



## PRESS RELEASE

January 31, 2024

# Ziccum has proven excellent mRNA activity in animal study with LaminarPace material

**Ziccum AB (publ) has performed an animal study, confirming excellent genetic activity of mRNA/LNP materials treated by LaminarPace. The in-vivo data confirms the ability of Ziccum's LaminarPace technology to transform delicate mRNA/LNP liquid solution into stable dry powder form, now proving the preserved mRNA activity also in animal testing. Assessing the mRNA effect in animal trials is a significant step for Ziccum.**

The results confirmed well preserved mRNA activity, after the LaminarPace-treated mRNA/LNP materials were administered by injection to mice in a study performed by the CRO partner for animal testing, TrulyLabs AB. The study was performed in a size allowing for statistical significance, over a period of 48 hours after injection. The aim of the study was to investigate the expression of GFP protein (a so-called mRNA reporter) in tumors after injecting mRNA-LNPs, both LaminarPace-treated and non LaminarPace-treated, intratumorally to 4T1 (breast cancer) and MC38 (colorectal cancer) tumors. The animal model choice with tumors was not to predict a cancer treatment effect, but to get well controlled biodistribution. The study was performed by experienced *in-vivo* experts and in accordance with Swedish legislation. Before start of the study, the experimental procedures have been evaluated and approved by the local ethical committee (5.8.18-16268/2022).

### Results demonstrated:

- Very good preservation of the mRNA activity (*In-vivo* protein expression level) for mRNA/LNP material treated by LaminarPace.
- The mRNA activity (*In-vivo* protein expression level) of the LaminarPace treated samples was on par with non-LaminarPace-treated samples for one of the two tumor types.

In addition to this study, Ziccum is expecting further *in-vivo* data later in 2024 from the Academic collaboration with University of Copenhagen. These *in-vivo* trials are work packages in the Ziccum masterplan, ensuring all the necessary steps towards industrial application of the technology, in parallel with development efforts pursued by industry partners for their respective drug projects.

CEO Ann Gidner: "This is a very important step on the journey towards approved treatments - vaccines or therapeutics. LaminarPace mRNA materials are now clearly proven in an animal model. We were anticipating this, based on our range of strong *in-vitro* data, but we now have clear confirmation *in-vivo*. Having pre-clinical animal data like this, is key for the pharmaceutical industry. This will be of great value in our partnering dialogues. At Ziccum, we are very pleased to achieve this milestone and we look forward to our onward progress".

## mRNA/LNP data sets

The new results add to a body of data that Ziccum has built up on its LaminarPace-treated mRNA /LNP materials over the last 18 months. Data reported in October 2023 demonstrated strong mRNA activity and confirmed previous positive encapsulation efficiency and particle size preservation readings. In January 2024 the company reported excellent *in-vitro* mRNA activity and positive readouts in all parameters in a Feasibility Study of the materials, carried out in partnership with a leading Biotech Corporation in the mRNA arena.

## mRNA a key priority

mRNA is of central strategic importance to Ziccum. It is the first of three target vaccine platforms the company focuses on. The mRNA/LNP platform was the key enabler of the record-breaking development of Covid-19 vaccines. Investment in the field has boomed. The mRNA market is forecasted to grow to 59 BUSD by 2031 (1). Solving the stability and delivery challenges of the mRNA platform is however a key priority to enable the application across indications and unmet needs. Today, mRNA/LNP products can only be administered as injectables and are fragile and easily damaged, requiring careful cryogenic storage throughout supply chains.

(1) <https://www.nature.com/articles/d41573-022-00035-z>

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## About Ziccum

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Ziccum is developing LaminarPace™, a unique drying method for biopharmaceuticals and vaccines based on mass transfer, not heat transfer. The technology is offered by licensing to vaccine and biologics developers and manufacturers in the global pharmaceutical industry. By reducing drying stress to the active ingredient, LaminarPace™ uniquely enables particle-engineered, thermostable dry powder biopharmaceuticals which can be easily handled and transported and are highly suitable for novel administration routes. The technology has been successfully applied to mRNA, peptides, proteins, antibodies, lipids and enzymes as well as excipients and adjuvants, and is well suited for industrial application. Ziccum is listed on the Nasdaq First North Growth Market.

### About the mRNA field

The new mRNA technology, first implemented in the Covid mass vaccinations, has become a game-changer in pharmaceutical development, generating multi-billion-dollar development efforts all over the global industry. Solving stability limitations and delivery challenges, as mRNA in LNP formulation is a very complex and delicate structure, would enable a cornerstone treatment across new indications, also targeting so called undruggable genes. A market forecast predicts the mRNA domain to grow to 59 BUSD by 2031 (1). However, existing methods for treatment, formulation or drying do not solve the limitations regarding stability nor fragility, and options for delivery are limited to injection currently. (1) Straits Research, June 08, 2023

*This information is information that Ziccum is obliged to make public pursuant to the EU Market Abuse Regulation. The information was submitted for publication, through the agency of the contact persons set out above, at 2024-01-31 17:48 CET.*

## Attachments

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[Ziccum has proven excellent mRNA activity in animal study with LaminarPace material](#)