™ platforms.

The origin of the p5RHH peptide and many of the other peptides described in the article's review arise from sources found in nature such as melittin (a component of bee venom), viruses, defensins, and others that are described as "cell penetrating," "membrane active," or "antimicrobial peptide" toxins. p5RHH is an example of a bio-inspired peptide derived from multiple sequential modifications of the native amino acid sequence of melittin to render it safe while boosting its efficacy. The final peptide corresponds to less than 50% of the original melittin structure.

"Over the past few years, there has been a dramatic acceleration in the pace of RNA therapeutic design and delivery due to improved basic understanding of how cells respond to RNA therapeutics," said Dr Samuel Wickline, Altamira's Chief Scientific Adviser. "However, the previously cited challenges to delivery of RNA molecules to diseases that originate beyond the liver continue to restrict clinical application. Peptide-based nanoparticles such as OligoPhore / SemaPhore represent a promising approach for systemic administration of RNA payloads for delivery to targeted disease sites beyond the liver with efficient endosomal release."

About OligoPhore / SemaPhore

OligoPhore / SemaPhore are versatile platforms designed to enable safe and effective delivery of oligonucleotides such as siRNA (small interfering ribonucleic acid) or messenger RNA, respectively, into target cells, using systemic or local administration. It is based on a proprietary 21 amino acid peptide that can engage any type of RNA in rapid self-assembly into a polyplex. The polyplex has a size, charge, and other physical features that allow it to escape hepatic clearance and thus to reach target tissues other than the liver. OligoPhore / SemaPhore protect the RNA payload from degradation in the circulation and allows for rapid cellular uptake, while enabling pH-dependent nucleotide full endosomal escape and cytoplasmic delivery. Effective delivery and positive treatment outcomes have been demonstrated in more than 15 diverse murine models of disease so far.

About Altamira Therapeutics

Altamira Therapeutics (Nasdaq:CYTO) is dedicated to developing and commercializing RNA delivery technology for extrahepatic targets (OligoPhore™ / SemaPhore™ platforms). The Company currently has two flagship siRNA programs in preclinical development beyond *in vivo* proof of concept: AM-401 for KRAS driven cancer and AM-411 for rheumatoid arthritis. The versatile delivery platform is also suited for mRNA and other types of RNA therapeutics and is planned to be leveraged via out-licensing to pharma or biotech companies. In addition, Altamira is in the process of divesting and/or out-licensing its legacy assets in allergology and viral infection (Bentrio® OTC nasal spray; commercial) and inner ear therapeutics (AM-125 nasal spray for vertigo; post Phase 2; Keyzilen® and Sonsuvi® for tinnitus and hearing loss; Phase 3). 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 and Section 21E of the Securities Exchange Act of 1934. Forward-looking statements are statements other than historical facts and may include statements that address future operating, financial or business performance or Altamira Therapeutics' 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 the continued commercialization of Bentrio and success of strategic transactions, including licensing or partnering, with respect to Bentrio or any other legacy assets, Altamira Therapeutics' need for and ability to raise substantial additional funding to continue the development of its product candidates, the timing and conduct of clinical trials of Altamira Therapeutics' product candidates, the clinical utility of Altamira Therapeutics' product candidates, the timing or likelihood of regulatory filings and approvals, Altamira Therapeutics' intellectual property position and Altamira Therapeutics' financial position, including the impact of any future acquisitions, dispositions, partnerships, license transactions or changes to Altamira Therapeutics' 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 Therapeutics' Annual Report on Form 20-F for the year ended December 31, 2022, and in Altamira Therapeutics' other filings with the SEC, which are available free of charge on the Securities Exchange Commission'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 Therapeutics or to persons acting on behalf of Altamira Therapeutics 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 Therapeutics 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.

Hear@altamiratherapeutics.com

800-460-0183

SOURCE: Altamira Therapeutics Ltd.

[accesswire.com](https://www.accesswire.com)

<https://www.accesswire.com/758431/Altamira-Therapeutics-Announces-Publication-of-Peer-Reviewed-Article-on-Peptide-Based-RNA-Delivery-for-Extrahepatic-Targets>