

## Result and financial position Q4 October - December 2022

Operating income from goods and services amounted to 0 kSEK (0).

Operating expenses amounted to 8 072 kSEK (6 474), of which personnel costs amounted to 2 582 kSEK (2 488).

Other external costs amounted to 5 148 kSEK (3 700).

Operating result amounted to -8 067 kSEK (-6 474) and result after financial items amounted to -8 021 kSEK (-6 450).

Result amounted to -8 021 kSEK (-6 450).

Result per share before and after dilution amounted to -0.58 SEK (-0.65).

Cash flow during the period amounted to -6 642 kSEK (-7 291). The cash flow included a share issue of 0 kSEK (0). Cash flow per share amounted to -0.48 SEK (-0.73).

## Result and financial position Full Year January - December 2022

Operating income from goods and services amounted to 0 kSEK (0).

Operating expenses amounted to 28 972 kSEK (21 121), of which personnel costs amounted to 11 276 kSEK (9 151).

Other external costs amounted to 16 323 kSEK (11 128).

Operating result amounted to -28 955 kSEK (-21 116) and result after financial items amounted to -28 788 kSEK (-21 136).

Result for the period amounted to -28 788 kSEK (-21 136).

Result per share before and after dilution amounted to -2.09 SEK (-2.17).

Cash flow during the period amounted to 10 678 kSEK (-21 347). The cash flow includes a share issue of 28 051 kSEK (2 200) before deduction of share issue costs. Cash flow per share amounted to 0.78 SEK (-2.19).

Cash and cash equivalents as of Dec 31 2022 amounted to 22 951 kSEK, compared with 12 273 kSEK on December 31 2021.

The company's equity as of Dec 31 2022 amounted to 29 301 kSEK, compared with 29 731 kSEK on December 31 2021.

Equity per share as of Dec 31 2022 amounted to 2.12 SEK, compared with 2.70 SEK on December 31 2021.

The company's equity ratio as of Dec 31 2022 was 88% compared to 81% on December 31 2021.

The result follows budget expectations regarding the costs of the ongoing commercialization of LaminarPace technology. The increase of external costs is mainly driven by consulting fees, extended premises, R&D costs and the disposal of four LaminarPace systems. Personnel costs have increased compared with the previous year as a result of the company having double CEO salary costs for four months, since the former CEO Göran Conradson was exempted from work during the notice period.

The investments made during the year are mainly related to development of the fourth generation of LaminarPace systems in order to adapt and automate the technology for industrial integration.

## Ziccum in brief

Ziccum is developing LaminarPace, a unique ambient 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.

## Vision

Ziccum's vision is to enable new biological treatments for patient needs globally, by making drug formulation, biopharmaceutical processing, product transport and patient administration efficient and functional enough for successful treatments.

## History

LaminarPace was developed by Inhalation Sciences Sweden AB (publ) to generate small amounts of micronized material for aerosolization. However, the many additional high-potential areas the technology could be applied to soon became apparent, and for that reason, Inhalation Sciences carried out a spin-out of LaminarPace into a subsidiary, Ziccum AB, which since mid-2017 has been developing and commercializing the technology on its own.

Ziccum's shares were listed on Spotlight Stock Market on October 25, 2018.

On December 1 2020, Ziccum moved to Nasdaq First North Growth Market.



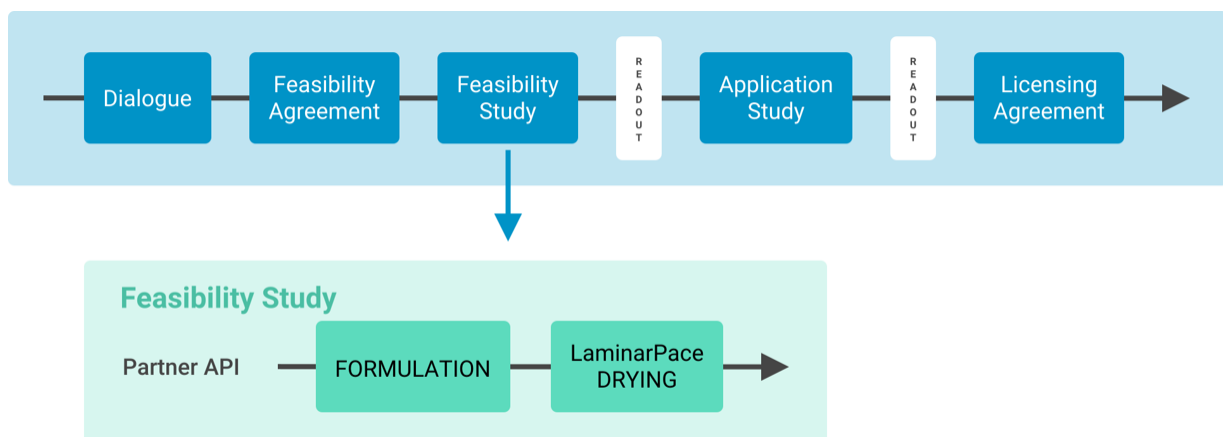
## Business model

Ziccum's business model is based on partnering and co-development with biotech and pharma companies. LaminarPace is developed to be an integrated part of the commercial supply chain of biological pharmaceutical products, with a particular focus on vaccines and mRNA-based products.

The business model rests on the following focus areas:

- ▶ An active partnering agenda to create a substantial pipeline of industrial dialogues.
- ▶ Development responsibility for the LaminarPace unit and process development.
- ▶ Development and optimization of quality attributes and scale-out.
- ▶ Continuous regulatory assessment to prepare for industrialization.

In the early project phases revenues are generated by paid feasibility studies, agreement signing fees, milestone payments for R&D activities and license fees for exclusive evaluation periods. At a mature commercial stage, revenues will primarily be earned through royalty payments from licensees – a standard revenue model for pharmaceutical industry.



*Ziccum technology licensing business model*

Ziccum's business and revenue models are dependent on a strong IP position. The IP strategy rests on two pillars: Patents and Trade secrets.

The basic principles of LaminarPace are protected by an approved Patent family providing an important basis for customer interaction and R&D activities and a fundament for out-licensing. The patent portfolio is currently built to include several layers of patent protection, including general technical improvements and features as well as specific use areas and product classes, enabling a strong and long term patent position supporting a long term out-licensing revenue stream.

Trade secrets are well defined pieces of operational knowledge, such as the optimal drying conditions for each specific product.

## Market and market targeting

The market for biologics and vaccine manufacturing is very significant and has a renewed emphasis with the covid-19 pandemic, having created keen awareness of the importance of vaccines not only within research organisations and from healthcare authorities, but in every segment of the industry and in the general public, globally. The Covid-19 pandemic created an enormous focus on developing a vaccine urgently, and highlighted the need for worldwide distribution.

Thanks to very intense efforts from large industry players it was possible to develop the new mRNA in LNP formulation for Covid-19 vaccination in a short timeframe. However, as now commonly known, these new mRNA vaccines require cryogenic handling all throughout the distribution chain, meaning storage and handling at -80°C. This poses a number of logistical and handling issues. In this situation, the Ziccum offering to enable powder-form thermostable biologics and vaccines should be of great interest.

The freeze-drying technique for drugs, established and developed since many decades, still has only succeeded in very limited trials to generate dry mRNA/LNP – and the product still requires special handling. Another technique gaining ground in pharmaceutical processing is spray-drying by heating – but there, no known attempts have succeeded in generating dry material from mRNA/LNP. Hence, the LaminarPace ability to dry LNP formulations may be of great importance.

The LaminarPace technology lends itself to biopharmaceutical ingredients in general, but as of now the company has decided to focus on vaccines, and three specific vaccine platforms, all relevant for covid-19 vaccines:

- ▶ mRNA/LNP vaccine platform
- ▶ Viral vector (adenovirus) platform
- ▶ Subunit vaccine (adjuvanted) platform

For the total vaccine Western world sales market value, estimates for the top vaccine indications are as follows; In 2023 predicted to 67 billion USD, also after a slight decrease from record Covid-19 numbers; to be followed by some 64 billion USD per year in 2024-2026, then rising towards 80 billion USD in 2028\*.

The corresponding annual market value for our three focus vaccine platforms are 40-50 billion USD for the years 2024-28. With a licensing business model, estimates of the addressable market size for our three focus vaccine platforms, considering a 1% royalty on entire vaccine sales can be made. Based on this, the total drying technology licensing market size may be predicted to 400 – 500 mUSD\*.

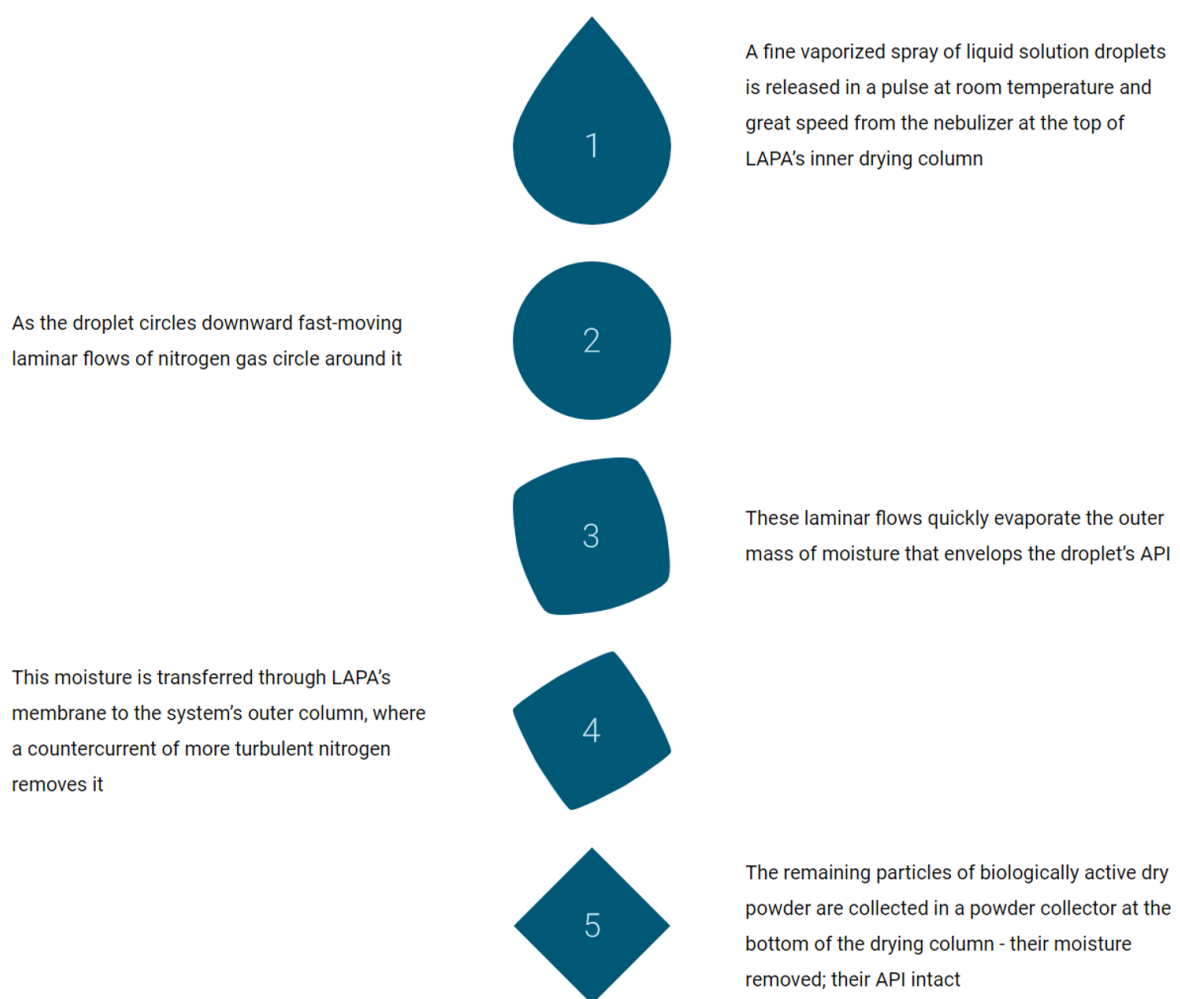


*\*Estimates based on the GlobalData Intelligence platform Dec 2022*

## Technical description

LaminarPace creates an efficient drying process by generating mass transfer, rather than heat transfer. This happens directly after evaporation and removes the need for elevated temperatures. Mass transfer is a highly efficient drying method. Our optimization tests demonstrate that following drying less than 2% of absolute humidity is left inside LaminarPace's drying column.

To best understand the process, let's follow the drying path of a single droplet of biomolecule.



*The LaminarPace drying path of a single droplet*

## Shares

As of January 1 2022, the total number of shares was 11 006 056 and as of December 31 2022, the total number of shares was 13 806 142. The increase of 2 800 086 shares was a result of the share issue that was initiated by the company in December 2021.

All shares have a voting ratio of 1.

The Board of Directors proposes that no dividend is paid for the financial year 2022.

## Shareholders 2022-12-31

Name	Number of shares	Share capital	Votes
Försäkrings AB, Avanza Pension	879,145	6.4%	6.4%
Göran Conradson	760,738	5.5%	5.5%
William Lithander	600,000	4.3%	4.3%
Tigerstaden AS	427,991	3.1%	3.1%
Nordnet Pensionsförsäkring AB	336,164	2.4%	2.4%
Viskär AB	220,000	1.6%	1.6%
Other shareholders	10,582,104	76.6%	76.6%
<b>Total</b>	<b>13,806,142</b>	<b>100%</b>	<b>100%</b>

## Share price

Ziccum AB was registered as a public company by the Swedish Companies Registration Office 2018-05-31.

Ziccum's shares were listed on Spotlight Stock Markets on October 25, 2018.

The share's closing price on the first trading day amounted to SEK 5.90.

Ziccum moved to Nasdaq First North Growth Market on December 1, 2020.

The share closing price on December 31, 2022 amounted to SEK 2.48.

## Transactions with related parties

During the reporting period (Jan-Dec), fees charged by related parties were invoiced as follows:

The Chairman of the Board, Fredrik Sjövall, has through Axelero AB invoiced fees amounting to 306 kSEK for project management.

Board member (until April 28, 2022) Mattias Münnich has through Magamu AB invoiced 26 kSEK for project management.

Board fees have been paid in accordance with resolutions at the Annual General Meeting.

There have otherwise been no significant transactions with related parties.

## Significant risks and uncertainties in brief

Ziccum's significant risk and uncertainty factors include business-related risks as well as risks related to market and technology development, patents, competitors and future financing.

The company's value is largely dependent on the success of the company's development projects and the ability to enter into partnerships, and that LaminarPace receives broad market acceptance. Ziccum is in the commercialization phase and there is a risk that the company will not reach sufficient profitability.

As the company is in growth stage and working to achieve a positive cash flow, the company needs access to capital before its cash flow becomes positive.

It is the company's assessment that the company has the required financing for longer than 12 months. The company will have a reduction of fixed costs compared to last year, and the Eurostars grant will also have an additional positive effect on the cash flow.

In light of the outbreak of the coronavirus and COVID-19, Ziccum is closely monitoring the development of events and taking measures to minimize or eliminate the impact on the company's operations. Ziccum follows guidelines from the Swedish Public Health Agency. Ziccum has been able to continue its internal operations without significant impact from COVID-19.

The conflict in Ukraine has not affected the development of the company's operations, position or results.

