
**Arming the patient's immune system to fight cancer**

# 4Q & FY 2016 presentation

**16 February 2017**

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# Fourth quarter highlights

**Patents**

- Targovax granted an European patent for ONCOS-102, extending patent coverage
- Follows a similar US patent in June
- Both expire in 2029

**Finances**

- Cash NOK 172m
- Operating expenses NOK 31m
- Operating cash flow NOK -23m

**People**

- Øystein Soug appointed as CEO on 1 November

**Post-period**

- Erik Digman Wiklund appointed CFO, starting April 2017
- Encouraging top line two-year survival data from TG01 clinical trial in resected pancreatic cancer patients

* PoC = Proof of Concept

# TG01 Phase I/II resected pancreatic trial

- **Encouraging top line two-year survival data -**

# TG01 in resected pancreatic cancer: Encouraging survival rate and "signal" of efficacy

| | First Cohort | Modified Cohort |
|---|---|---|
| 1 Immunization schedule | • 26 vaccinations over 2 years | • 15 vaccinations over 2 years |
| 2 Patient population | • 15 eligible patients<br>• 19 ITT[1], 4 lost to follow up due to lack of consent | • Recruitment completed<br>• 13 patients |
| 3 Immune activation | • DTH response: 15 of 18<br>• T-cell response: 6 of 8 | • DTH response at 8 weeks: 4 of first 5<br>• *T-cell response: not yet available* |
| 4 Interim 1-year survival | • 14 of 15 patients alive after 1 year<br>• No patients died from pancreatic cancer during the first year | • Not planned |
| 5 2-year survival | • **13 of 19 patients (68%) alive after 2 year**<br>• Published* historical rate 30-53% suggests a signal of clinical efficacy for TG01<br>• Abstract submitted to ASCO 2017: efficacy, safety, immune activation data | • *1H18* |
| 6 Safety | • Generally well tolerated<br>• 4 allergic reactions triggering the "modified cohort" | • *Not yet available* |

[1] ITT – Intention to treat

[2] J Neoptolemos 2010, J van Loethem 2010, H Oettle 2013, M Sinn 2015, K Uesaka 2016 (In these reported studies overall survival is measured either from surgery or treatment randomization).

# TG – background – “reasons to believe”

**RAS**

- RAS mutations are neoantigens
- Regulate cell proliferation. Mutations cause abnormal cell growth
  - definition of cancer
- Exclusively found in cancer cells

**TG-peptides**

- Activate both RAS specific CD4+ and CD8+ T cells
  - recognize and destroy mutated RAS cells

**History**

- 120 patients treated with TG peptides in 1990’s
- Encouraging long-term survival for resected patients treated with TG01 or single TG peptides[1]

[1] Wedén et al, 2011 and Clinical trial reports

# Encouraging survival rate and “signal” of efficacy in TG01 trial

CT TG01-01; A Phase I/II Trial of TG01 and Gemcitabine as Adjuvant Therapy for Treating Patients with Resected Adenocarcinoma of the Pancreas

- 68% (13 of 19) of the patients in cohort 1 were alive two years after the resection
  - Published historical rate 30-53% suggests a signal of clinical efficacy for TG01[1]
- Abstract submitted to ASCO 2017 (June) from this 1st cohort
  - Efficacy, safety, immune activation
- In summary: encouraging survival rate and “signal” of efficacy

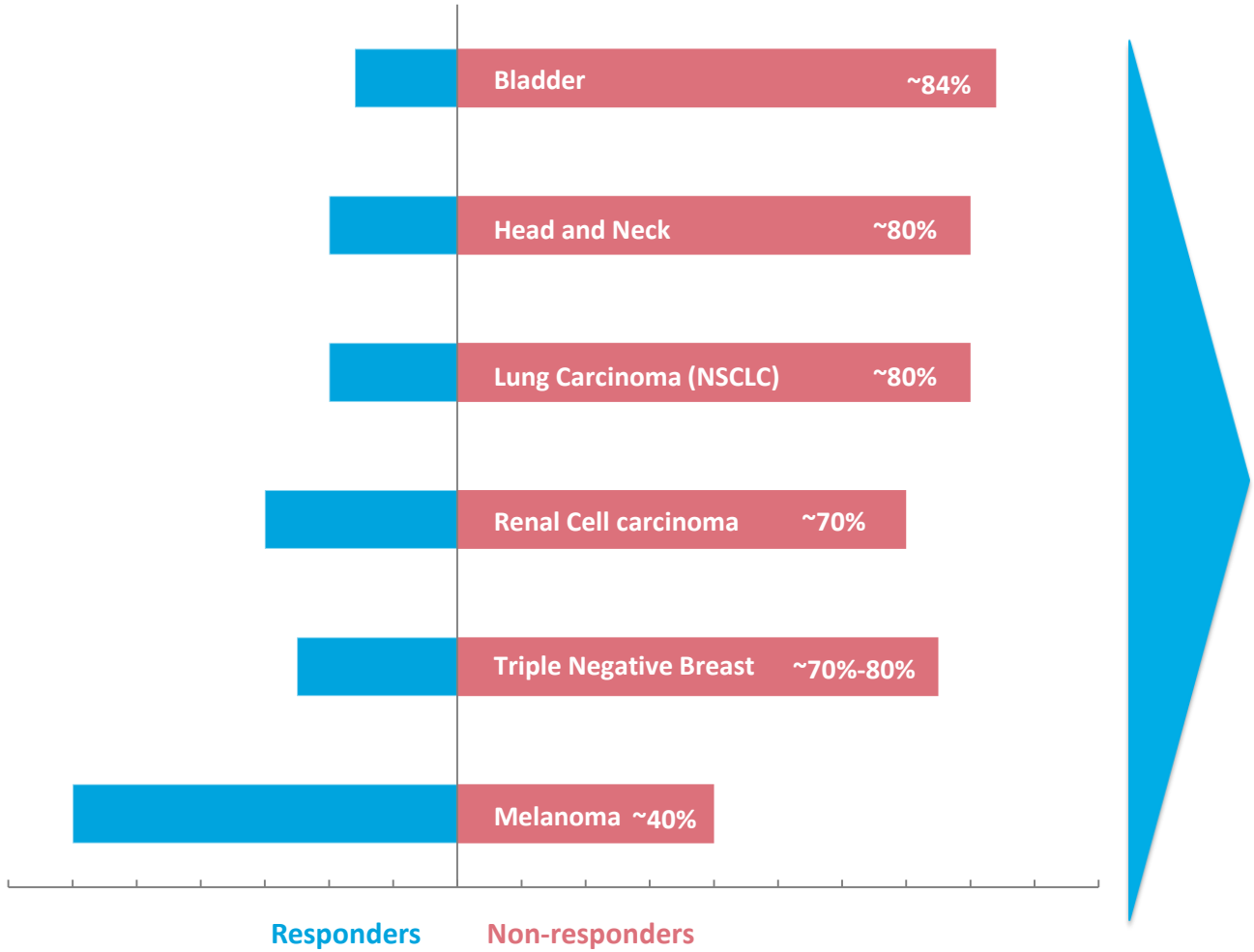
[1] J Neoptolemos 2010, J van Loethem 2010, H Oettle 2013, M Sinn 2015, K Uesaka 2016 (In these reported studies overall survival is measured either from surgery or treatment randomization).

# ONCOS-102 Phase I Melanoma trial

# - Clinical proof of platform -

# Large unmet need for checkpoint inhibitor refractory patients

***Response rate to checkpoint inhibitors (CPIs)***




ONCOS-102 can potentially activate non-responders to become susceptible to CPI's

# ONCOS-102: CPI refractory melanoma trial details

**Background**

- No standard of care for patients not responding to CPI

**Setting**

- Advanced malignant melanoma patients not responsing to CPIs
- Immune activate CPI non-responders with ONCOS-102, then re-challenge with a CPI (Keytruda)

**Cohorts**

- Six patients with prior PD1 monotherapy
- Six patients with prior PD1 plus Yervoy combination therapy

**Key endpoints**

- Safety
- Immune activation and clinical response data
- Correlation of immune activation and clinical response data

**Sequence**


Yervoy – generic name: ipilimumab
Keytruda – generic name: pembrolizumab

# How does ONCOS-102 work?

***At the tumor:***

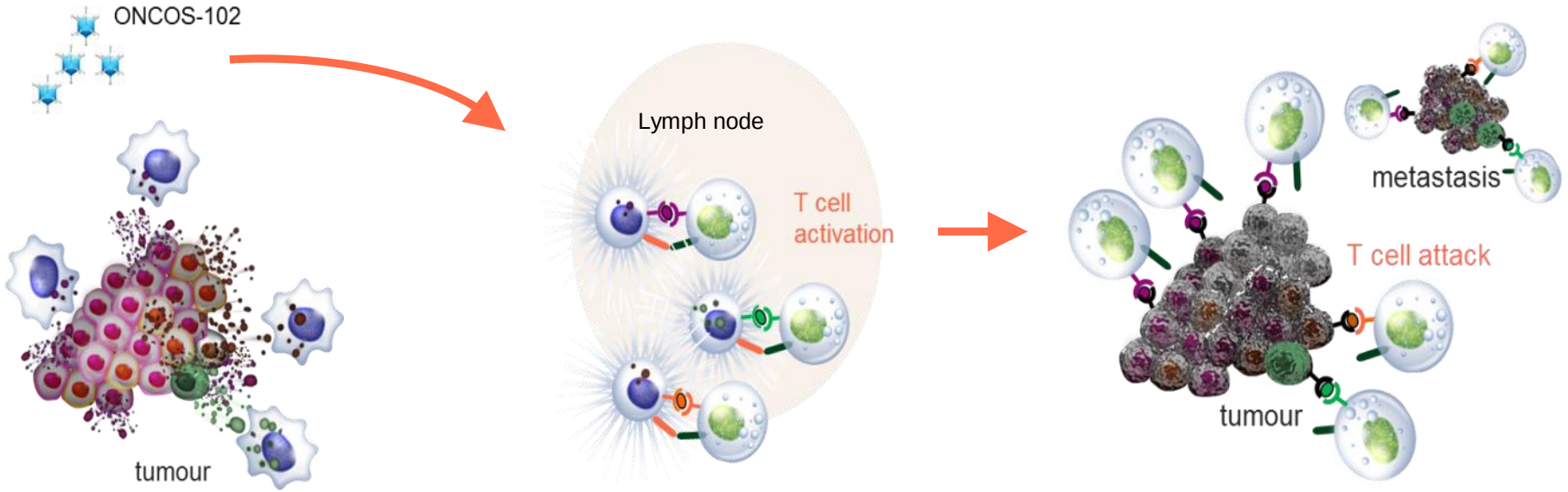
Virus injected directly into tumor, replicates, lyses cells and releases antigens. Immune system picks up antigens

***At the lymph node:***

Immune system starts production of tumor specific T-cells

***At the tumor lesions:***

T-cells find tumor lesions with corresponding tumor antigens and kill the cancer cells

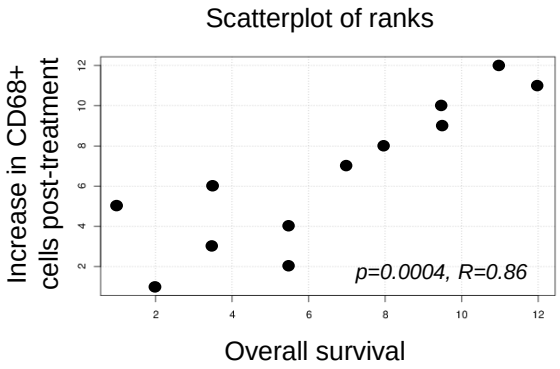


# Initial ONCOS-102 trial showed strong T-cell response

## Evidence that immune system recognizes tumor threat

Innate Immune System (biopsy)

- Induction of proinflammatory cytokines + fever (all patients)
- Infiltration of innate immune cells into tumors in 11 out of 12 patients



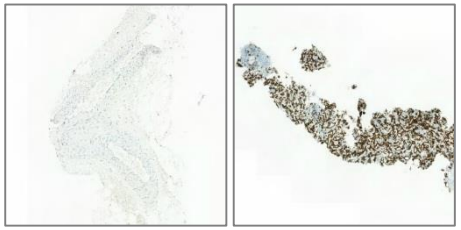

Correlation between post-treatment increase in innate immune cells and OS

## Evidence that T-cells find the tumor and are cell killing

Adaptive immune system (biopsy)

- Increase in T-cell infiltration into tumors (including CD8+ killer T-cells) in 11 out of 12 patients
- Observation in one non-injected distant metastasis

*OvCa. patient (FI1-19)*



Correlation between post-treatment increase in CD8+ T-cells and OS (p=0.008, R=0.74)

## Evidence that newly produced T-cells are tumor specific

Anti-tumor immune response (blood)

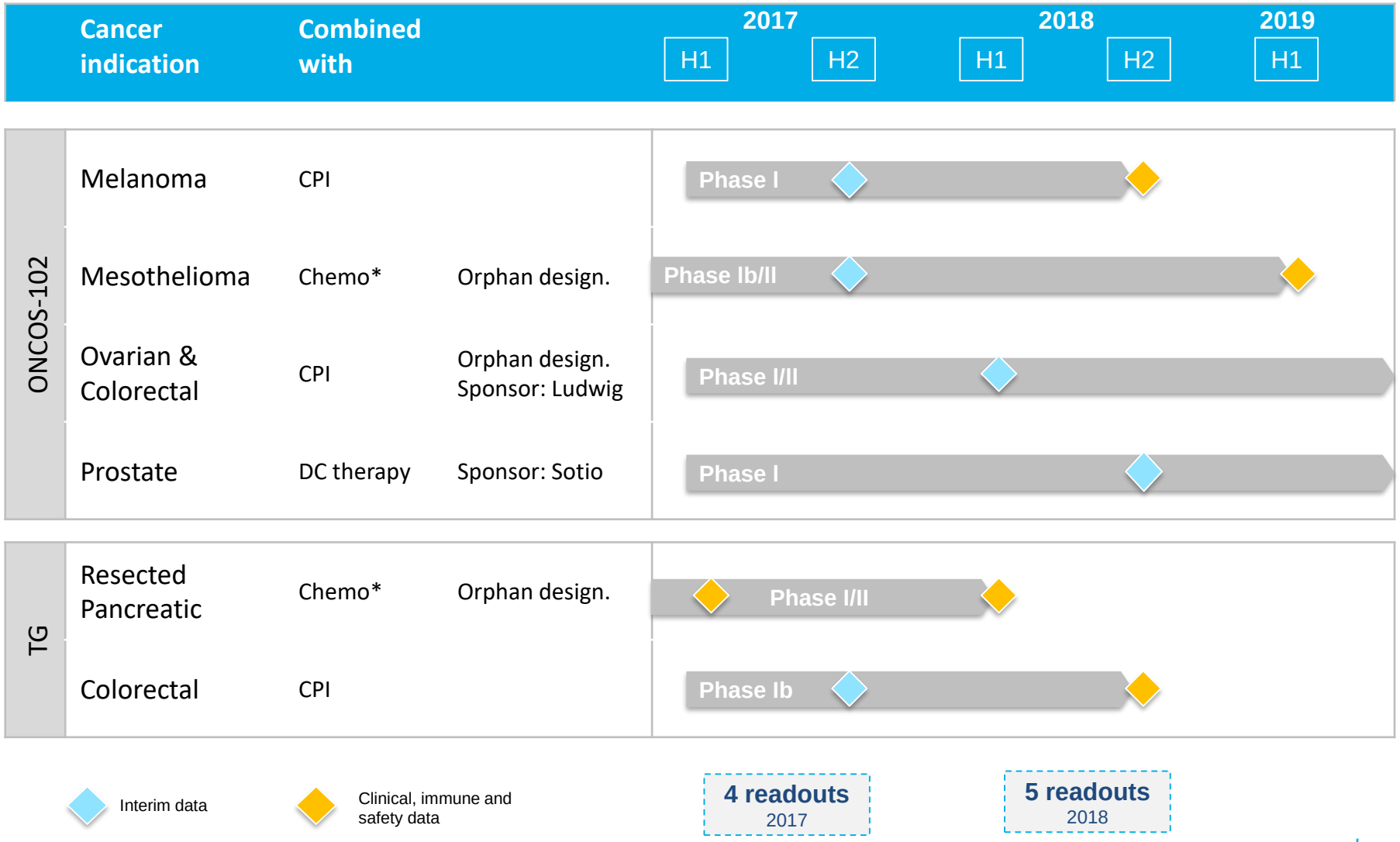
- Systemic induction of tumor-specific CD8+ T-cells

***Ovarian patient:***
*NY-ESO-1, MAGE-A1, MAGE-A3, and Mesothelin specific CD8+ cells*

***Mesothelioma patient:***
*MAGE-A3 specific CD8+ cells*

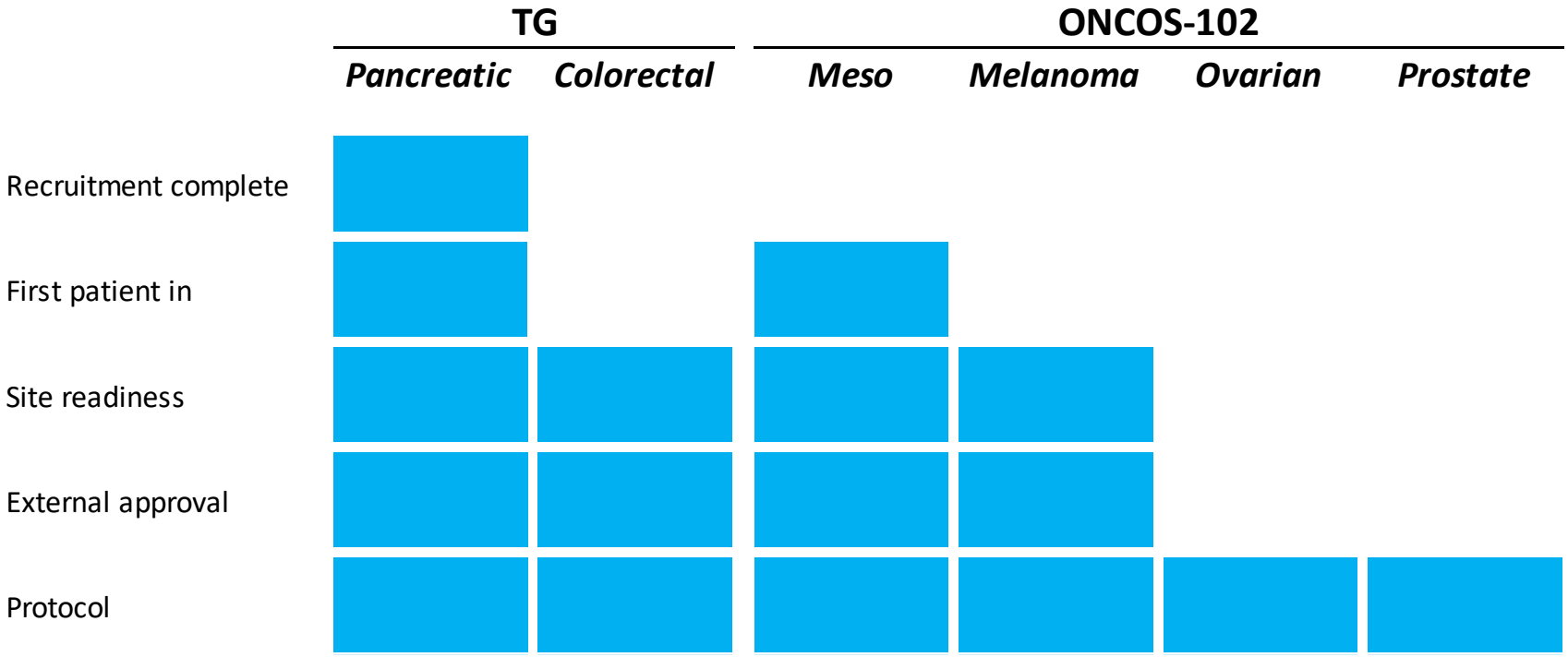
Associated with clinical benefit

# Six shots on goal




* In combination with Standard of Care Chemoterapy. Pemetrexed/cisplatin for Mesothelioma and Gemcitabine for Resected Pancreatic

# Where are we with the clinical trials?

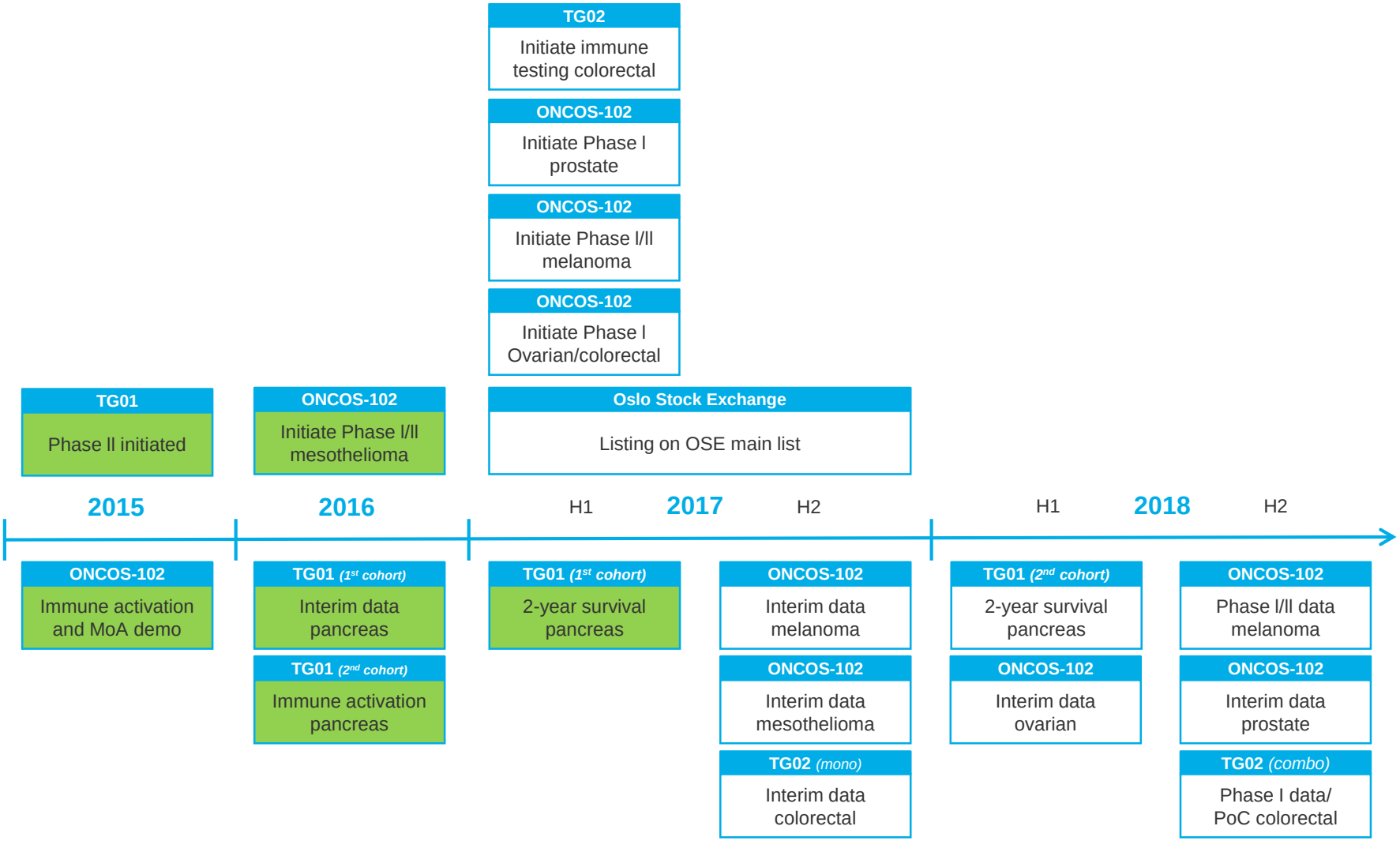


# Financial summary

| Operations | | | |
|---|---|---|---|
| **Cash** | **NOK 172m** | USD 20m | |
| **Yearly run rate** | **NOK 110m** | USD 13m | *Last four quarters* |
| **Annual opex** | **NOK 120m** | USD 14m | *Last four quarters* |

| The share | OSE: TRVX | | |
|---|---|---|---|
| **Daily liquidity** | **NOK 9m** | USD 1m | *Last two month's avg.* |
| **Market Cap** | **NOK ~1 bn** | USD 123m | *At share price NOK ~24* |
| **Debt** | **NOK 40m** | USD 5m | *EUR 6m conditional* |
| **No. of shares** | **42.2m** | | *44.9m fully diluted* |
| **Analysts** | DNB, ABG Sundal Collier, Arctic, Redeye, Norske Aksjeanalyser | | |

# Multiple near term value inflection points



# Arming the patient's immune system to fight cancer

| | |
|---|---|
| 1 **Core focus on immuno-oncology** | ✓ Lead product is an differentiated oncolytic adenovirus<br>✓ Targeting refractory solid, injectable tumors |
| 2 **Proprietary platforms and pipeline** | ✓ Promising Phase I data from two platform technologies<br>✓ Immunological findings linked to clinical benefit |
| 3 **Multiple near term value inflection points** | ✓ Six combination trials (Phase I and II)<br>✓ All six trials read out in 2017-2018 |
| 4 **Corporate** | ✓ Oslo IPO in July 2016 (OSE:TRVX)<br>✓ Cash at approx. NOK 172m |

# Appendix

# Financial Snapshot

NOK m

| | 4Q15 | 1Q16 | 2Q16 | 3Q16 | 4Q16 |
|---|---|---|---|---|---|
| **Total revenue** | **0** | **-** | **-** | **0** | **0** |
| External R&D expenses | -15 | -11 | -12 | -11 | -12 |
| Payroll and related expenses | -15 | -13 | -12 | -10 | -13 |
| Other operating expenses | -11 | -7 | -8 | -4 | -6 |
| **Total operating expenses** | **-41** | **-31** | **-32** | **-25** | **-31** |
| Operating loss | -41 | -31 | -32 | -25 | -31 |
| Net financial items | -1 | -1 | -1 | -1 | -1 |
| Loss before income tax | -42 | -32 | -33 | -26 | -32 |
| Net change in cash | -33 | -33 | -34 | 85 | -21 |
| **Net cash EOP** | **174** | **141** | **107** | **193** | **172** |

# Strong shareholder base as per 6 February 2017

| | Estimated ownership | |
|---|---|---|
| **Shareholder** | **No. of shares** | **Ownership** |
| HealthCap | 11 155 584 | 26,4 % |
| RadForsk | 4 077 255 | 9,7 % |
| Nordea | 2 594 239 | 6,1 % |
| Rasmussengruppen | 1 820 000 | 4,3 % |
| KLP | 1 703 333 | 4,0 % |
| Nordnet Livsforsikring | 1 207 802 | 2,9 % |
| Statoil | 915 981 | 2,2 % |
| Danske Bank (nom.) | 770 916 | 1,8 % |
| Nordnet Bank AB (nom.) | 739 998 | 1,8 % |
| Timmuno AS | 724 650 | 1,7 % |
| Prieta AS | 720 000 | 1,7 % |
| Sundt AS | 400 000 | 0,9 % |
| Pohjola | 320 966 | 0,8 % |
| DNB | 291 993 | 0,7 % |
| Tobech Invest AS | 286 449 | 0,7 % |
| Thorendahl Invest AS | 260 000 | 0,6 % |
| Netfonds Livsforsikring AS | 253 639 | 0,6 % |
| Avanza Bank AB (nom.) | 251 102 | 0,6 % |
| Danske Bank (nom.) | 182 791 | 0,4 % |
| Molnar | 181 800 | 0,4 % |
| Other shareholders (~2790) | 13 332 302 | 31,6 % |
| **Total** | **42 190 800** | **100,0 %** |

**42.2m ordinary shares**

- Management ownership: 2.1%
- Approx. ~2810 shareholders

**44.4m[1,2] shares fully diluted**

- Average strike price on options ~NOK 21
- Total dilutive effect of options is 5.6%[1]

[1] As per 30 December 2016
[2] Includes outstanding options (2,513,170) and Restricted Stock Units (129,991) to Board members