April 29, 2025

Acuitas Therapeutics Demonstrates Enhanced mRNA-LNP Activity in Cancer and Viral Vaccine Development

Vancouver, B.C. – Acuitas Therapeutics, a global leader in lipid nanoparticle (LNP) delivery systems, shared key findings from its latest mRNA-LNP therapeutic research during the 2025 World Vaccine Congress, held in Washington, DC, on April 21-24, 2025. Acuitas shared data relating to ALC-0315™ (the ionizable lipid of COMIRNATY®) and its application in mRNA cancer immunotherapy, as well as the company's identification of novel lipids with improved virus-specific immunogenicity for prophylactic vaccine development.

"Our preclinical findings build on the proven success of our clinically validated mRNA-LNP platform, ALC-0315™," said Dr. Ying Tam, chief scientific officer of Acuitas Therapeutics. "And with its robust CD8+ T-cell activity, our data reinforce its potential in cancer immunotherapy. What's especially exciting is that our novel LNP formulations have demonstrated immune responses against infectious disease that surpass the first-generation lipid found in COMIRNATY®, opening the door to a wide range of future possibilities. We look forward to further developing these candidates to enable a new slate of cancer and infectious disease therapies."

Presentation and Poster: Development of LNP for mRNA Cancer Immunotherapy

This presentation, titled "Development of LNP for mRNA Cancer Immunotherapy" and presented by Dr. Ghania Chikh, Acuitas' senior director of vaccine development, revealed how the success of mRNA-LNP vaccines has underscored the potential of LNP technology, not only for infectious disease, but also as a promising approach for cancer treatment.

Cancer vaccines now hold the possibility to provide targeted therapies, including personalized medicines, with reduced toxicity and improved outcomes for a variety of cancers. Here, ALC-0315™, along with other proprietary LNP formulations, are being investigated as candidates for cancer immunotherapy development by assessing the relative activity of a rationally selected panel of lipids as mRNA-LNP cancer vaccines. The performance of these lipids was determined through metrics identifying enhanced induction of relevant immune readouts. Key highlights of the data include:

- Identification of several lipids with strong and polyfunctional CD8 T cells and Th1 bias humoral response, a type of response required for tumour eradication.

- Compared to lipoplex (an alternative mRNA cancer vaccine format), ALC-0315™, at one-third the dose, elicited a comparable or better CD8 T cell response, with significantly better cytokines and CD107a expression. This confirms the ability of induced immune cells to perform multiple functions, leading to cytotoxic activity against cancer cells.

Poster: Identification of Novel Lipids with Improved Activity for Prophylactic Vaccine Development

Furthermore, Acuitas Therapeutics presented data on multivalent vaccine developments targeting three antigen models derived from viral infectious diseases, H1N1 influenza, RSV, and SARS-CoV-2. This panel of next-generation novel lipids showed improved immunogenicity when compared to ALC-0315™. Key findings of the data include:

- Compared to ALC-0315™, the newly selected lipids' expression data indicated higher secondary lymphoid expression than liver.

- Screened LNP differentially induced innate immune stimulation with no correlation with adaptive immune response to vaccine. A novel LNP formulation induced a higher memory B-cell pool compared to ALC-0315™.

- Immunogenicity in a multivalent vaccine targeting three antigen models from viral infectious diseases was comparable to the respective monovalent LNP.

More information on these findings can be found on the Acuitas website.

About Acuitas Therapeutics, Inc.

Acuitas Therapeutics is a global leader in lipid nanoparticle (LNP) technology and partners with pharmaceutical and biotechnology companies, as well as non-governmental organizations and academic institutions, to advance nucleic acid therapeutics into clinical development and commercialization. Acuitas' clinically validated LNP technology is applied in the Pfizer-BioNTech COVID-19 vaccine, COMIRNATY®, and Alnylam Pharmaceuticals' ONPATTRO® for the treatment of transthyretin amyloidosis. Current efforts focus on enhancing LNP to advance novel gene therapies, and identifying potent new lipids to enable partners to develop vaccines for infectious diseases, multivalent vaccines, and novel therapeutic vaccines against cancer, including personalized cancer vaccines.

For more information, visit www.acuitastx.com.

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