Spotlight: cancer vaccine ES2B-C001

On 16 November, the company published its Q3 '23 results and announced the outcome of its strategic review. It now intends to partner or divest its Her2-targeted cancer vaccine ES2B-C001 before or after phase I (previously: after phase II) and is accelerating the monetization of its exploratory pipeline. Management reiterated cash reach guidance to 2025e based on its end of Q3 cash position of SEK 77m and the implementation of cost savings measures, with potential upside from a milestone payment. Buy, FV estimate: SEK 9.

Her2-targeted cancer vaccine candidate ES2B-C001 – flagship project

The asset is expected to be phase I ready next year; in line with general policy, management is contemplating a grant-funded investigator-driven trial and intends to sell or partner the asset prior to phase II. It might have blockbuster potential in breast cancer alone before risk adjustment. Lead candidates from the exploratory pipeline will be selected and monetized under a new conceptual framework; timelines are not yet known. The focus pipeline includes two discovery stage assets: MucoVax (influenza) and ES2B-I001 (cytomegalovirus), while the legacy pipeline includes a malaria program, where initial phase IIb data are expected in H2 2024, as well as a pre-clinical stage influenza project.

Financials: cash reach to at least 2025e confirmed

At the end of Q3, the company's cash position stood at SEK 77m. On this basis and given ongoing headcount and R&D spend reductions, management foresees cash reach until 2025, noting that any clinical development work is subject to separate funding. A possible dividend payment of up to SEK 38m from the joint venture AdaptVac following the receipt of an anticipated milestone in respect of ABNCoV2 from Bavarian Nordic could be used to extend cash reach and/or fund ES2B-C001 phase I development, we reckon. Any such dividend represents upside to our forecasts, which we have reduced to reflect Bavarian Nordic's decision not to pursue ABNCoV2 commercially. Scope for potential dilution from the exercise of warrants looks modest to us.

Investment thesis

We rate the shares a Buy. Based on our NPV-based SOTP, we estimate the fair value at SEK 9 per share, with roughly half of this value attributable to ES2B-C001. Key newsflow over the next twelve to 18 months includes the expected phase I readiness of ES2B-C001 in breast cancer, phase IIb data in malaria and announcements of lead candidates from the exploratory pipeline. Downside risks arise primarily from funding constraints and the potential failure of assets in development. Upside arises primarily from the de-risking of pipeline assets.

SEKm	2021	2022	2023e	2024e	2025e
Revenues	14	6	9	9	9
EBITDA	(47)	(126)	(102)	(50)	(40)
EBIT	(48)	(128)	(102)	(50)	(40)
EPS	(1,59)	(3,39)	(2,21)	(0,97)	(0,78)
EPS adj	(1,59)	(3,39)	(2,21)	(0,97)	(0,78)
DPS	-	-	-	-	-
EV/EBITDA	-	-	-	-	-
EV/EBIT	-	-	-	-	-
P/E adj	-	-	-	-	-
P/B	6,56	5,59	1,45	20,87	-
ROE (%)	-	-	-	-	-
Div yield (%)	-	-	-	-	-
Net debt	(35)	(109)	(57)	(4)	39

Source: Pareto Securities

Target price (SEK)	**9,0**	▲ **BUY**
Share price (SEK)	1,5	– HOLD
		▼ SELL

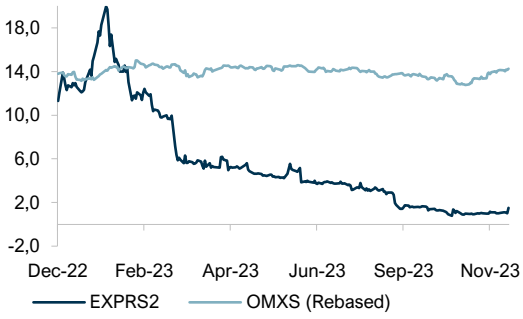
Forecast changes

%	2023e	2024e	2025e
Revenues	6	(73)	(66)
EBITDA	(39)	(7)	31
EBIT adj	(32)	2	35
EPS reported	(64)	(17)	41
EPS adj	(64)	(17)	41

Source: Pareto Securities

Ticker	EXPRS2.ST, EXPRS2 SS
Sector	Healthcare
Shares fully diluted (m)	53,4
Market cap (SEKm)	81
Net debt (SEKm)	-57
Minority interests (SEKm)	0
Enterprise value 23e (SEKm)	21
Free float (%)	83

Performance



Source: FactSet

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Platform technology & key assets

Strategy review key outcomes: 1) clinical development options for cancer vaccine ES2B-C001

Following partner Bavarian Nordic's decision not to pursue the Covid-19 vaccine ABNCoV2 commercially against the backdrop of a mutating virus and waning pandemic, ExpreS2ion Biotech conducted a strategic review. Given current capital market conditions, the company has implemented cost reduction measures to secure cash reach to 2025. It intends to pursue grant-funding for its priority projects where possible and will be seeking non-dilutive funding to progress its flagship project, the Her2-targeted cancer vaccine ES2B-C001, which we profile in a dedicated section of this report. Whilst ExpreS2ion Biotech's original ambition had been to conduct a combined phase I/II study in-house, using the services of a contract research organization (CRO), the company is now aiming to partner or divest the asset before or after phase I and is considering an investigator-initiated trial.

2) Conceptual framework for the de-risking, acceleration and monetization of the exploratory pipeline

Furthermore, it intends to accelerate the monetization of its technology platform through its exploratory pipeline, which is expected to yield late pre-clinical and/or early clinical assets for out-licensing. The company intends to pursue assets with a higher initial risk-adjusted value due to shorter development times and lower costs compared to its earlier approach. We note that ExpreS^{2}ion is developing vaccines based on its proprietary ExpreS2 technology platform, a recombinant protein expression platform based on *Drosophila melanogaster* (fruit fly) S2 cell lines. The platform supports a wide range of molecular constructs and notably allows for the attachment of antigens to capsid virus-like particles (cVLP). The cVLPs of AdaptVac, in which ExpreS2ion Biotech holds a 34% stake, are used in both the COVID-19 and HER2-targeted vaccines. In this section, we provide a brief overview of the company's principal assets other than ES2B-C001.

Exploratory pipeline: conceptual framework for monetization

Key asset selection criteria: cost, speed, risk, diversification, and attractiveness of target markets

The company has elaborated a scientific and commercial framework for prioritizing and monetizing the early-stage assets it is seeking to generate based on its technology platform. Key criteria for the selection of assets include:

- **Low R&D expenses prior to out-licensing:** The company intends to seek a buyer or partner for each asset in the early stages of development, preferably upon the availability of initial clinical data. It is seeking to minimize the amount of funding required to generate sufficient data to generate interest on the part of strategic investors.
- **Diversification of the exploratory pipeline** to avoid becoming overly dependent on a single asset or therapeutic area.
- **Availability of fast-to-market routes,** based on the assumption that strategic partners would generally prefer assets with the potential to generate cash flows in a relatively timely manner, given the current high discount rates as well as a typically strong focus on earnings accretion. Fast-to-market routes may be available under a range of scenarios, including underserved indications and late-stage disease settings.
- **Size and growth rate of the target market,** as this affects strategic investors' propensity to purchase or in-license an asset as well as deal terms.
- **Probability of technical & regulatory success,** based on standard success probabilities for the targeted indications and the specific characteristics of the molecule and target.

Lead candidates to be announced once animal data become available

Whilst management has communicated this rigorous conceptual framework following its strategy review, it intends to refrain from communicating any expectations with regards to timelines or the number of molecules expected to be discovered and developed until it has identified initial lead candidates and generated initial animal data as well as some intellectual property. We also note that the company has not committed to a specific stage at which it intends to monetize exploratory pipeline assets. Whilst its preference would normally be to generate at least some clinical data prior to approaching strategic investors in order to extract as much value as possible, we caution that funding constraints could prompt the divestment of some assets at the pre-clinical stage.

Covid-19 vaccine ABNCoV2: platform validation

We expect 34%-owned AdaptVac to receive a milestone of DKK 74m

Although Bavarian Nordic has decided not to pursue this asset further against the backdrop of a mutating virus and waning pandemic, we consider ABNCoV2 to be an important asset for two reasons. First, it remains a key near-term value driver owing to a contractually owed milestone from Bavarian Nordic to the originator AdaptVac, in which ExpreS2ion Biotech owns a 34% stake, upon completion of full phase III work in 2024e. We assume the amount to be DKK 74m (ca. SEK 113m), based on Bavarian Nordic's statement in its 9m '23 report to the effect that future payments of DKK 74m represent the most likely milestone scenario in connection with the program, and based on our own assumption that any other potential future milestones are highly unlikely to be achieved following Bavarian Nordic's decision to terminate the compound.

Phase III data showed protection against the original Wuhan strain

Second, the completion of phase III trials provides important validation of the ExpreS2 technology platform. The vaccine candidate was designed to provide protection against the original Wuhan strain of the virus and showed compelling phase III data in this regard. On 27 June, Bavarian Nordic released phase III headline data. The study met its primary endpoint of non-inferiority to a booster shot with Pfizer/BioNTech's entrenched vaccine Corminaty with regards to neutralizing antibodies generated against the original Wuhan strain. On 16 June, strong phase II durability data were announced, with >90% protection against the Wuhan strain observed after twelve months of follow-up, thus providing some reassurance against the backdrop of concerns over waning efficacy of Covid-19 jabs.

… but not against key variants of concern, prompting the decision to terminate the asset in an increasingly challenging regulatory and commercial environment

We note that Bavarian Nordic's decision not to pursue a regulatory submission is attributable to various factors, including insufficient cross-protection against variants of concern, coupled with regulator preferences for polyvalent vaccines, in the context of a shrinking commercial market due to the waning pandemic. Bavarian Nordic has also decided not to pursue a potential new vaccine based on either ExpreS2 or any other protein-based technology platform, in contrast to mRNA-based approaches, does not support rapid adaptation to the mutating virus. On a positive note, ExpreS2ion Biotech will not incur any costs in connection with Covid-19 vaccines going forward.

AdaptVac stake: value beyond ABNCoV2 milestone

Various pre-clinical stage assets in addition to ABNCoV2, ES2B-C001

ExpreS2ion Biotech holds a 34% stake in AdaptVac, with NextGen Vaccines owning the remaining 66%. AdaptVac's principal assets include ABNCoV2, for which we expect the receipt of a DKK 74m milestone payment as discussed in the previous chapter, the Her2-targeted cancer vaccine ES2B-C001, which was licensed by ExpreS2ion Biotech and will be discussed in the next section, as well as pre-clinical stage assets for fibrosis, malaria, influenza and coronavirus. It is unknown to us to what extent AdaptVac would be seeking to reinvest the expected milestone in its early-stage pipeline versus paying a special dividend.

MucoVax (mucosal influenza vaccine) from the Focus pipeline

Grant-funded discovery stage focus project added in March

On 3 March, ExpreS2ion Biotech announced the award of a grant by the Innovation Fund Denmark (IFD) for the joint development of a new universal mucosal vaccine platform by ExpreS2ion and the University of Copenhagen as part of a five-year research project. Direct funding of ExpreS2ion amounts to SEK 14m, with IDF funding 67% of ExpreS2ion's share of the research project budget. MucoVax is at the discovery stage. It is a focus project, along with ES2B-C001 and ES2B-I001 (cytomegalovirus, see discussion below). The company tags the potential commercial market at more than EUR 7bn.

ES2B-I001 (cytomegalovirus) from the Focus pipeline

Lead candidate to be selected by the end of 2025

On 6 December, ExpreS2ion Biotech announced a collaboration agreement with the NASDAQ-listed company Evaxion Biotech for the discovery of a cytomegalovirus (CMV) vaccine candidate. The aim is to develop a novel lead candidate by the end of 2025 by combining ExpreS2ion's vaccine capabilities with Evaxion's vaccine-specific artificial intelligence platform RAVEN. Costs will be shared equally through 2025 and are covered by the companies' existing budgets. ES2B-I001 is at the discovery stage. It is a focus project, along with ES2B-C001 and MucoVax. The company tags the potential commercial market at more than EUR 2bn.

Malaria pipeline: first phase IIb proof of concept study planned

Grant-funded program by the University of Oxford

ExpreS^{2}ion Biotechnologies supports grant-funded malaria research by the University of Oxford, the originator of AstraZeneca's highly successful COVID-19 vaccine Vaxzevria. It supplies a vaccine formulation including antigen as well as an adjuvant obtained from NovaVax. The project is part of the legacy pipeline but not part of the AdaptVac joint venture.

Phase IIb trial due to start this year

Several projects are underway to target malaria at the blood and transmission level. The most advanced project (blood-targeted RH5) is expected to start a 360-patient phase IIb trial in Burkina Faso this year, with completion in H2 2024e. Additional phase I trials in the blood stage (RH5.2 and a combination of RH 5.1 and R78C) are expected to read out in 2025; analysis of a completed phase I trial of Pfs48/45 in the transmission stage is ongoing.

Malaria is an attractive niche market

Although malaria represents a niche opportunity – the company tags the commercial market at roughly EUR 1.8bn – we believe that success could potentially result in meaningful revenues and contribute to the validation of the company's technology. With initial phase II trials underway, we tag the likelihood of approval at approximately 20%, in between the industry average across all indications of ca. 15% and the infectious disease-specific average of c. 27%.

Hemagglutinin-targeted influenza vaccine

Pre-clinical work underway as part of the INDIGO flu jab consortium

This project is part of efforts by the INDIGO consortium to develop low-cost next-generation influenza vaccines. ExpreS^{2}ion supplies antigen based on its Expres2 platform. It is part of the legacy pipeline, but not part of the AdaptVac joint venture. At present, pre-clinical pharmacology work is being conducted. Toxicology work and a manufacturing scale-up are subject to future grants.

We see blockbuster potential before risk-adjustment

The company tags the potential commercial market at more than EUR 7bn. We see blockbuster potential for the vaccine candidate in the event of success but tag the likelihood of approval at just 4% while the asset is in pre-clinical development.

Her2-targeted cancer vaccine ES2B-C001

The market for HER2-positive breast cancer exceeds EUR 10bn and is highly developed

HER2 ranks among the most highly validated targets for the treatment of cancer, with numerous successful drugs. ExpreS^{2}ion tags the market potential for HER2-positive breast cancer at more than EUR 10bn. We see further upside if the emerging "HER2-low" space is considered, following the initial success of AstraZeneca/Daichi Sankyo's Enhertu in cancers that express HER2 at a level that is below the threshold for classical drugs, and note that some non-breast tumors also over-express HER2. ES2B-C001's commercial potential would depend on the molecule's positioning within the crowded Her2-targeted space.

Clinical work could start from next year, subject to funding

ExpreS2ion Biotech is in the process of finalizing pre-clinical work and reckons that the asset looks set to be phase I-ready next year. The start of clinical development work is subject to funding; the company is currently exploring various options including a grant-funded investigator-initiated phase I trial. Given difficult capital market conditions, management now envisages selling or partnering the asset prior to phase II. In this section, we profile the asset and provide an overview of potential target markets.

Commercial terms

Pay-aways to AdaptVac look modest to us

ExpreS^{2}ion licensed the asset from AdaptVac in February 2021, in return for decreasing its stake in AdaptVac to 34%, from 50%. The licensing agreement contains modest DKK-denominated pay-aways to AdaptVac:

- DKK 2.5m upon the approval of release of clinical-ready production material
- DKK 2.5M upon the start of a phase I trial
- DKK 10m upon the start of phase II
- Up to DKK 200m in aggregate milestone payments in relation to phase III and regulatory progress
- A low single-digit royalty rate on net sales

Agreement covers Her2-positive tumors

To our knowledge, the licensing agreement covers the development of the asset in any Her2-positive cancer but does not explicitly include the Her2-low setting, where Her2-targeted molecules have shown efficacy in recent years. Should future clinical studies suggest that the development of ES2B-C001 in Her2-low tumors is warranted, we would expect a possible amendment of the licensing agreement to be in AdaptVac's interest, though we acknowledge the possibility that use in Her2-low settings might be on less favorable terms from the point of view of ExpreS2ion Biotech.

Molecular profile, current status and pre-clinical data

Pre-clinical toxicology and manufacturing scale-up underway

The molecule was generated using ExpreS2ion Biotech's expression system as well as AdaptVac's cVLP technology. It was designed to be a Her2-targeted therapeutic cancer vaccine. ExpreS2ion Biotech is in the progress of preparing the asset for phase I. Following the resolution of earlier manufacturing issues, it is scaling up cGMP (current Good Manufacturing Practice) manufacturing. We note that the current budget includes the scale-up of the active ingredient, while separate funding would be required for the manufacturing of final drug product used in clinical development.

Initial pre-clinical data look compelling to us

Toxicology work is ongoing and has been fully budgeted for. On 20 October 2022, initial positive preclinical data were published in the journal Biomedicines (https://doi.org/10.3390/biomedicines10102654). We regard the Biomedicines publication as positive in several respects:

- **Publication in a peer-reviewed journal** always lends additional credence to previous data releases
- The authors concluded that **further preclinical development was warranted**, with a view to commencing testing in humans subsequently
- **Positive results** were obtained in both prevention and **therapy** in mice

It followed an earlier announcement by the company in late May 2022, when initial positive preclinical data in transgenic mice were released. 100% of the mice vaccinated with adjuvanted ES2B-C001 were metastasis-free, while all control animals had lung nodules. Moreover, 73% of the mice vaccinated with an adjuvant-free formulation were free from metastases.

Clinical development expected to commence in the near-term

Asset set to be phase I ready in 2024e, subject to funding

Based on the progress of pre-clinical work, management expects to be able to file a clinical trial application (CTA) next year. The latter is included in the current budget. While the company's original ambition had been to complete phase II before partnering or selling the asset, it is now envisaging divesting or out-licensing it before or after phase I, owing to funding constraints. In fact, phase I work has not been included in the company's current budget, and the start of a phase I trial is subject to separate funding. At the current share price, management does not expect to be able to tap the capital markets to fund an in-house trial conducted by a CRO at an estimated cost of EUR 5 to 10m. It is therefore actively exploring the possibility of a lower-cost grant-funded investigator-initiated trial and has also begun talks with potential strategic investors.

Likely next step: investigator-initiated phase I dose escalation study in advanced breast cancer

Whilst the company has not yet announced the design of the planned phase I study, we regard a dose-escalation study in advanced Her2-positive breast cancer as the most likely avenue. We would expect to glean important safety data, both as a single agent and in combination with other drugs. We reckon that in a best-case scenario, the study could provide anecdotal evidence of biologic activity; however, we would not expect to see efficacy data prior to phase II.

Peak sales potential in key Her2-driven cancer settings

Peak sales potential is illustrative, pending data & development plans

Her2-positive breast cancer is currently ES2B-C001's main indication, with potential upside from other Her2-positive tumors such as Her2-positive gastric cancers. We also note the potential utility of highly potent assets in Her2-low settings, though this is not currently a focus area for the company. It is too early to speculate about the molecule's potential positioning in the evolving treatment paradigms or about other key determinants of peak sales potential, such as treatment duration and penetration rates in different settings. However, we flag potential peak sales in key settings for illustrative purposes.

Advanced breast cancer as a likely first indication, with scope to move into lucrative early settings

We would expect the asset to be developed for late-stage breast cancer initially, though it would likely move into earlier settings over time if the efficacy and safety data were compelling. Under such a scenario, we would expect the early breast cancer setting to cannibalize the late stage setting to some extent, as patients are typically switched to another drug upon recurrence or progression, though we note that patients who progress many years after the completion of adjuvant treatment might opt to use the same drug in the metastatic setting. Even assuming full cannibalization, the use in earlier settings is typically preferable to administration in later settings, as patient numbers tend to be higher and treatment duration is typically longer. For example, AstraZeneca estimates that in the top 8 countries (US, EU top 5, Japan and China), more than 200,000 early breast cancer patients receive treatment, compared to only 51,000 in the front-line metastatic setting. The number of patients declines further to 20,000 in the salvage setting. This is reflected in drug revenues: while Roche's Perjeta, which is entrenched in the adjuvant setting, generates annual sales of ca. CHF 4bn, the company's Kadcyla, which is typically relegated to pre-treated metastatic settings, generates annual revenues of just more than CHF 2bn. Her2-positive gastric cancer represents a much smaller, but nonetheless lucrative opportunity, compared to breast cancer, with Roche's Herceptin estimated to have approached CHF 1bn in annual sales in the gastric cancer indication at peak.

We see sizeable commercial potential before risk adjustment under any scenario

In the absence of a clinical development plan aimed at positioning ES2B-C001 in earlier settings, we prudently base our base case forecast on peak sales before and after risk adjustment of EUR 0.7bn and EUR 28m, respectively, based on the assumption of a 25% penetration rate in the salvage setting and average cost of EUR 170,000 per patient. As previously mentioned, we note that both the eligible patient population and the treatment duration will depend on clinical data, with scope for significant upside if ES2B-C001 moves into earlier or HER2-low settings or gastric cancer. Owing to the asset's early stage, we currently tag the likelihood of approval at approximately 4% and would raise the success probability to 10% upon the transition to phase I.

Conclusion: significant optionality, sizeable target market

Safe and potent Her2-targeted molecules typically attain commercial success

We regard ES2B-C001 as ExpreS2ion Biotech's flagship asset based on its compelling initial pre-clinical data, expected phase I readiness from next year and blockbuster potential in various tumor settings. Whilst it is too early to speculate about the molecule's most likely potential future position in the rapidly evolving treatment paradigm for Her2-driven tumors or about other key determinants of peak sales potential such as treatment duration, we would anticipate the molecule to attain commercial success under nearly any scenario if it can be proven to be safe and potent.

Financial forecasts

Current budget excludes fresh inflows of capital

Following Bavarian Nordic's decision not to pursue a regulatory submission and/or commercial launch of the Covid-19 vaccine ABNCoV2 and given the current capital market conditions, which largely preclude rights issues by early-stage biotechnology companies, ExpreS2ion Biotech embarked on a cash preservation journey. The company has implemented cost savings measures designed to ensure cash reach to 2025 even in the absence of any cash inflows related to milestones or other dilutive or non-dilutive funding. Clinical work, including the planned phase I study for the Her2-targeted cancer vaccine ES2B-C001, has been excluded from the company's budget and is subject to separate funding, for example in the form of grants. ExpreS2ion recently launched a three-year non-cash incentive program for its management and employees in the form of warrants, resulting in dilution of less than 4%. This type of compensation plan is customary for small public companies for purposes of talent retention in the context of the higher base salaries large pharmaceutical and biotechnology companies can offer.

Cash reach to at least 2025e

Cost base set to decline due to headcount reductions, completion of ES2B-C001 pre-clinical work

At the 9m 2023 stage, management reiterated the company's commitment to ensuring cash reach to 2025e. At the end of September, the cash position stood at more than SEK 77m. Revenues in Q3 2023 were negligible at less than SEK 2m, while operating costs stood at SEK 24m. Excluding any potential clinical work that would be subject to separate funding, operating costs are expected to decrease significantly over the coming quarters as a result of headcount reductions and the absence of ES2B-C001-related R&D expenses following the expected near-term completion of pre-clinical work on the asset.

The company has excluded the following potential sources of cash from its current projections:

- **Dividend from AdaptVac:** Following the expected receipt of a DKK 74m (ca. SEK 113m) milestone from Bavarian Nordic in respect of ABNCoV2 next year, AdaptVac could conceivably pay a dividend, subject to its own funding needs (we note that AdaptVac reported a cash position of DKK 9.1m at the end of last year, following a net loss of DKK 4.8m) and approval by both shareholders. ExpreS2ion Biotech owns a 34% stake in AdaptVac, implying that it could potentially be eligible to receive a one-off dividend of up to SEK 38m. Such a dividend could conceivably be sufficient to fund an investigator-driven phase I trial of ES2B-C001 or could be used to support additional work on the exploratory pipeline. Alternatively, it could be used to further extend cash reach. However, we note several imponderables, such as NextGen Vaccine's propensity to approve a material dividend, particularly in an environment where it is unclear when AdaptVac might be able to tap the capital markets for external funding as and when the company might wish to incur significant R&D expenses. It is unknown to us whether AdaptVac might be amenable to an arrangement where ExpreS2ion Biotech would reduce its stake in the joint venture in return for a dividend but note that AdaptVac agreed to a decrease in ExpreS2ion Biotech's stake several years ago in the context of the ES2B-C001 licensing agreement.
- **Grants** might be obtained and would enable the company to progress key assets and thus to crystallize value but would probably not extend cash reach as they would typically be tied to the development of specific assets rather than being available for general corporate purposes. We note the possible availability of EU grants for an investigator-driven phase I trial of ES2B-C001.
- **Exploratory pipeline monetization** could provide upside in the mid-term, though we note the company's inclination to conduct some clinical work – which would require additional funding – prior to seeking to monetize assets based on its expression system.
- **Capital markets:** barring a significant improvement in key indicators and sentiment, we would not expect dilutive financing to become available soon. Even specialized financing solutions such as asset finance or convertible bonds might be difficult to access for early-stage projects, in our opinion.

Potential dilution from warrant programs and other measures

The risk of significant dilution appears low

We do not currently view dilution as a major risk to existing shareholders, given the current difficulties associated with obtaining dilutive funding as described above, and given modest risk of dilution from the company's existing warrant programs.

TO8 series warrants have already been exercised

At the end of Q3 2023, the total number of shares outstanding amounted to 51,404, 958, including the exercise of warrants from the TO8 series issued in connection with a rights issue earlier this year. (18.5% of the warrants were exercised for the subscription of 2,115,191 shares at a price of SEK 1.57, resulting in a cash inflow of SEK 3.4m).

Potential dilution from TO9 series (new incentive program) is <4%

On 9 November, an EGM resolved to allow the company to issue up to 2,000,000 warrants to executives and employees under a non-cash incentive program. This constitutes the TO9 series of warrants. The exercise period is in late 2026; the exercise price is SEK 1.27, which is the 130% of the volume weighted average price at Nasdaq First North Growth Market during ten trading days up to and including the day of the EGM at which the warrant proposal was resolved upon. Exercise is subject to the warrant holders being employed by ExpreS2ion Biotech in good standing. The maximum potential dilution to existing shareholders is approximately 3.8%.

Warrants with a 2024 exercise window are out of the money

Two other warrant programs already vest in 2024; however, the warrants are currently significantly out of the money. They include:

- **TO6 – exercise window October through December 2024.** This program covers 1 million warrants with a strike price of approximately SEK 17.
- **TO7 – exercise window June through August 2024.** This program covers up to 1,050,000 warrants with a higher strike price.

Valuation: SOTP-based FV of SEK 9/share

Our conservative assumptions include late-line use only of the cancer vaccine ES2B-C001

Our NPV-based sum-of-the-parts model shown below suggests a fair value of SEK 477m, or SEK 9 per share on a fully diluted basis, based on arguably conservative assumptions. As previously noted, our base case assumption for the cancer vaccine ES2B-C001, which accounts for approximately half of our fair value estimate, is that it will be relegated to the salvage setting, with significant upside in case of positive data in lucrative earlier settings. Although the project is expected to be phase I ready from next year, we heavily risk-adjust our forecasts, which are based on a success probability of slightly less than 4%. We prudently do not attribute any value to ExpreS2ion Biotech's 34% stake in AdaptVac, other than the portion of the expected Bavarian Nordic milestone in relation to ABNCoV2 attributable to the company, which we estimate at SEK 38m on a pre-tax basis. Moreover, we have refrained from attributing a value to the focus pipeline, pending substantive pre-clinical data. Our fully diluted number of shares estimate assumes the exercise of all TO9 warrants in late 2026, although some forfeiture is typically observed with this type of program due to employee attrition. In the absence of visibility on timelines to profitability, we do not include tax-loss carry-forwards as an asset in our valuation on a standalone basis but note that this could be a consideration in a hypothetical bid scenario. We have applied a 10% discount rate.

Pipeline newsflow provides value inflection points

Upside notably arises from the de-risking of pipeline assets, from the potential use of ES2B-C001 in earlier lines of cancer treatment, from the focus pipeline, and from any potential value of AdaptVac's underlying business. Downside risks arise primarily from funding constraints and the potential failure of assets in development. Key newsflow over the next twelve to 18 months includes the expected phase I readiness of ES2B-C001 in breast cancer, phase IIb data in malaria and announcements of lead candidates from the exploratory pipeline.

Sum of the Parts Valuation	NPV (SEK m)	Per Share (SEK)	% of Total Fair Value
ES2B-C001	242	4.54	50 %
Malaria	84	1.57	17 %
Influenza	56	1.05	12 %
ABNCoV2 milestone - AdaptVac stake	38	0.71	17 %
Total	**420**	**7.86**	**87 %**
Net cash (debt)	57	1.06	12 %
Shares outstanding (Pro Forma for Dilution)	53.4		
Fair Value	**477**	**9.00**	100 %

Source: Pareto research

PROFIT & LOSS (fiscal year) (SEKm)	2018	2019	2020	2021	2022	2023e	2024e	2025e
Revenues	**9**	**14**	**15**	**14**	**6**	**9**	**9**	**9**
EBITDA	**(16)**	**(16)**	**(28)**	**(47)**	**(126)**	**(102)**	**(50)**	**(40)**
Depreciation & amortisation	(3)	(3)	(3)	(2)	(1)	-	-	-
EBIT	**(18)**	**(19)**	**(31)**	**(48)**	**(128)**	**(102)**	**(50)**	**(40)**
Net interest	(1)	(1)	(4)	1	1	(0)	(0)	(0)
Other financial items	-	-	-	-	-	-	-	-
Profit before taxes	**(19)**	**(20)**	**(35)**	**(48)**	**(127)**	**(102)**	**(50)**	**(40)**
Taxes	2	2	3	4	8	-	-	-
Minority interest	-	-	-	-	-	-	-	-
Net profit	**(17)**	**(17)**	**(32)**	**(44)**	**(119)**	**(102)**	**(50)**	**(40)**
EPS reported	(1,22)	(0,63)	(1,15)	(1,59)	(3,39)	(2,21)	(0,97)	(0,78)
EPS adjusted	**(1,22)**	**(0,63)**	**(1,15)**	**(1,59)**	**(3,39)**	**(2,21)**	**(0,97)**	**(0,78)**
DPS	-	-	-	-	-	-	-	-

BALANCE SHEET (SEKm)	2018	2019	2020	2021	2022	2023e	2024e	2025e
Tangible non current assets	1	1	1	1	1	1	2	2
Other non-current assets	9	7	5	105	6	5	10	12
Other current assets	5	5	6	9	19	7	7	7
Cash & equivalents	6	5	107	37	111	58	5	(38)
Total assets	**21**	**19**	**119**	**152**	**137**	**74**	**24**	**(16)**
Total equity	8	(1)	95	140	103	54	4	(36)
Interest-bearing non-current debt	7	1	2	2	2	2	2	2
Interest-bearing current debt	-	-	-	-	-	-	-	-
Other Debt	6	18	22	10	32	4	18	18
Total liabilites & equity	**21**	**19**	**119**	**152**	**137**		**24**	**(16)**

CASH FLOW (SEKm)	2018	2019	2020	2021	2022	2023e	2024e	2025e
Cash earnings	(13)	(12)	(17)	(47)	(100)	(102)	(50)	(40)
Change in working capital	0	(1)	(2)	1	0	-	-	-
Cash flow from investments	(1)	(1)	(1)	1	(0)	(3)	(3)	(3)
Cash flow from financing	19	13	123	75	167	53	-	-
Net cash flow	5	(1)	101	(70)	74	(53)	(53)	(43)

VALUATION (SEKm)	2018	2019	2020	2021	2022	2023e	2024e	2025e
Share price (SEK end)	**5,3**	**3,26**	**9,9**	**33,3**	**15,4**	**1,52**	**1,52**	**1,52**
Number of shares end period	14	28	28	28	38	51	51	51
Net interest bearing debt	1	(4)	(104)	(35)	(109)	(57)	(4)	39
Enterprise value	**74**	**86**	**168**	**885**	**469**	**21**	**75**	**118**
EV/Sales	8,4	6,2	11,0	-	-	2,5	8,8	13,8
EV/EBITDA	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
EV/EBIT	-	-	-	-	-	-	-	-
P/E reported	-	-	-	-	-	-	-	-
P/E adjusted	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
P/B	8,8	-	2,9	6,6	5,6	1,5	20,9	-

FINANCIAL ANALYSIS	2018	2019	2020	2021	2022	2023e	2024e	2025e
ROE adjusted (%)	-	-	-	-	-	-	-	-
Dividend yield (%)	-	-	-	-	-	-	-	-
EBITDA margin (%)	-	-	-	-	-	-	-	-
EBIT margin (%)	-	-	-	-	-	-	-	-
NIBD/EBITDA	(0,05)	0,25	3,69	0,76	0,86	0,56	0,07	(0,99)
EBITDA/Net interest	-	-	-	52,94	-	-	-	-

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Appendix A

Disclosure requirements in accordance with Commission Delegated Regulation (EU) 2016/958 and the FINRA Rule 2241

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Companies	No. of shares	Holdings in %
Austevoll Seafood	1 052 265	0,52 %
Bonheur	243 588	0,57 %
Pareto Bank	16 124 046	23,08 %
Pexip Holding	814 576	0,78 %
SpareBank 1 Nord-Norge	5 006 421	4,99 %
SpareBank 1 SMN	2 944 385	2,27 %
SpareBank 1 SR-Bank	2 544 527	0,99 %
SpareBank 1 Østfold Akershus	1 227 128	9,91 %
SpareBank 1 Østlandet	6 990 591	6,58 %
Sparebanken Møre	376 833	0,76 %
Sparebanken Vest	8 869 865	8,08 %
SpareBank 1 Sørøst-Norge	2 830 852	4,49 %

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Please find below an overview of material interests in shares held by employees in Pareto Securities AS, in companies where a recommendation has been produced or distributed by Pareto Securities AS. "By material interest" means holdings exceeding a value of NOK 50 000.

Company	Analyst holdings*	Total holdings
2020 Bulkers		10 534
2G Energy		340
ABB Ltd.		580
Adevinta		4 000
Aker ASA	500	2 377
Aker BP		10 084
Aker Carbon Capture		8 976
Aker Horizons		502 071
Aker Solutions		1 131
AMSC ASA		3 600
Aprila Bank		22 675
Austevoll Seafood		3 548
B3 Consulting Group		2 000
Bakkafrost		600
BB Biotech		460
BioInvent		15 000
Bonheur		30 718
Bouvet		5 500
BW Energy		73 427
BW LPG		1 950
BW Offshore		3 000
Cloudberry Clean Energy		8 690
Cool Company		5 610
Crayon		21 151
Deep Value Driller		7 800
Dermapharm Holding SE		750
DNB		16 577
DNO		74 331
Elkem		62 170
Elmera Group ASA		32 755
Embracer Group		32 520
Encavis AG		630
Eneti		525
Equinor		4 473
Europris		17 718
Evolution		52
Flex LNG		595
Frontline		11 820
Gaming Innovation Group		10 000
Genel Energy		5 700
Getinge		260
GFT Technologies		270
Gjensidige Forsikring	519	3 540
Grieg Seafood		13 201
Hafnia Ltd.		106 223
Höegh Autoliners		10 923
International Petroleum Corp		7 786
Kahoot		1 689
Kambi Group plc		430
Kitron		22 314
Komplett ASA		21 754
Kongsberg Gruppen		490
Kontron AG		350
Lea bank		16 355
Lerøy Seafood Group		127 350
Lundin Mining Corp.		7 652
Morrow Bank		121 200
Mowi		10 256
MPC Container Ships		7 190
Multitude		2 443
Mutares SE & Co. KGaA		433
NorAm Drilling		6 883
Nordic Semiconductor		9 877
Norsk Hydro		77 351
Norske Skog		85 606
Northern Ocean		8 400
Norwegian Air Shuttle		63 509
Odfjell Drilling		2 186
Okeanis Eco Tankers		7 912
Orkla		7 636
Otovo ASA		35 400
Panoro Energy		34 533
Pareto Bank		767 562
PetroTal		20 000
Pexip Holding		814 576
Protector Forsikring		9 436
PSI Software		300
QleanAir		3 498
Quantafuel		16 812
REC Silicon		5 739
SalMar		224
Sandnes Sparebank		2 500
Scorpio Tankers		2 227
Seadrill Ltd		10 410
Solstad Offshore		124 000
SpareBank 1 Nord-Norge	725	744
SpareBank 1 SMN		6 023
SpareBank 1 SR-Bank		11 697
SpareBank 1 Sørøst-Norge		3 000
SpareBank 1 Østlandet	1 100	1 100
Sparebanken Møre		1 080
Sparebanken Sør		15 000
Sparebanken Vest		966
Standard Supply		20 000
Stolt-Nielsen		2 100
Stora Enso		1 396
Storebrand	100	2 600
Storytel		17 115
Subsea 7		21 471
Telenor		4 183
Telia Company		5 000
TGS		11 595
Thule Group		800
Transocean		10 000
Valaris		3 427
Vestas Wind Systems		1 225
Viscom		1 300
Vår Energi		284 626
Yara		18 774
Zaptec		19 800

This overview is updated monthly (last updated 14.11.2023).

*Analyst holdings refers to positions held by the Pareto Securities AS analyst covering the company.

Appendix B

Disclosure requirements in accordance with Article 6(1)(c)(iii) of Commission Delegated Regulation (EU) 2016/958

Overview over issuers of financial instruments where Pareto Securities AS have prepared or distributed investment recommendation, where Pareto Securities AS have been lead manager/co-lead manager or have rendered publicly known not immaterial investment banking services over the previous 12 months:

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Archer
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Ayfie Group AS
Beerenberg Services AS
Benchmark Holdings
Bonheur ASA
Borr Drilling
BW Epic Kosan
BW Group Limited
Cabonline Group Holding
Cadeler
CCS Finansiering AS
CEMAsys AS
CERAFILTEC
Clemens Kraft AS
COOL Company
DEAG Deutsche Entertainment AG
Delignit
Desert Control AS
DOF
Dolphin Drilling
Edda Wind
EdR Certified Origin Physical Gold Plc
Eidesvik Offshore
EIK Servering AS
Endur ASA
Energy Drilling Pte. Ltd.
Fertiberia Corporate S.L.U.
First Camp Group
Fishbase Group AS
Floatel
Fredrikstad Energi AS
Frøy ASA
Gjensidige Forsikring ASA
Golar LNG
Golden Energy Offshore Services AS
Grøntvedt AS
Hafnia Ltd.
Hertha BSC GmbH & Co. KGaA
HydrogenPro
HÖRMANN Industries GmbH
Idavang A/S
Instabank ASA
International Petroleum Corp. ("IPC")
Katjes International GmbH&CO
Kezzler AS
Klaveness Combination Carriers ASA
KMC Properties
Kraft Bank
Kron AS
Krow Bidco AS
Kruse Smith
LoneStar Group
Maha Energy
Mime Petroleum
Mintra Group
Morrow Bank
Mutares SE & Co. KGaA
NEXT Biometrics Group ASA
Nordic Unmanned
Norlandia Health & Care Group
Norse Atlantic
Northern Ocean
OKEA
Pareto Bank
PGS
PHM Group Holding
Point Resources Holding AS
Prosafe
PulPac AB
Quality Living Residential AS
ReFuels
RelyOn Nutec A/S
Salmon Evolution
Scala Eiendom
Seacrest Petroleo
Shamaran Petroleum
Skandia GreenPower
Standard Supply
Tasik Toba Subsea AS
Treasure ASA
Vantage Drilling International
Viking Venture 28 AS
Waldorf Production Ltd.
Wattif EV
wheel.me
Ziton A/S

This overview is updated monthly (this overview is for the period 01.11.2022 – 31.10.2023).

Appendix C

Disclosure requirements pursuant to the Norwegian Securities Trading Regulation § 3-11 (4)

Distribution of recommendations

Recommendation	% distribution
Buy	72 %
Hold	26 %
Sell	2 %

Distribution of recommendations (transactions*)

Recommendation	% distribution
Buy	96 %
Hold	4 %
Sell	0 %

* Companies under coverage with which Pareto Securities Group has on-going or completed public investment banking services in the previous 12 months

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Appendix D

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Hanza AB
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Media & Games Invest plc
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Appendix E

Disclosure requirements in accordance with Article 6(1)(c)(i) of Commission Delegated Regulation (EU) 2016/958

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Foris AG
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Logwin AG
manz AG
MAX Automation SE
Merkur Privatbank AG
Meta Wolf AG
MLP SE
MPC Container Ships ASA
Muehlhahn AG
Mutares SE & Co. KGaA
OVB Holding AG
ProCredit Holding AG
Progress-Werk Oberkirch AG
Pryme B.V.
PSI AG
Pyrum Innovations AG
Salmones Camanchaca S.A.
Seven Principles AG
SHOP APOTHEKE EUROPE N.V.
SMT Scharf AG
Surteco AG
Syzygy AG
TTL Beteiligungs- und Grundbesitz AG
Uzin Utz SE
VERIANOS SE
Viscom AG
WPU - Waste Plastic Upcycling AS

Appendix F

Disclosure requirements in accordance with Article 6(1)(c)(iv) of Commission Delegated Regulation (EU) 2016/958

Sponsored Research
Pareto Securities has entered into an agreement with these companies about the preparation of research reports and – in return - receives compensation.

2G Energy AG
BayWa AG
BB Biotech AG
Biotest AG
Biotest AG Pfd.
Cliq Digital AG
Daldrup & Söhne AG
Delignit
Dermapharm Holding SE
Enapter AG
epigenomics AG
exceet Group
Expres2ion Biotech Holding AB
Gesco AG
GFT Technologies SE
Gigaset AG
Heidelberg Pharma AG
Hypoport SE
INTERSHOP Communications AG
Kontron AG
Logwin AG
MAX Automation SE
Merkur Privatbank AG
MLP SE
Mutares SE & Co. KGaA
Mynaric AG
OHB SE
ProCredit Holding AG
Progress-Werk Oberkirch AG
PSI AG
Siegfried Holding AG
SMT Scharf AG
Surteco AG
Syzygy AG
Viscom AG

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