Ziccum in brief

Ziccum's patented technology LaminarPace gently dries liquid biopharmaceuticals such as vaccines or protein therapeutics into a particle engineered powder product.

For patient administration, the drug powder may be reconstituted, which means mixed with liquid and injected just like a liquid solution vaccine, or directly administered in powder form by inhalation or other novel administration routes.

The gentle processing in ambient temperature enables thermostable powder biopharmaceuticals. This means that the biological drug or vaccine can be transported and stored at room temperature, unlike today's liquid biologics that require costly, complex logistics with an unbroken cold chain, or even freeze chain.

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.

Business model

Ziccum’s business model is to offer evaluation studies and technology licensing to Pharma, Biotech and drug manufacturing partners, based on Ziccum intellectual property and know-how.

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.

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 m-RNA in LNP formulation for Covid-19 vaccination in a short timeframe. However, as now commonly known, these new m-RNA 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 69 billion USD, also after a slight decrease from record Covid-19 numbers; to be followed by some 65 billion USD per year in 2024-2026, then rising towards 77 billion USD in 2028.

With a licensing business model, estimates of the market size 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 650 to 770 Million EUR per year in the near future.

Technical description

The basic principle of LaminarPace is a column that separates the ingoing liquid that contains the active component from a countercurrent nitrogen flow that slowly and gently causes evaporation. The result is a micronized powder. The drying cycle is a so called semi-continuous process. The system not only retains all the properties of sensitive active substances, but also allows great possibilities to control certain properties of the particles, e.g. particle size that is crucial for creating an inhalable material.

The powder produced during the process is normally very easy to dissolve, which enables flexible application possibilities, e.g. vials of intravenously administered drugs, inhalable drugs and even for topical application of particles through the skin.

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