

Activating the patient's immune system to fight cancer

4Q and Full Year 2018

14 February 2019



targovax

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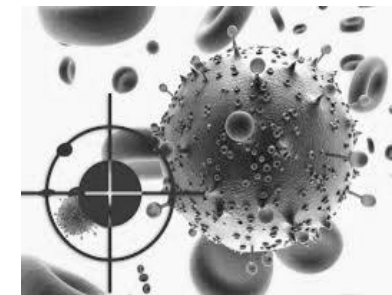
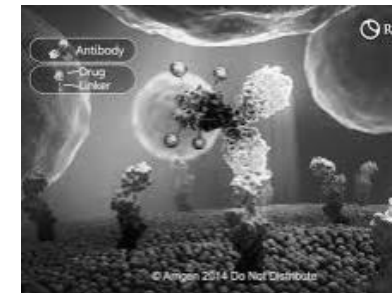
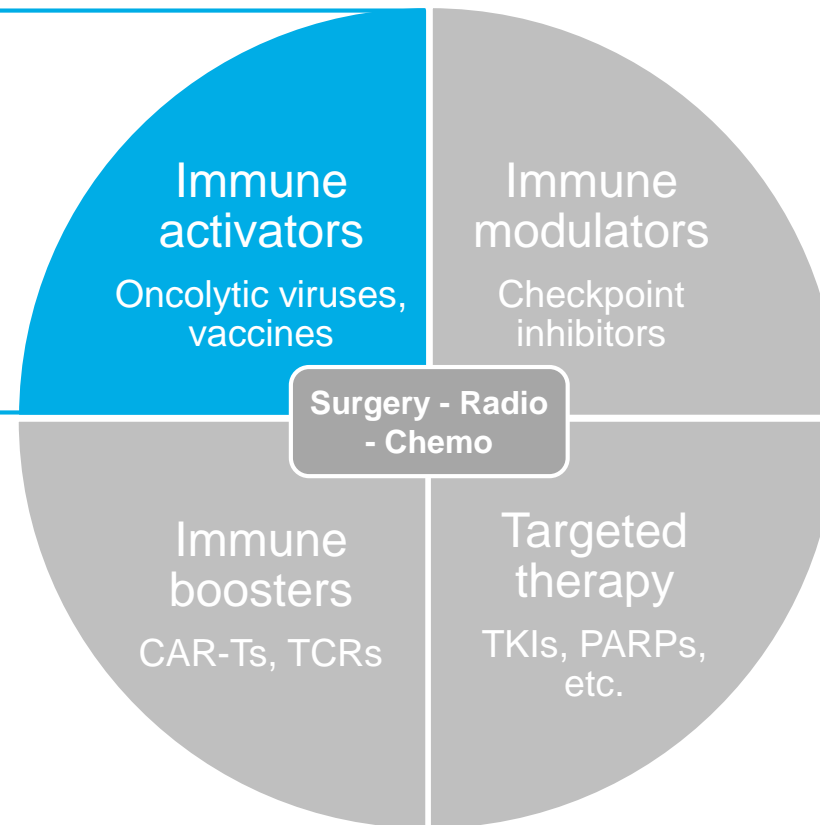
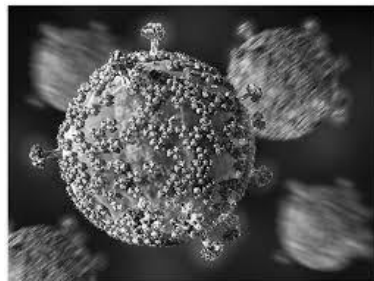
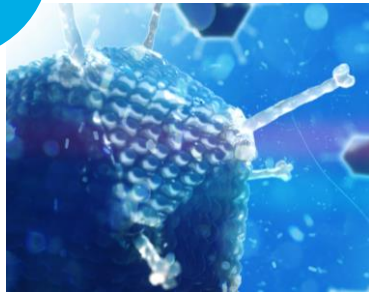
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Intro & Highlights

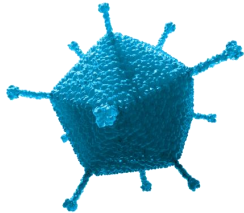
2. TG neo-antigen vaccine program
3. ONCOS oncolytic virus program
4. 4Q 2018 Financials

TARGOVAX'S POSITION IN THE FUTURE CANCER THERAPY LANDSCAPE

Targovax
focus



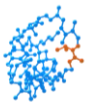
Targovax has two programs in clinical development, with an
ONCOLYTIC VIRUS LEAD PRODUCT CANDIDATE



ONCOS
Oncolytic virus

Lead product candidate

- Genetically **armed adenovirus**
- Turns **cold tumors hot**
- Induces **tumor specific T-cells**
- Single agent **phase I completed**
- **4 ongoing combination trials**



TG
Neoantigen
vaccine

Pipeline product

- **Shared neoantigen**, therapeutic peptide vaccine
- Triggers the **T-cell response** to oncogenic **RAS driver mutations**
- 32 patient **phase I/II trial completed**

*Activates the
immune system*

*Triggers patient-
specific responses*

*No need for
individualization*

PIPELINE OVERVIEW AND MILESTONES

Platform	Product candidate	Preclinical	Phase I	Phase II	Phase III	Last event	Next expected event
ONCOS oncolytic adenovirus	ONCOS-102	Mesothelioma Comb. w/ pemetrexed/cisplatin				Phase Ib safety lead-in cohort, incl. immune activation and ORR data (6 pts)	1H 2020 Randomized ORR data
		Melanoma Comb. w/Keytruda				ORR and immune activation (6 pts), 1/6 CR	1H 2019 ORR and immune data first cohort
		Peritoneal metastases ¹ Collab: Ludwig, CRI & AZ Comb. w/Imfinzi				First dose escalation cohort safety review (4 pts)	<i>Update by collaborator, expected 2019</i>
		Prostate Collab: Sotio Comb. w/DCVAC				First patient dosed	<i>Update by collaborator, expected 2019</i>
	Next-gen ONCOS	3 viruses undisclosed				Virus construct cloning and <i>in vitro</i> validation	2H 2019 Pre-clinical data
TG neo- antigen cancer vaccine	TG01	Pancreatic cancer Comb. w/gemcitabine				mOS 33.4 months Demonstrated mutant RAS-specific immune activation	1H 2019 3-year survival data
	TG02	Colorectal cancer Proof-of-mechanism Comb. w/Keytruda				First safety review, incl. immune activation data (3 pts)	1H 2019 Immune activation and mechanistic data (mono)
	TG02	CPI synergy TG + PD-1					2H 2019 Pre-clinical data

¹ Patients with advanced peritoneal disease, who have failed prior standard chemotherapy and have histologically confirmed platinum-resistant or refractory epithelial ovarian or colorectal cancer

■ Ongoing collaborator sponsored trials

2018 & 4Q HIGHLIGHTS

ONCOS

Melanoma CPI-refractory phase I:

- One complete response among first six patients
- Innate immune activation in all 6 patients
- Presented at KOL event in October

Mesothelioma phase I/II:

- 50% disease control rate after 6 months in six patient safety lead-in
- All patients were immune activated

ONCOS-102 Peritoneal cancer phase I/II:

- Safety evaluation of first dose cohort completed without any concerns

TG01

TG01 Resected pancreatic cancer phase I/II:

- Encouraging two-year survival, medium OS and medium DFS compared to historical control
- RAS-specific immune activation in 94% of patients

Corporate

- Granted product patent in the EU for TG to 2034
- Dr. Catherine Wheeler was elected to the Board
- Torbjørn Furuseth appointed CFO

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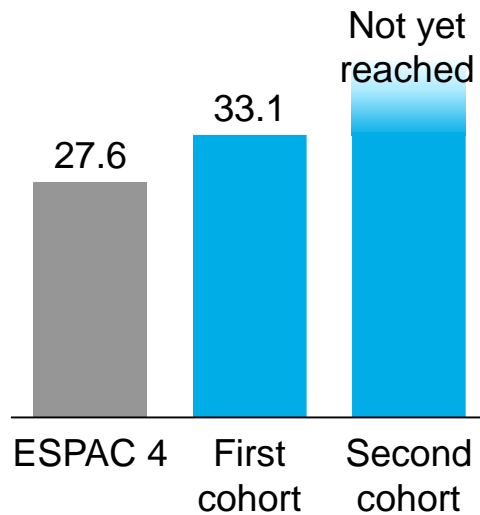
TG mutant RAS vaccine program

- 3. ONCOS oncolytic virus program
- 4. 4Q 2018 Financials

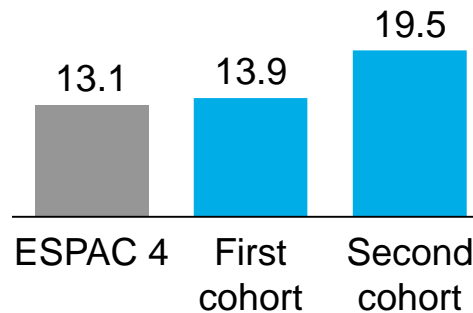
TG01 IN RESECTED PANCREATIC CANCER

EFFICACY SIGNAL SEEN IN PHASE I/II TRIAL

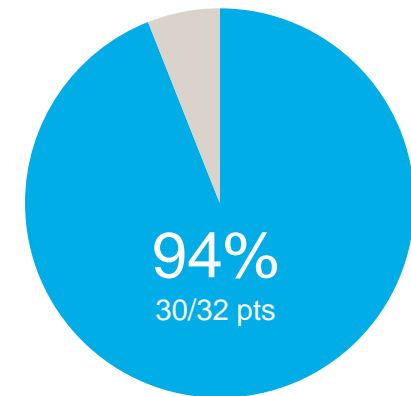
Median overall survival, months



Median disease free survival, months



RAS-specific immune activation



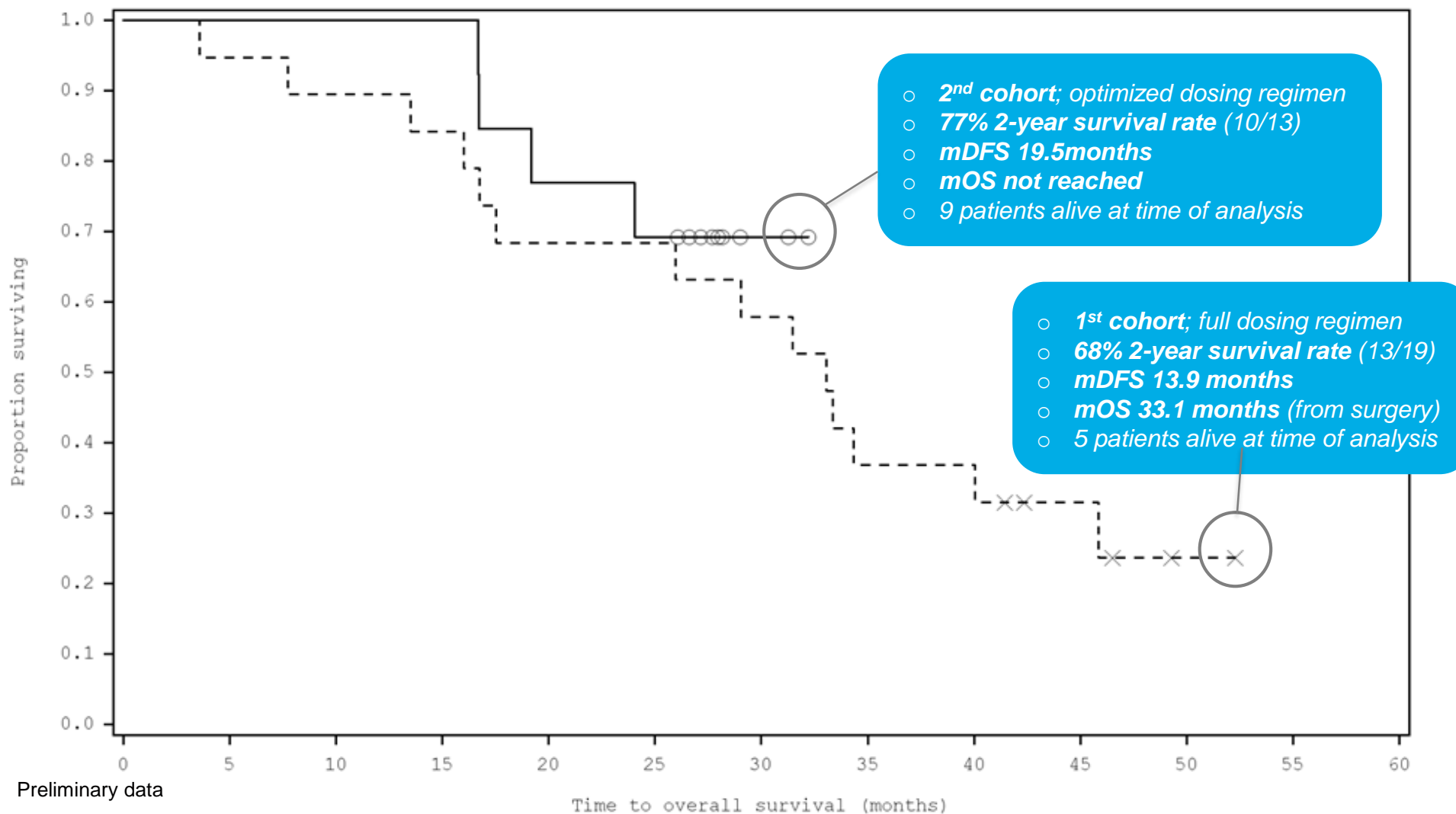
TG01 is well-tolerated - improved dosing regimen in second cohort

Preliminary data

First cohort: 19 pts, Second cohort: 13 pts. Total 32 pts.
ESPAC4 trial for gemcitabine alone
DFS both cohorts: 16.1 months

TG01 resected pancreas cancer trial survival - first vs. second patient cohorts

SECOND PATIENT COHORT NOT YET REACHED MEDIAN OS

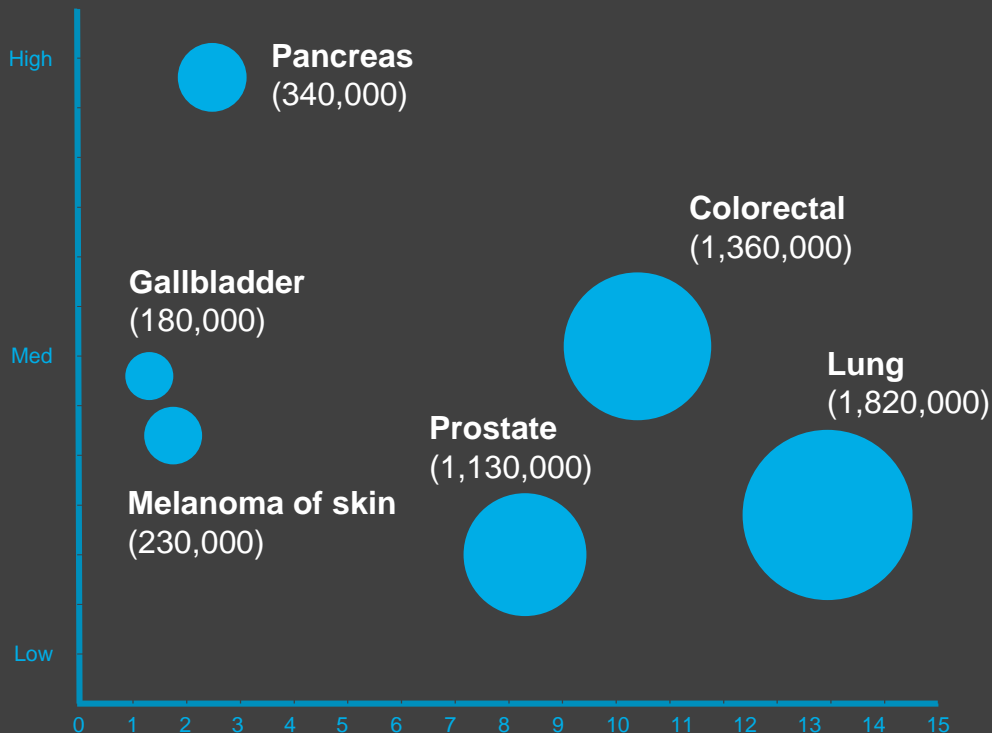


The RAS gene is central in oncogenesis and is mutated in 90% OF PANCREATIC AND 50% OF COLORECTAL CANCERS

Frequency of RAS mutations

Global cancer incidents per 10,000





























(xx) = no. of cancer patients



- RAS mutations are **trunk neoantigens** that **drive oncogenesis**
- **There are no existing therapies** targeting RAS mutations
- Targovax' TG program is a **unique vaccine approach for mutant RAS cancer**

THE RAS DEVELOPMENT LANDSCAPE

TG is the most advanced RAS-targeting product in active development

Company	Mechanism of Action	Highest Phase
              	Heat-inactivated yeast expressing target RAS mutations 	Phase II (halted)
	Peptide cancer vaccine targeting RAS mutations	Phase II
	RNAi targeting mutant KRAS 	Phase I/II
	Antisense oligonucleotide (ASO) KRAS inhibitor 	Phase I
	mRNA KRAS cancer vaccine 	Phase I
	Small molecule inhibitor of RAS 	Preclinical
	Small molecule inhibitor of KRAS 	Preclinical
	Small molecule inhibitor of RAS 	Preclinical
	Small molecule inhibitors of RAS 	Preclinical
	Small molecule inhibitors of KRAS 	Preclinical
	Small molecule inhibitors of mutant KRAS 	Preclinical
	Small molecule inhibitor RAS 	Discovery
	Small molecule inhibitors of KRAS regulators 	Discovery
	Small molecule inhibitors of KRAS 	Discovery
	Small molecules targeting SOS (Son Of Sevenless), a RAS regulator	Discovery



Yeast based



Gene silencing

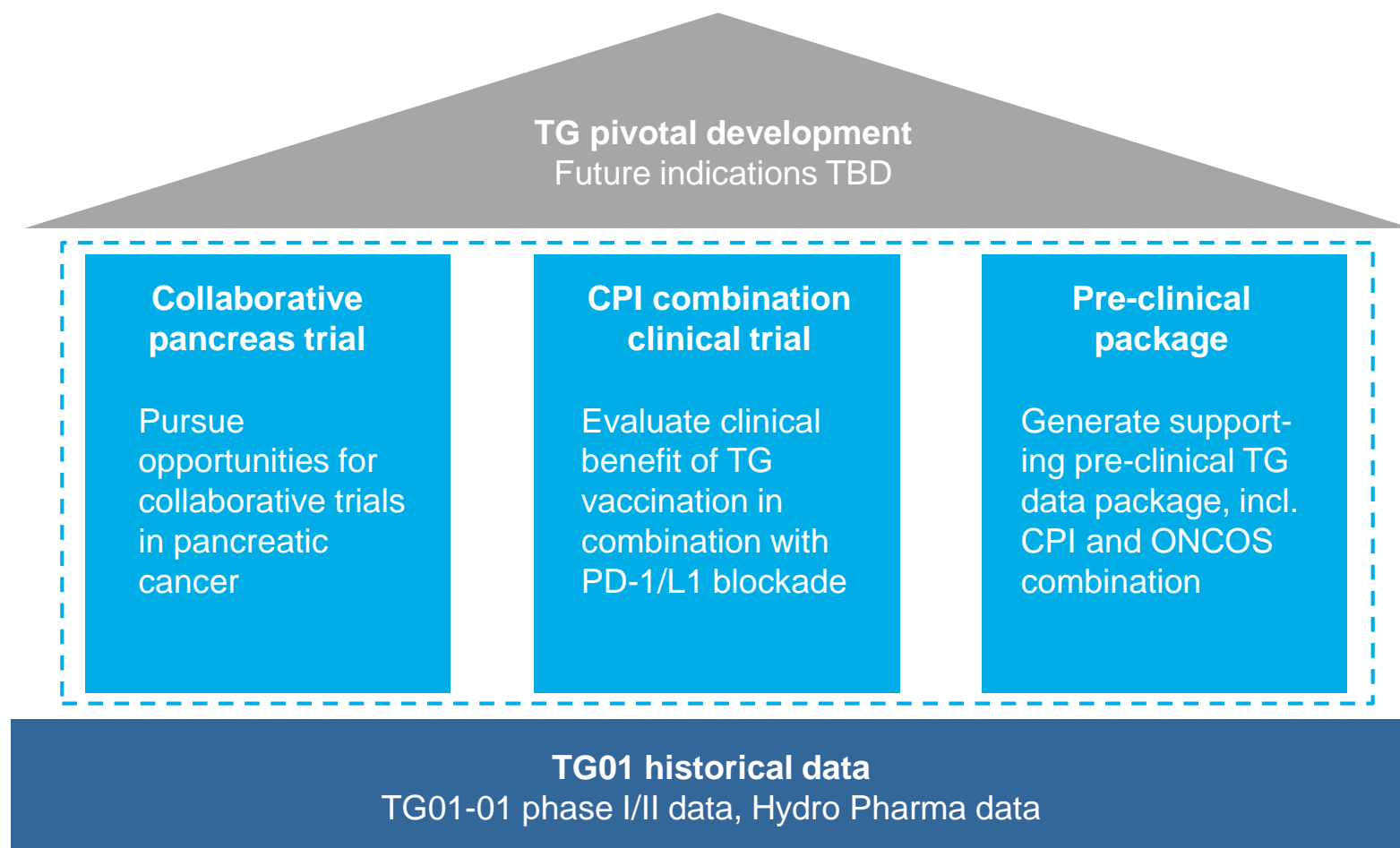


mRNA

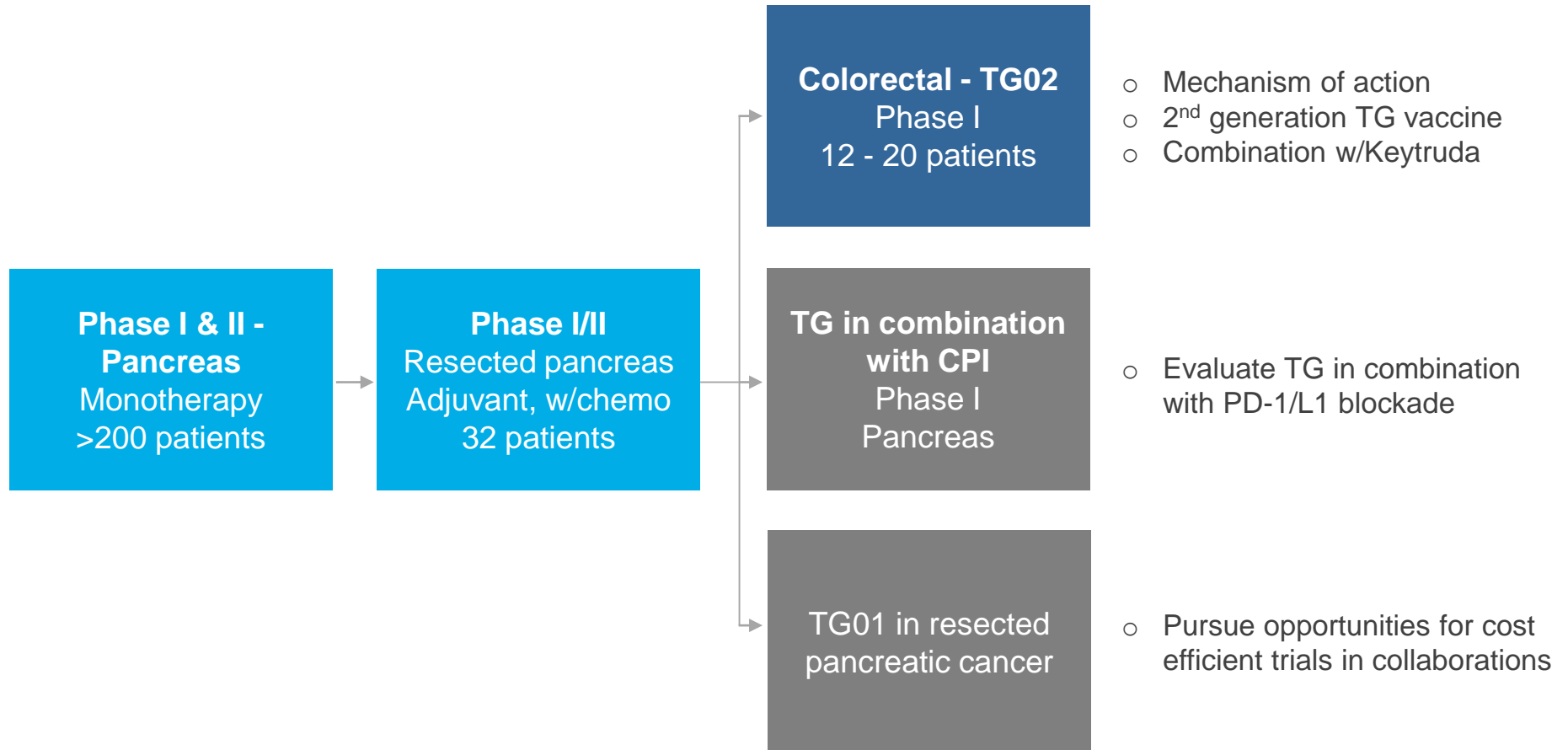


Small molecule

TG DEVELOPMENT STRATEGY



TG CLINICAL PROGRAM OVERVIEW



■ Completed trial ■ Ongoing trial ■ Trial under planning

TG CLINICAL DEVELOPMENT STRATEGY

1

Resected pancreatic cancer



TG01 indication

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

2

Colorectal cancer



TG02 lead indication

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

3

Lung cancer (NSCLC)

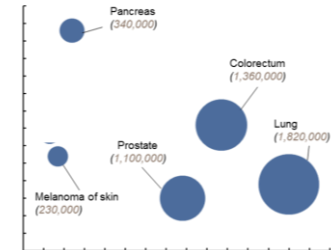


TG02 potential future indication

- 30% mutRAS
- ~0.5m incidents

4

All mutRAS cancers



TG02 + TG03 long-term potential

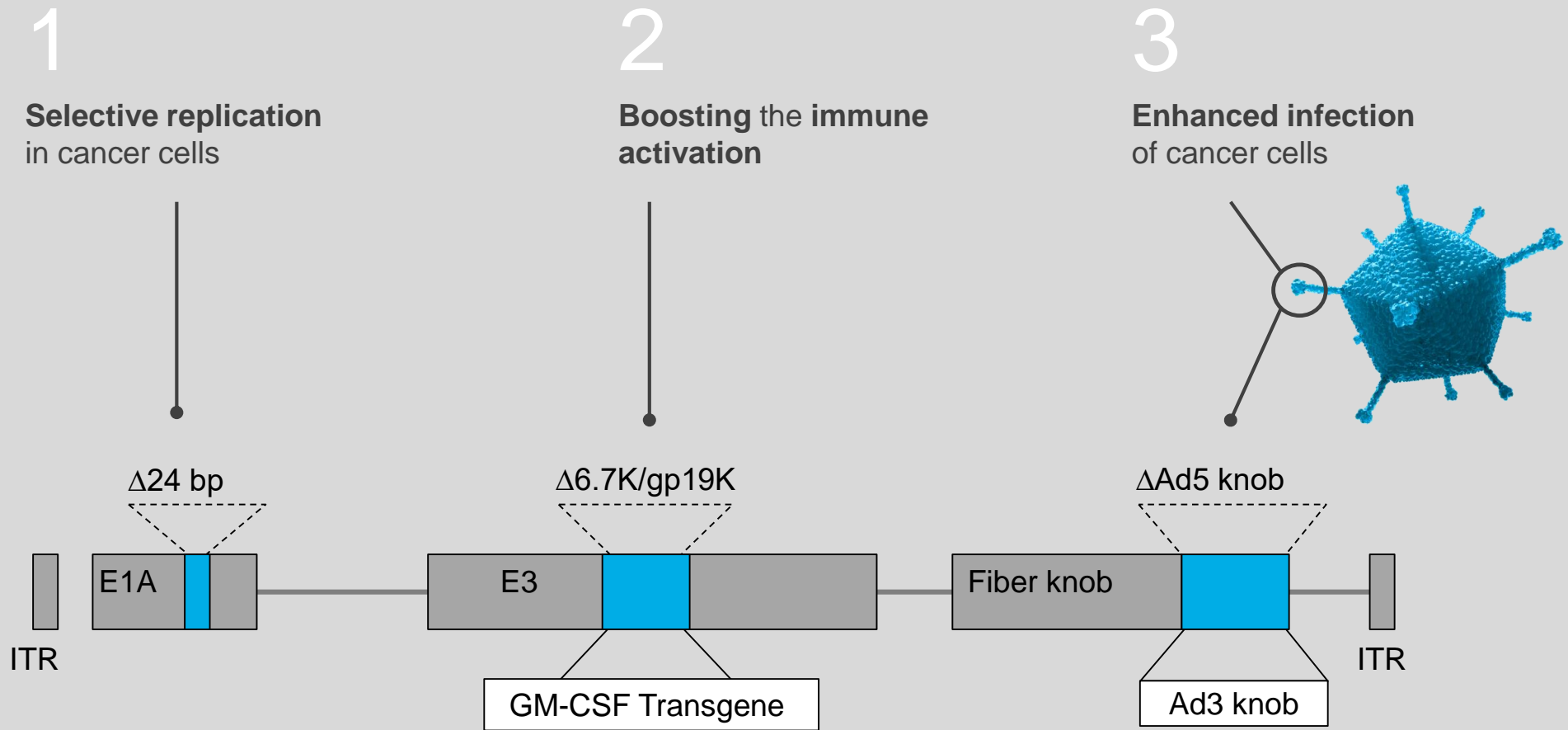
- Up to 30% of all cancer patients

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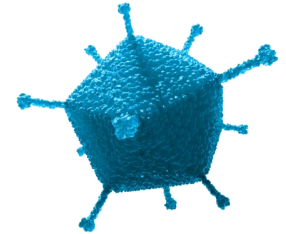
ONCOS oncolytic virus program

4. 4Q 2018 Financials

ONCOS-102 IS AN ONCOLYTIC ADENOVIRUS SEROTYPE 5, ARMED WITH A GM-CSF TRANSGENE



BENEFITS OF ADENOVIRUS SEROTYPE 5 BACKBONE



Highly immunogenic, Toll like receptor 9 (TLR9) agonist



Well-characterized, well-tolerated and few safety concerns

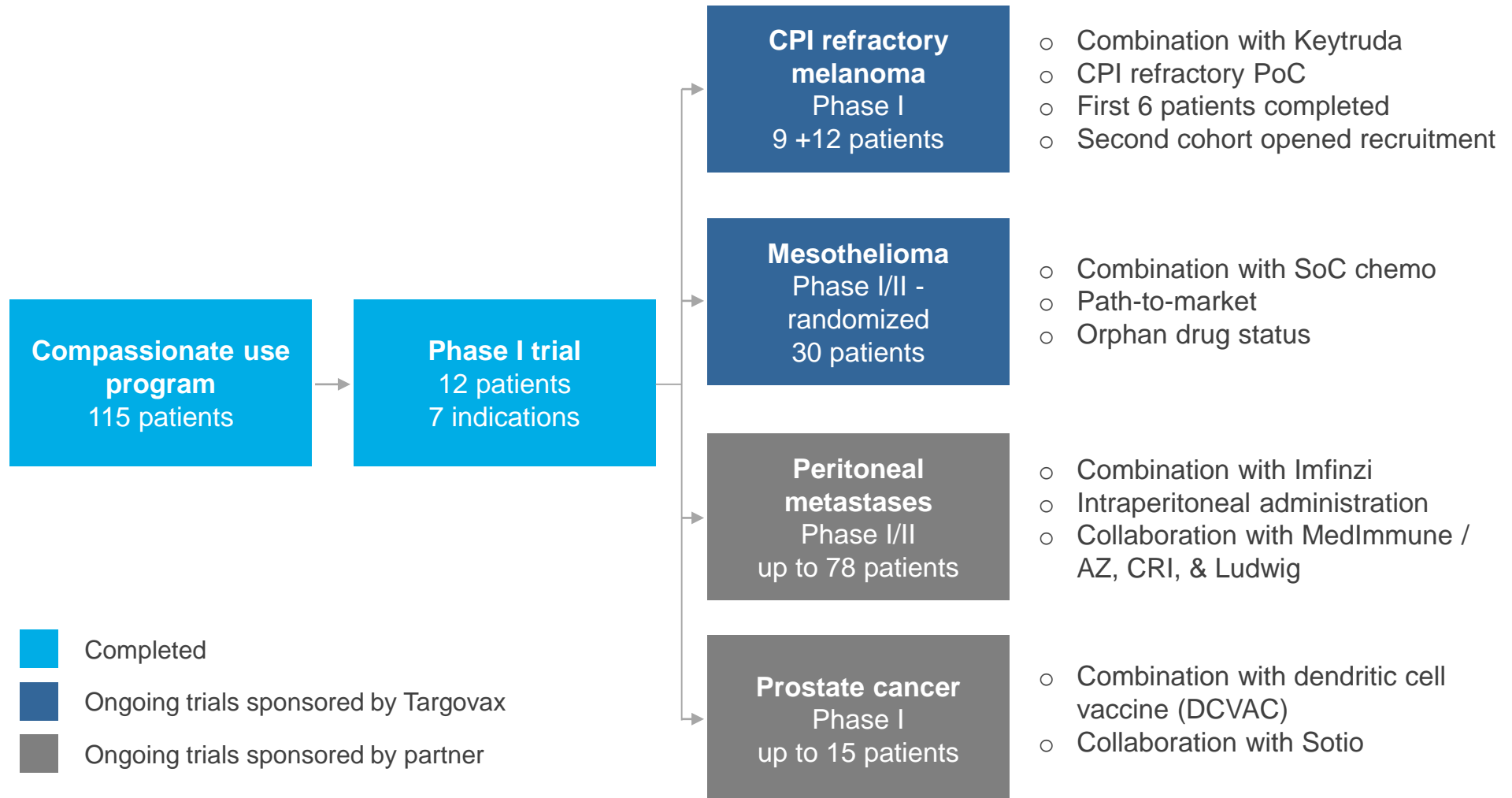


Double stranded DNA, possibility for transgenes, non-enveloped

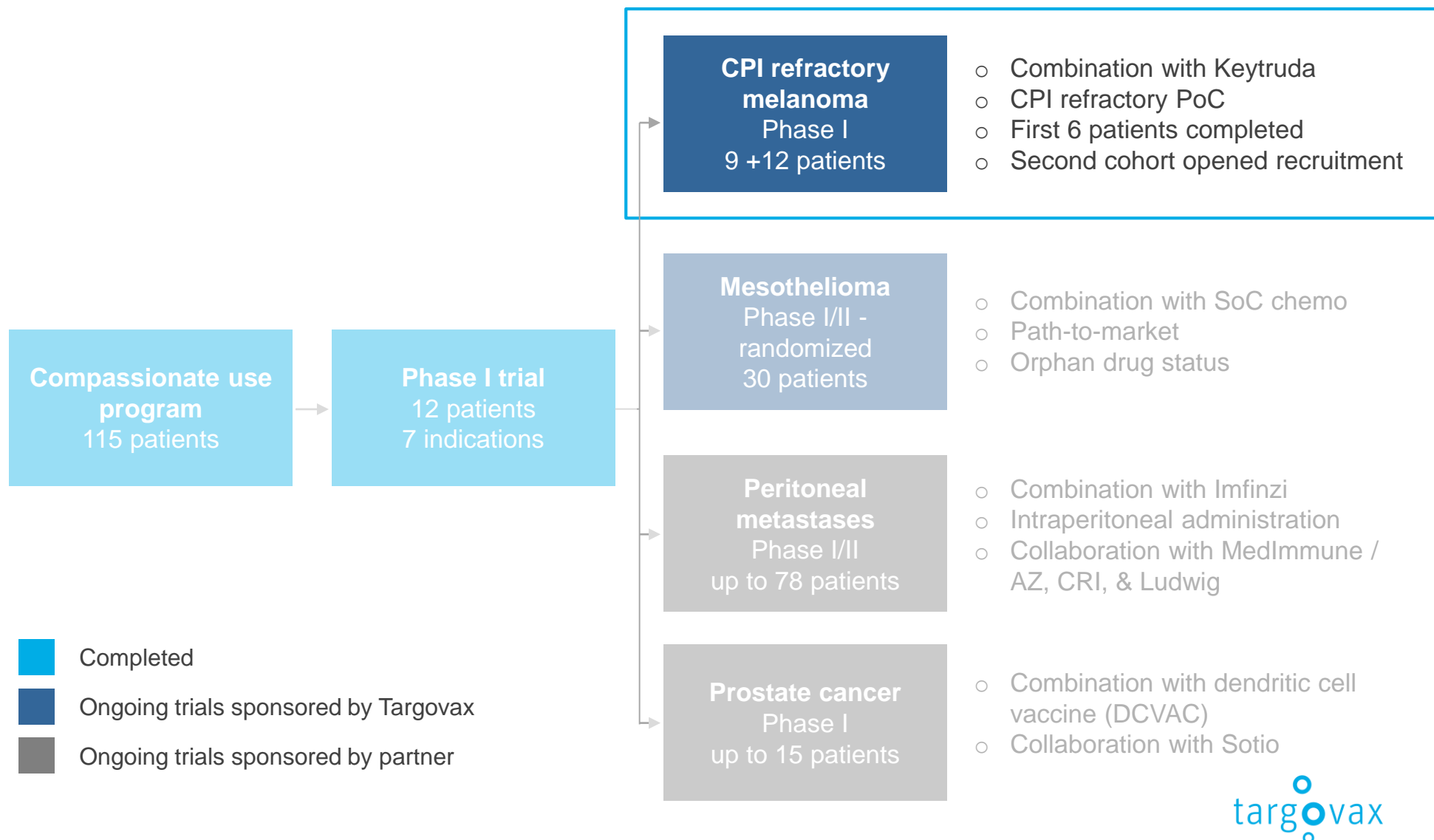


Pre-existing immunity, reduced issue of immuno-dominance

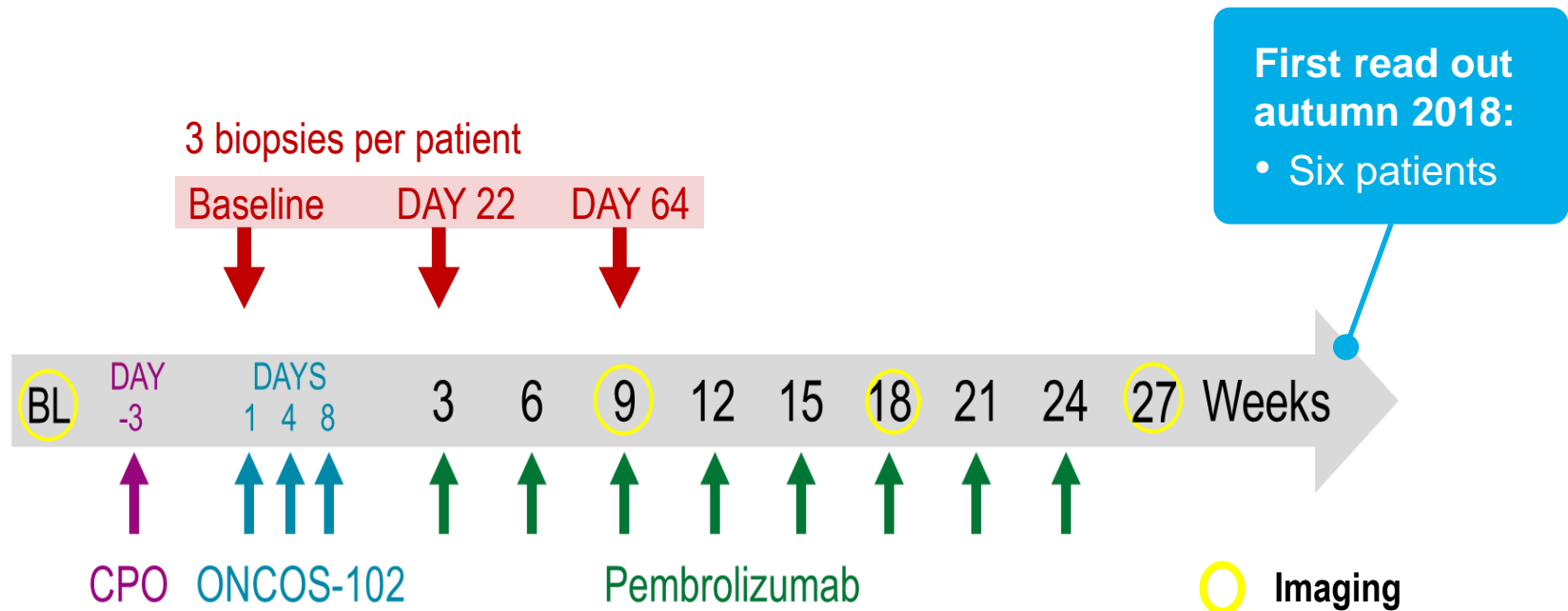
ONCOS-102 CLINICAL DEVELOPMENT PROGRAM



ONCOS-102 MELANOMA EARLY DATA



ONCOS-102 & Keytruda combination MELANOMA PHASE I TRIAL STUDY DESIGN



CPO: Cyclophosphamide

COMPLETE RESPONSE IN ONE OF SIX PATIENTS

following ONCOS-102 and Keytruda combination treatment

Patient 5

Previous Yervoy & Keytruda

Baseline



Progression on Keytruda

Week 3



Visible tumor regression after 3x ONCOS-102 injections

Week 9



Complete response after 3x ONCOS-102 injections & 2x Keytruda infusions

Patient 4

Previous Yervoy, Keytruda & Imlygic

Baseline

No clinical benefit with Keytruda monotherapy

Week 9

SD – Transient tumor regression observed by clinical assessment




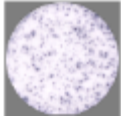

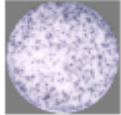
By week 15

Withdrawn due to distant metastasis

TUMOR SPECIFIC T-CELLS IN TUMOR BIOPSIES

Tumor antigen specific T-cell response

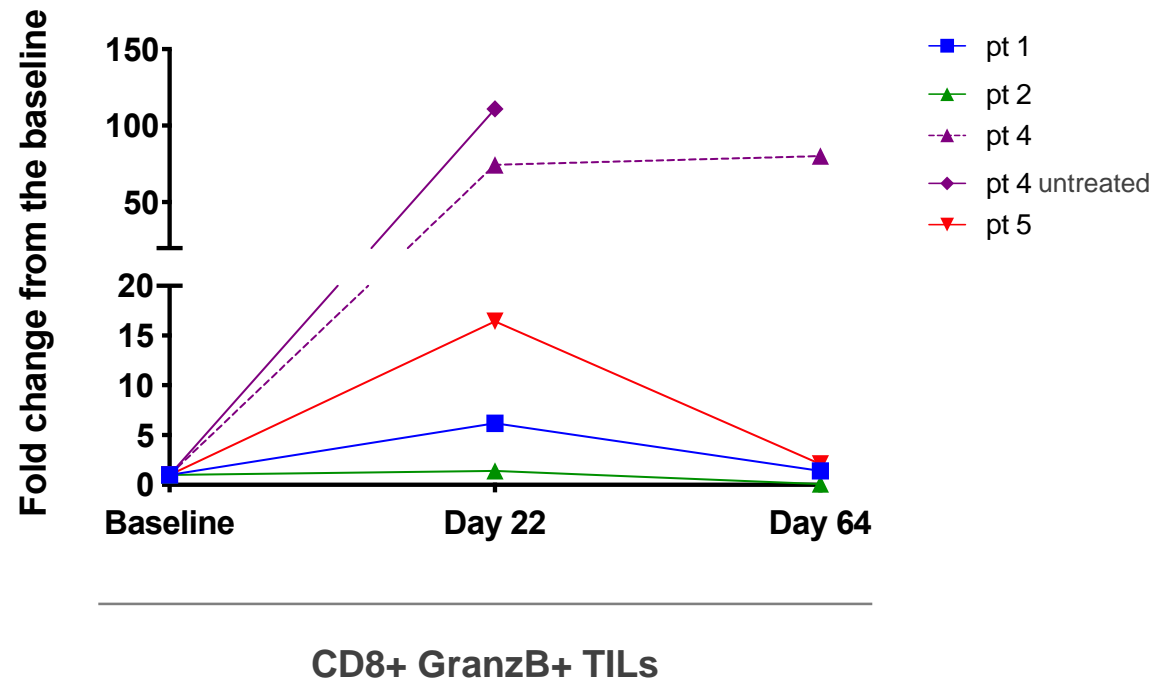
IFN- γ ELISPOT analysis for tumor antigen activated T-cells

Patient 5 <i>Previous Yervoy & Keytruda</i>	MAGE-A1	-		Increased infiltration of MAGE-A1 tumor specific T-cells - MAGE-A1 T-cells also detected at baseline
	Week 3	+		
Patient 4 <i>Previous Yervoy, Keytruda & Imlygic</i>	NY-ESO-1	-		De novo induction of NY-ESO-1 tumor specific T-cells - Not present at baseline
	Week 3	+		
	MAGE-A1	-		De novo induction of MAGE-A1 tumor specific T-cells - Not present at baseline
	Week 3	+		

INCREASED LEVEL OF CYTOTOXIC CD8+ TILs

Granzyme B expressing CD8+ T-Cells (TILs)

Fold change from baseline



Preliminary data

ONCOS-102 + KEYTRUDA MELANOMA TRIAL

one patient had a complete response by week 9

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Safety

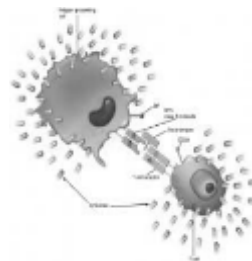
- ✓ **First safety review completed with no concerns**
- ✓ ONCOS-102 and Keytruda combination is well-tolerated



2

Innate immune activation

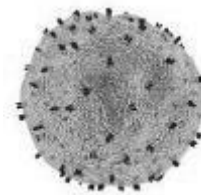
- ✓ **Systemic increase of pro-inflammatory cytokines** (6/6 patients)
- ✓ All patients develop fever



3

Adaptive immune activation

- ✓ **Increase in tumor T-cell infiltration** (TILs, 3/4 patients)
- ✓ **Tumor-specific T cells** in 2/4 patients
- ✓ **Abscopal immune response** in one patient



4

Efficacy

- ✓ **Complete response** in 1/6 patients (very rare)
- ✓ **Transient local regression** observed in 3 patients
- ✓ **Associated** with level of immune **activation**

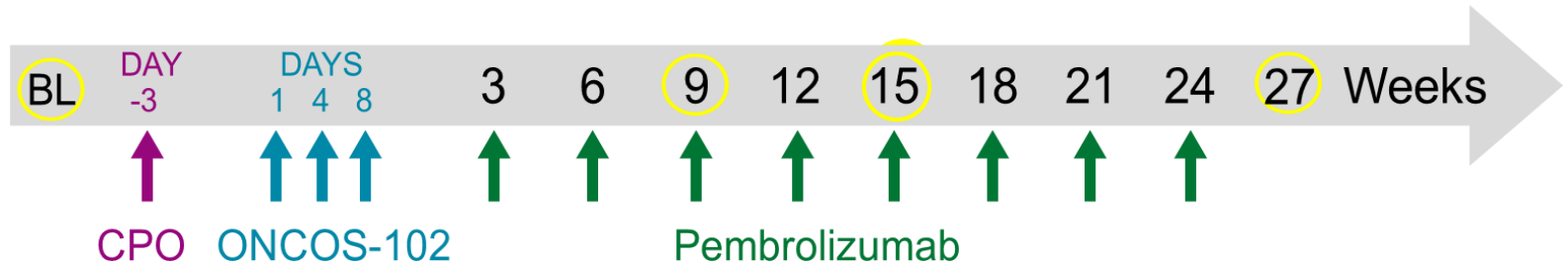


SECOND DOSE COHORT IS INITIATED

with up to 12 additional patients who will receive 12 ONCOS-102 injections

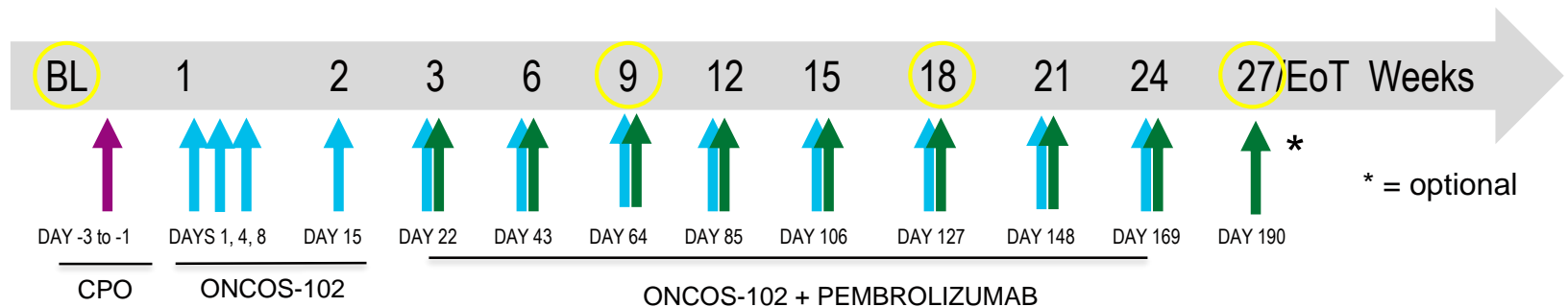
From:

1st dose cohort
3x ONCOS-102
injections

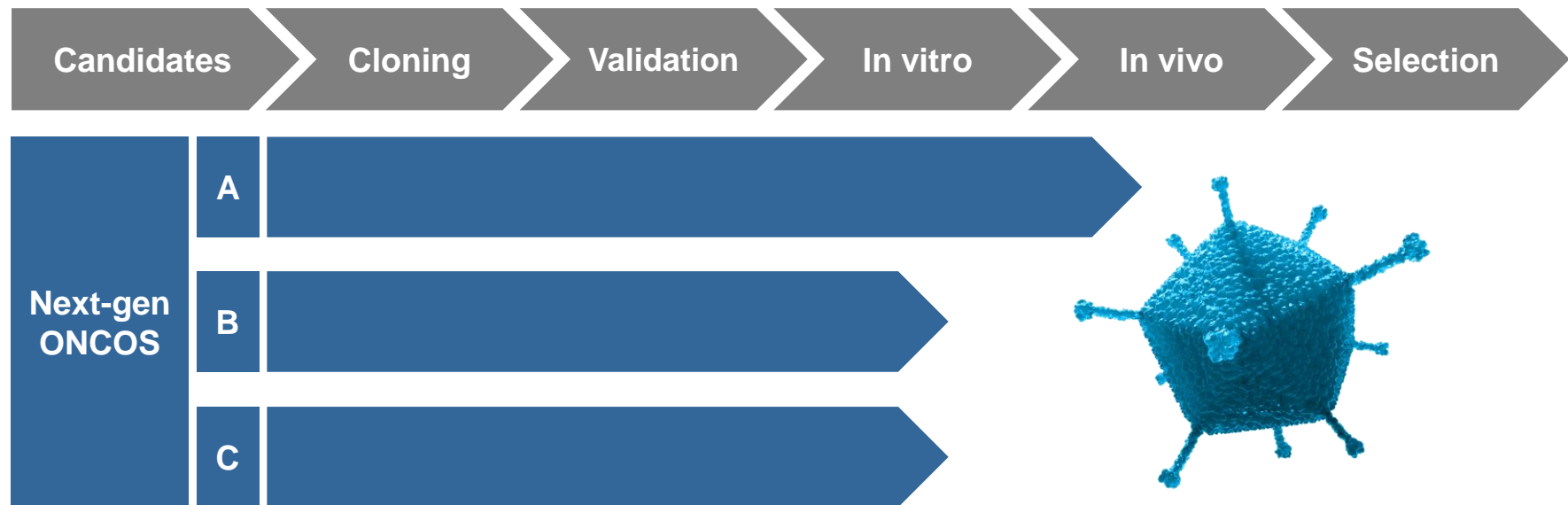


To:

2nd dose cohort
12x ONCOS-102
injections



NEXT GENERATION ONCOLYTIC VIRUSES ARE IN DEVELOPMENT



- Same adenovirus backbone as ONCOS-102
- Targets and transgenes not disclosed until IP is secured
- Unique modalities that affects the immune system and the tumor microenvironment

4

4Q 2018 Financials

PROFIT AND LOSS

	4Q17	4Q18	2017	2018
Total revenue	0	0	0	0
External R&D expenses	-12	-21	-46	-64
Payroll and related expenses	-13	-14	-48	-56
Other operating expenses	-7	-7	-26	-26
Total operating expenses	-32	-42	-120	-146
Operating loss	-32	-42	-120	-146
Net financial items	-0	1	-2	-1
Loss before income tax	-33	-41	-122	-147
Net change in cash	-24	-22	90	-110
Net cash EOP	262	151	262	151

TARGOVAX HAS CASH POSITION

to continue the planned clinical program into 2020

Operations

Cash end of 4Q - Dec 31th 2018

151 / 17

NOK million USD million

Net cash flow - total 4Q

-25 / -3

NOK million USD million

Annual run rate - last four quarters

112 / 13

NOK million USD million

The share

Market Cap - at share price NOK ~8

420 / 48

NOK million USD million

Daily turnover - rolling 6 month avg.

1.6 / 0.2 / 0.3%

NOK million USD million

Analyst coverage

DNB, ABG Sundal Collier, Arctic, Redeye,
Edison

PIPELINE OVERVIEW AND MILESTONES

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	TG02	CPI synergy TG + PD-1					2H 2019 Pre-clinical data

¹ Patients with advanced peritoneal disease, who have failed prior standard chemotherapy and have histologically confirmed platinum-resistant or refractory epithelial ovarian or colorectal cancer

■ Ongoing collaborator sponsored trials



ACTIVATING THE PATIENT'S IMMUNE SYSTEM

to fight cancer

ONCOS-102: lead product

Strong single agent data
Several upcoming data points

TG: clinical effect in pancreas

First cancer vaccine to show
immune activation against a
driver mutation

Ideal combination product

Innovative pipeline

Next generation
viruses in testing

