Activating the immune system to fight cancer

Company update

Oslo

12 June 2018

Important
NOTICE AND DISCLAIMER

This report contains certain forward-looking statements based on uncertainty, since they relate to events and depend on circumstances that will occur in future and which, by their nature, will have an impact on the results of operations and the financial condition of Targovax. Such forward-looking statements reflect the current views of Targovax and are based on the information currently available to the company. Targovax cannot give any assurance as to the correctness of such statements.

There are a number of factors that could cause actual results and developments to differ materially from those expressed or implied in these forward-looking statements. These factors include, among other things, risks or uncertainties associated with the success of future clinical trials; risks relating to personal injury or death in connection with clinical trials or following commercialization of the company's products, and liability in connection therewith; risks relating to the company's freedom to operate (competitors patents) in respect of the products it develops; risks of non-approval of patents not yet granted and the company's ability to adequately protect its intellectual property and know-how; risks relating to obtaining regulatory approval and other regulatory risks relating to the development and future commercialization of the company's products; risks that research and development will not yield new products that achieve commercial success; risks relating to the company's ability to successfully commercialize and gain market acceptance for Targovax's products; risks relating to the future development of the pricing environment and/or regulations for pharmaceutical products; risks relating to the company's ability to secure additional financing in the future, which may not be available on favorable terms or at all; risks relating to currency fluctuations; risks associated with technological development, growth management, general economic and business conditions; risks relating to the company's ability to retain key personnel; and risks relating to the impact of competition.

1 Introduction

2. ONCOS oncolytic virus program
3. TG mutRAS neoantigen vaccine
4. Targovax pipeline
5. Corporate overview

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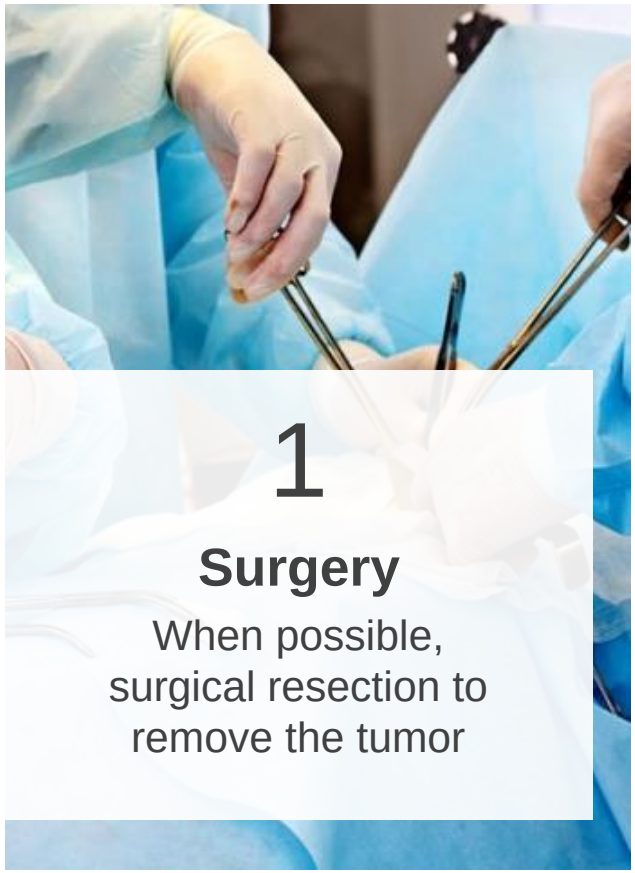
From a sequential treatment strategy directly targeting the cancer…



1

Surgery

When possible, surgical resection to remove the tumor

2

Radiotherapy

Tumor irradiation to shrink tumor volume

3

Chemotherapy

Cornerstone treatment in most cancer forms

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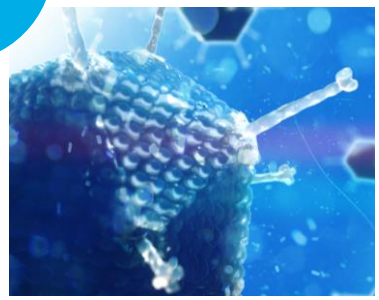
…to an integrated combination approach

HARNESSING THE POWER OF THE PATIENT'S OWN IMMUNE SYSTEM

Targovax focus



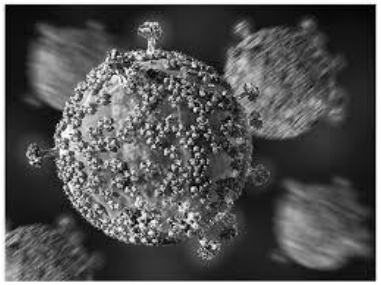
Immune activators

Oncolytic viruses, vaccines

Immune modulators

Checkpoint inhibitors

Surgery - Radio - Chemo

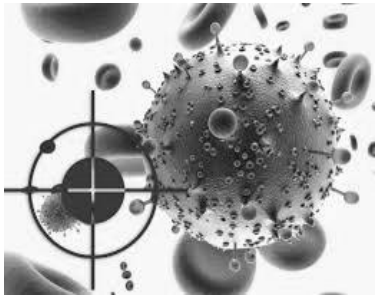


Immune boosters

CAR-Ts, TCRs

Targeted therapy

PARPs, gene therapy, etc.



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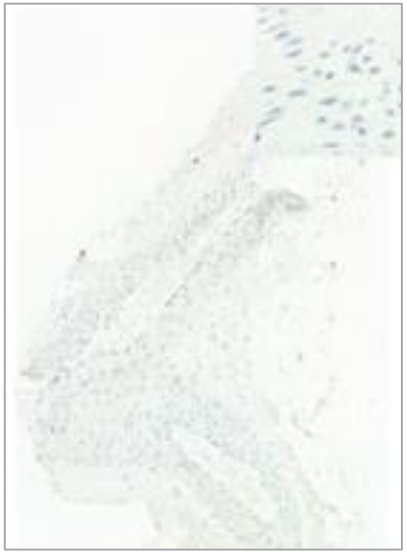
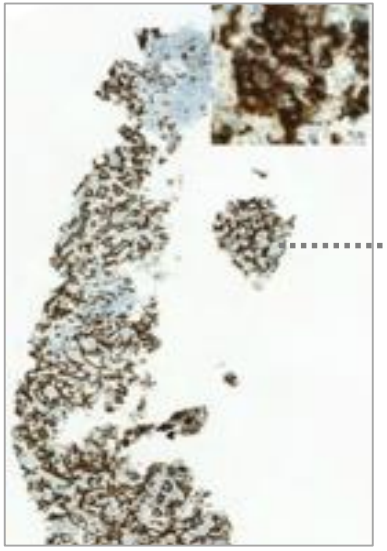
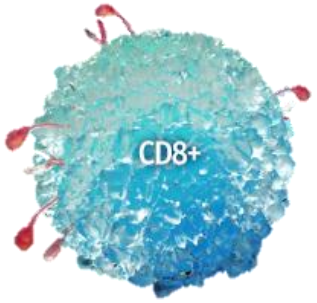
Mode of action

IMMUNE ACTIVATORS TURN COLD TUMORS HOT

Example from Targovax Phase I trial – Ovarian cancer patient







CD8+ T-cell

Recognizes and destroys cancer cells

Before injection of oncolytic virus

"Cold tumor"
No T-cell infiltration

After injection of oncolytic virus

"Hot tumor"
Full T-cell infiltration

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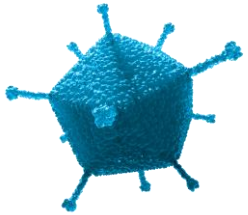
Targovax has two programs in clinical development, with an

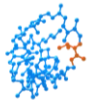
ONCOLYTIC VIRUS LEAD PRODUCT CANDIDATE



ONCOS
Oncolytic virus

Lead product candidate

- Genetically **armed adenovirus**
- **Alerts the immune system** to the presence of cancer antigens
- **Induces T-cells** specific to the patients' tumor
- **4 ongoing trials**



TG
Neoantigen vaccine

Pipeline product

- **Shared neoantigen**, therapeutic cancer vaccine
- Triggers the immune system to **recognize mutant RAS cancers**

Activates the immune system

Triggers patient-specific responses

No need for individualization

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Major deals over the past 6 months are driving increasing

INDUSTRY INTEREST IN ONCOLYTIC VIRUSES

Acquirer	Target	Type of deal	Deal value
MERCK	Viralytics Developers of Oncolytic Immunotherapies	**M&A** Phase I/II oncolytic virus	**USD 400m** up-front cash
janssen PHARMACEUTICAL COMPANIES OF Johnson&Johnson	BeneVir	**M&A** Pre-clinical oncolytic virus	**USD 140m** up-front cash **Up to USD 1b** total value
Bristol-Myers Squibb	PsiOxus THERAPEUTICS	**BD partnership** IV delivered oncolytic virus	**USD 15m** milestone payment **Up to USD 1b** total value

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2

ONCOS oncolytic virus program

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ONCOS-102
Phase I single agent proof of concept

IMMUNE ACTIVATION DEMONSTRATED

ONCOS-102 Phase I trial design:

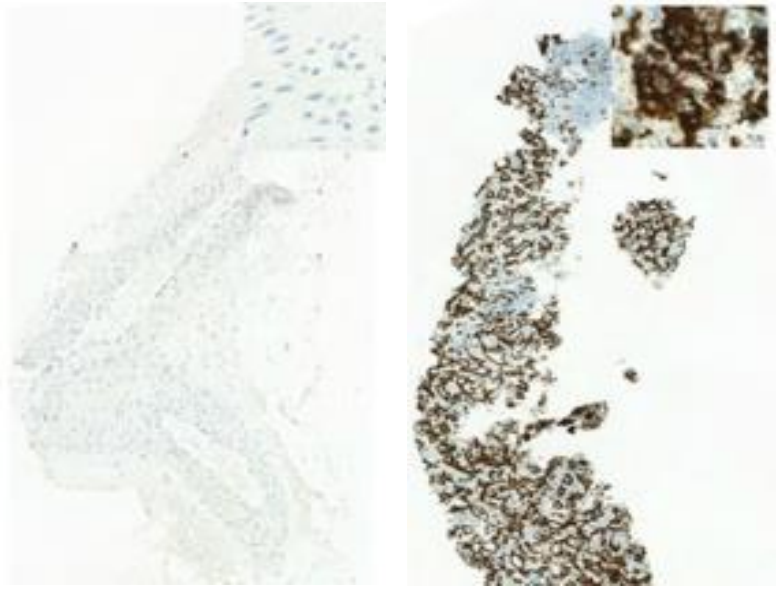
- 12 patients, 7 different solid tumors
- No other treatment options left
- Monotherapy 9 injections

Top-line results:

- 100% innate immune activation
- 11/12 patients increase in TILs
- Abscopal effect
- Tumor specific T-cells in blood
- Correlation with survival

Cold tumor turned hot

CD8+ T-cell staining



Pre-treatment **Post-treatment**

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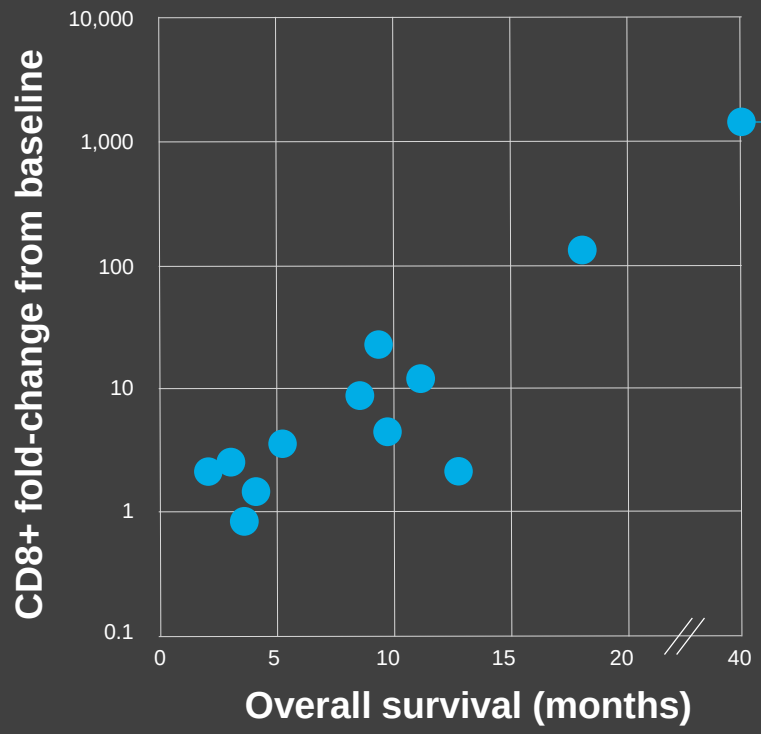
ONCOS-102

Phase I single agent proof of concept

CD8+ T-CELL INFILTRATION CORRELATES WITH SURVIVAL

Fold-change CD8+ T-cell count vs. survival

r = 0.75 p = 0.005



Case example

- Ovarian cancer
- Failed on 5 chemotherapies
- Tumor specific T-cells after 2 years
- Stable disease for 3 years
- Survived 3.5 years

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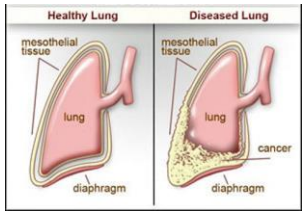
ONCOS

CLINICAL DEVELOPMENT STRATEGY

1

Mesothelioma
Orphan disease

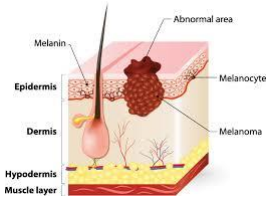


Target launch indication

- Orphan drug
- Addition to SoC
- Controlled trial
- 15,000 incidents

2

CPI synergy
Intra-tumoral

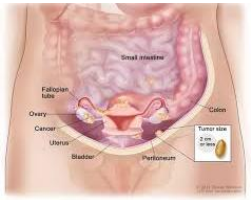


Indications with limited CPI effect

- Melanoma Ph I
- Combo w/PD-1
- >100,000 incidents

3

CPI synergy
Intra-peritoneal

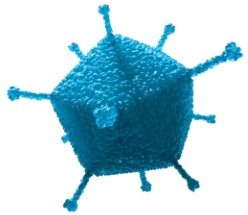


Peritoneal malignancies

- Ovarian/colorectal
- Ph I/II
- Combo w/PD-L1
- >100,000 incidents

4

Next generation
ONCOS viruses



Double transgene adenoviruses

- Novel targets
- *In vivo* testing

SOURCE: Global Data, EU big 5 + US

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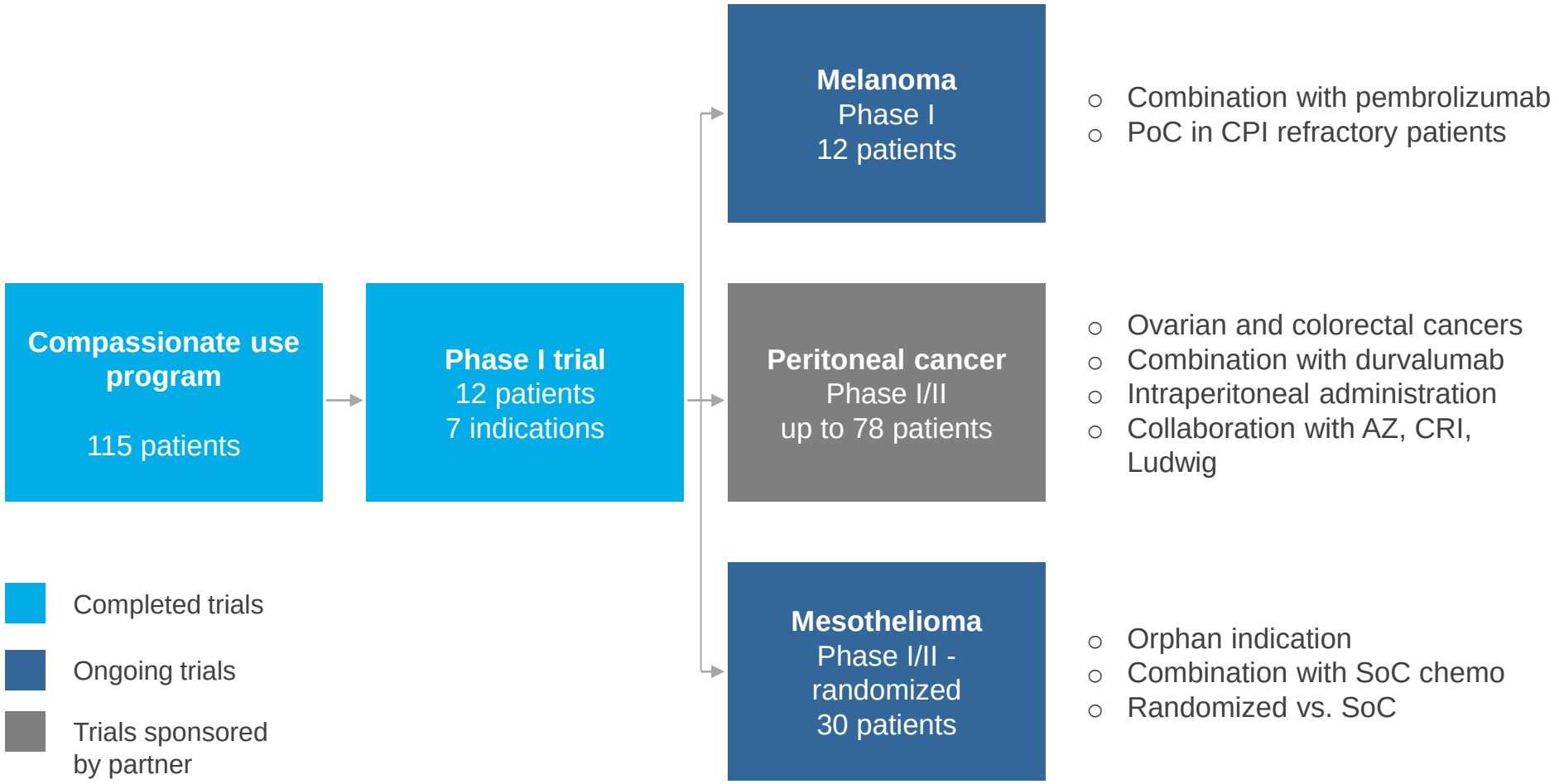
ONCOS

CLINICAL PROGRAM OVERVIEW



- Combination with pembrolizumab
- PoC in CPI refractory patients

- Ovarian and colorectal cancers
- Combination with durvalumab
- Intraperitoneal administration
- Collaboration with AZ, CRI, Ludwig

- Orphan indication
- Combination with SoC chemo
- Randomized vs. SoC

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ONCOS-102 has the potential to become a breakthrough

IN THE TREATMENT OF MESOTHELIOMA

Rationale for ONCOS-102 opportunity in mesothelioma

Become frontline therapy

- Currently testing efficacy in combination with SoC chemotherapy in both 1st and 2nd line in 30 patients randomized Phase I/II trial
- Good safety profile

Orphan Drug Designation

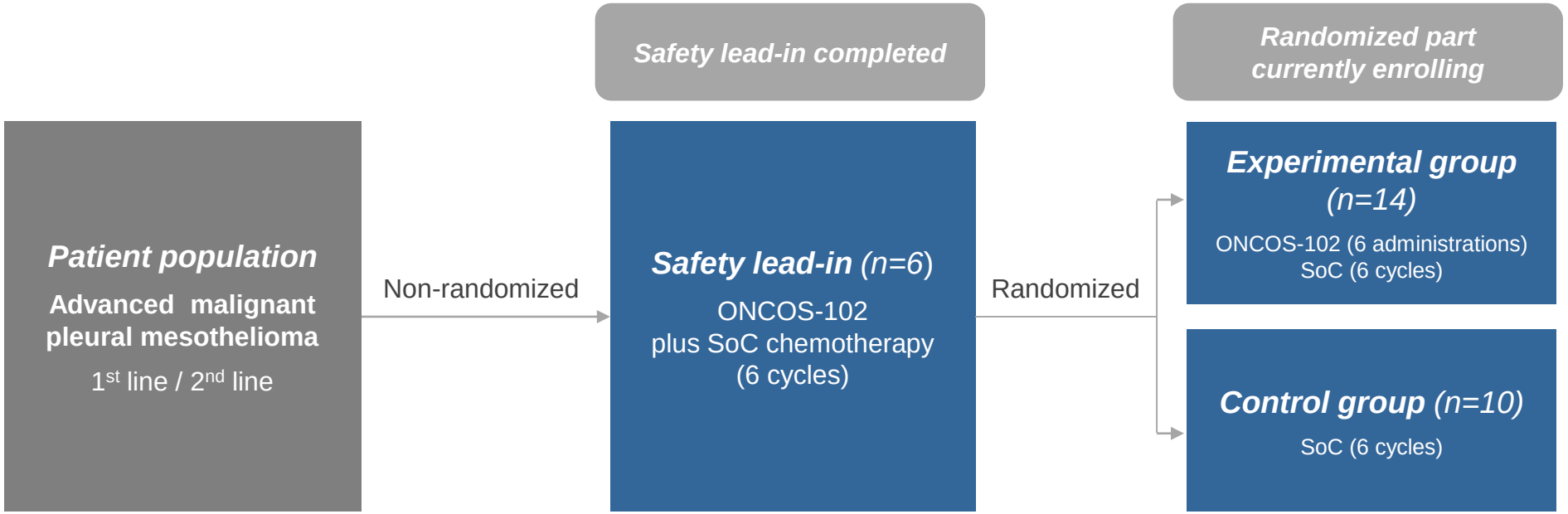
- High unmet medical need, ONCOS-102 has ODD
- Opportunity for priority regulatory review
- 7 year market exclusivity in the US and 10 years in the EU

Limited competition

- CPIs show some early signs of efficacy, but are potential ONCOS-102 combinations, rather than competitors
- No/few competing viruses and vaccines in clinical development

ONCOS-102 in malignant pleural mesothelioma

PHASE I/II STUDY DESIGN IN COMBINATION WITH SoC



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ONCOS-102 in malignant pleural mesothelioma

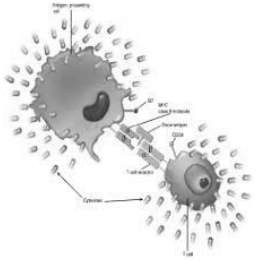
SIGNAL OF EFFICACY IN THE FIRST 6 PATIENTS

1
Safety

- ✓ ONCOS-102 **well-tolerated** in combination **with chemotherapy**

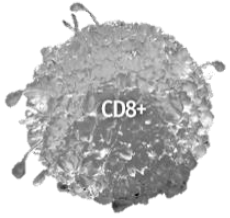
2
Innate immune activation

- ✓ **Systemic increase of pro-inflammatory cytokines** in 6/6 patients (IL-6, TNFα and IFNγ)



3
Adaptive immune activation

- ✓ Increase in **tumor infiltration of CD4+ and CD8+ T cells** in 3/4 patients



4
Clinical activity

- ✓ **Clinical activity** seen in **3/6 patients** after 6 months
- ✓ **50% disease control rate**

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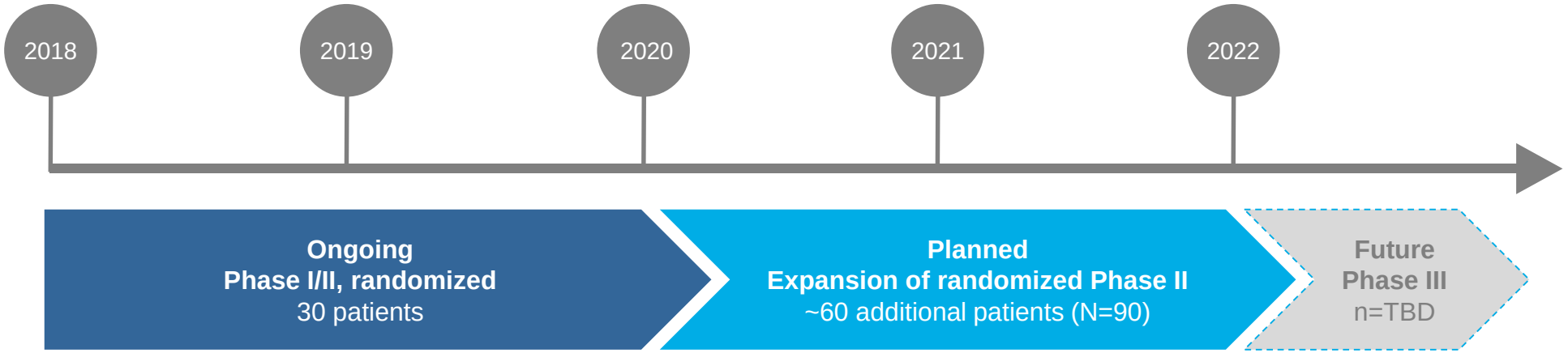
ONCOS-102 in malignant pleural mesothelioma

DEVELOPMENT STRATEGY AND INDICATIVE TIMELINES



- Randomized ORR and OS data 30 patients
- Decide on possible CPI combination arm
- EMA & FDA advisory meetings

- Randomized ORR and OS data 90 patients
- Potentially use as basis for a submission for conditional approval
- Potentially start Phase III OS trial for full MAA

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3

TG mutRAS neoantigen vaccine

4. Targovax pipeline
5. Corporate overview

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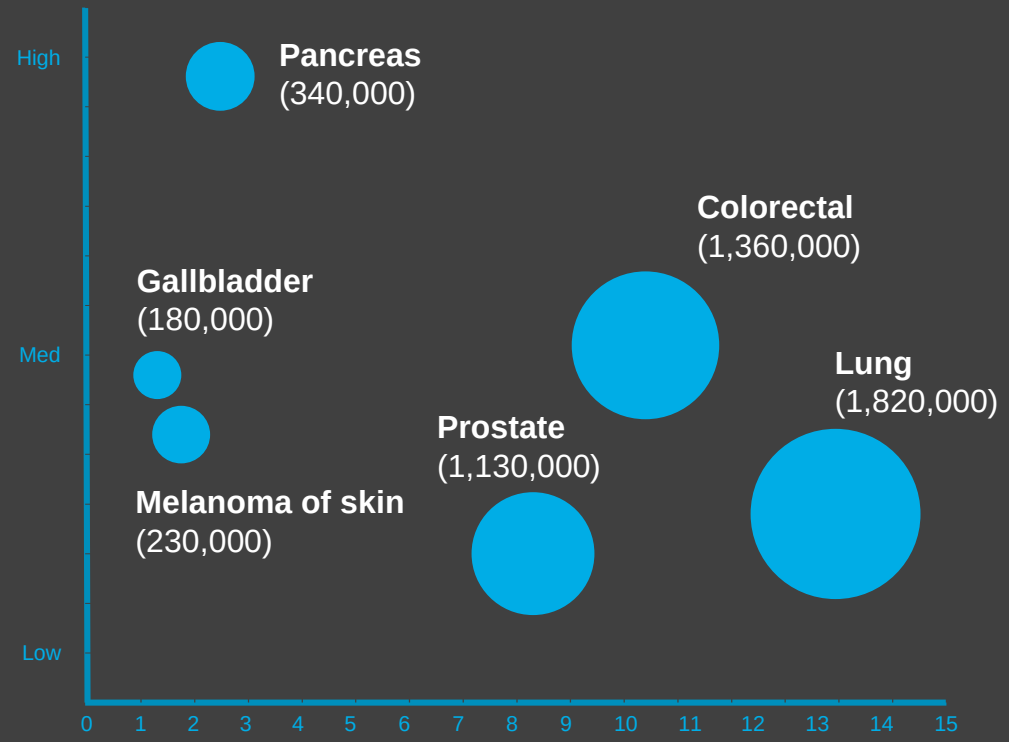
The RAS gene is mutated in

90% OF PANCREATIC AND 50% OF COLORECTAL CANCERS

Frequency of RAS mutations

Global cancer incidents per 10,000
(xx) = no. of cancer patients



- RAS mutations are oncogenic and result in **uncontrolled cell division**
- **There are no existing therapies** targeting RAS mutations
- Targovax' TG program is a **unique vaccine approach for mutant RAS cancer**

Fernandez-Medarde; RAS in Cancer and Developmental Diseases; Genes & Cancer. 2011;2(3)

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WHY THE TG APPROACH MAY WORK

where other cancer vaccines have failed

Historical lessons learned	*The TG approach*
Target often poorly defined and not cancer specific, mainly TAAs	Mutated **RAS is a well-defined, cancer-specific neo-antigen**, driving the cancer
No or insufficient immune activation of the adaptive immune system	TG peptides are **clinically proven** to induce both **CD4+ and CD8+ mutRAS T-cells**
Most clinical trials have been done in **advanced disease**	Initial focus on **resected patients, with stronger immune system**

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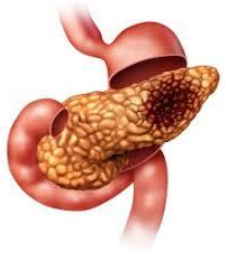
TG

CLINICAL DEVELOPMENT STRATEGY

1

Resected pan-creatic cancer



TG01 indication

- Ph I/II completed
- Next steps currently being reassessed
- ~40 000 incidents

2

Colorectal cancer

TG02 lead indication

- Ph I trial ongoing
- 50% mutRAS
- ~0.5m incidents

3

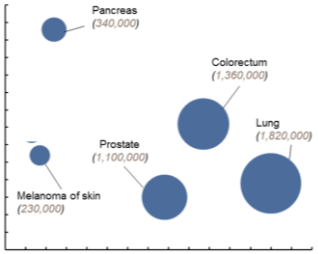
Lung cancer (NSCLC)

TG02 potential future indication

- 30% mutRAS
- ~0.5m incidents

4

All mutRAS cancers



TG02 + TG03 long-term potential

- Up to 30% of all cancer patients

Source: Global data, Riva et al. Plos One 2017 Estimated total addressable patient number with RAS mutations in US, EU and China

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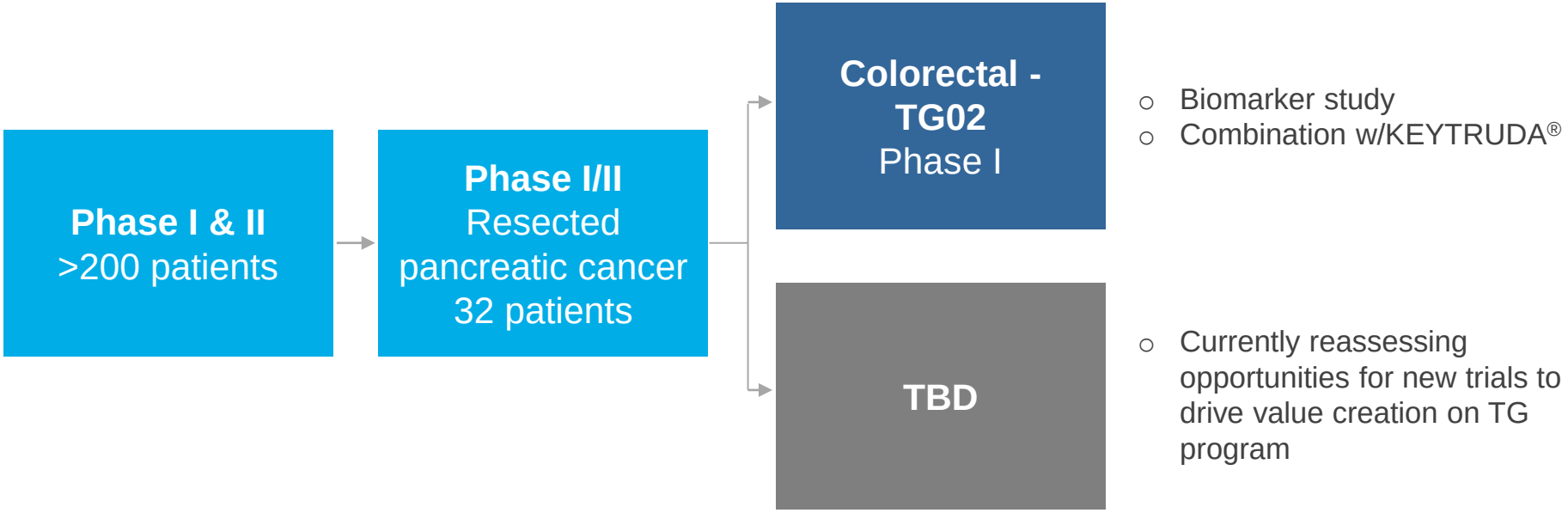
TG CLINICAL PROGRAM OVERVIEW



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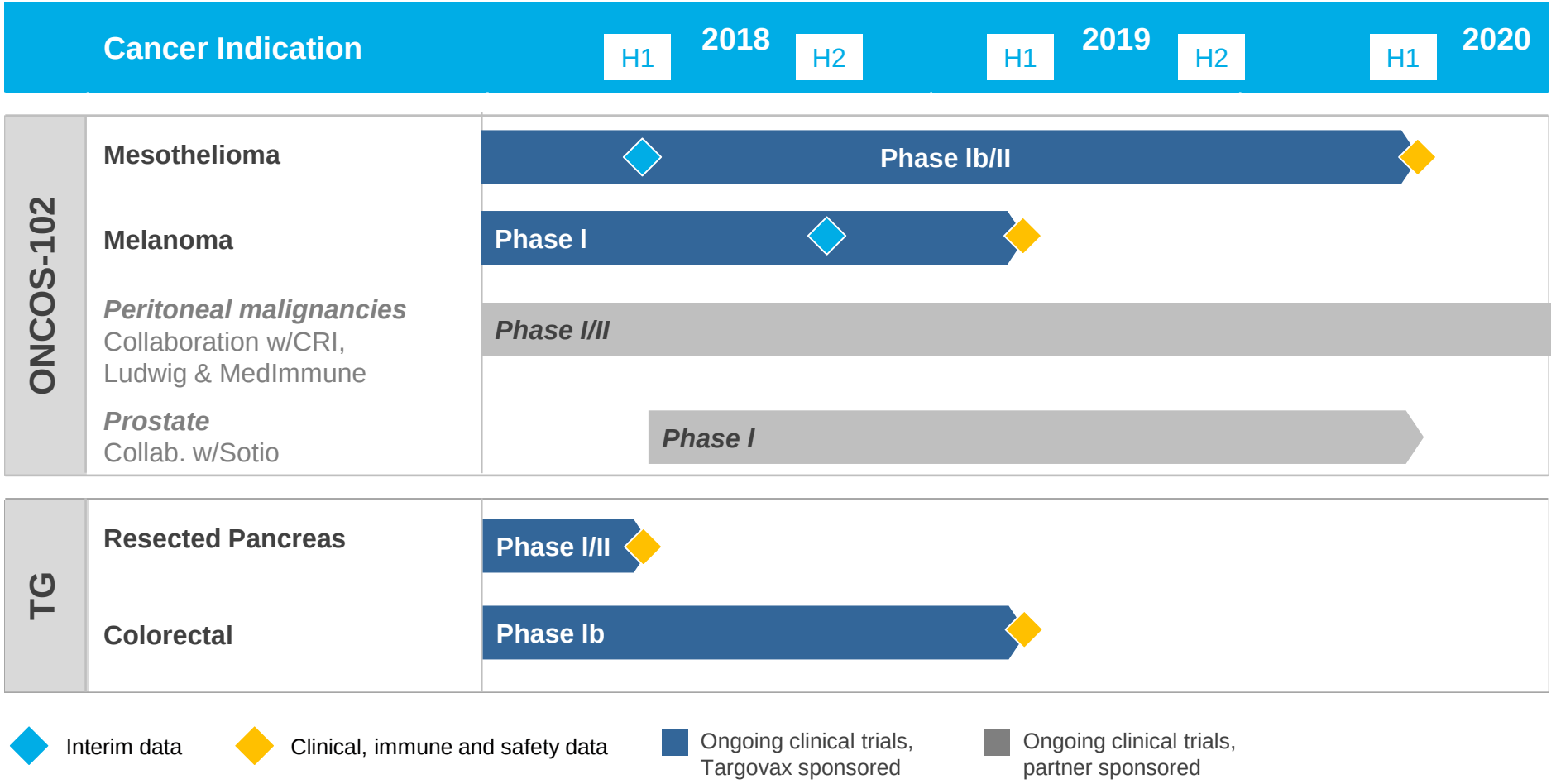
Targovax pipeline

5. Corporate overview

Targovax overall

CLINICAL PROGRAM TIMELINES



ACTIVATING THE PATIENT`S IMMUNE SYSTEM

to fight cancer

Oncolytic virus lead product

Strong single agent data

Several upcoming data points

Defined path to market

Aim to become frontline treatment in mesothelioma

Orphan drug designation

Innovative pipeline

Next gen double transgene viruses in testing

Signal of efficacy for mutRAS neoantigen vaccine

5 Corporate overview

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TARGOVAX HAS A SOUND FINANCIAL POSITION

with cash to complete the planned clinical program well into 2019

Operations

Cash end of Q1 - Mar 31st 2018

229 / **29**

NOK million **USD million**

Net cash flow - total Q1

-32 / **-4**

NOK million **USD million**

Annual run rate - last four quarters

113 / **15**

NOK million **USD million**

The share

Market Cap - at share price NOK ~17

900 / **110**

NOK million **USD million**

Daily turnover - rolling 6 month avg.

3 / **0.4**

NOK million **USD million**

Analyst coverage

DNB, ABG Sundal Collier, Arctic, Redeye, Norske Aksjeanalyser, Edison

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THE SHAREHOLDER BASE IS STRONG

with a mix of specialist, generalist and retail investors

	Shareholder	Estimated ownership No. of shares	Ownership
1	HealthCap	12 405 584	23,6 %
2	Nordea	4 626 839	8,8 %
3	RadForsk	4 427 255	8,4 %
4	KLP	2 117 144	4,0 %
5	Statoil	1 187 981	2,3 %
6	Thorendahl Invest AS	1 000 000	1,9 %
7	Danske Bank (nom.)	828 250	1,6 %
8	Timmuno AS	728 601	1,4 %
9	Prieta AS	720 000	1,4 %
10	Sundt AS	500 000	1,0 %
	Other shareholders (	20 806 325	39,5 %
	Total	**52 609 867**	**100,0 %**

Key international investors participating in PP 2017

- Nyenburgh (NL)
- Trium (UK)
- Millenium Capital Partners (UK)
- Interogo (SWE)
- AP3 (SWE)
- Aramea AM (DE)

Shares and options

57.4m shares fully diluted

- Average strike price on options ~NOK 20
- Total dilutive effect of options is 8.1%

52.6m ordinary shares

- Management ownership: 0.3%
- >4,100 shareholders

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