Activating the patient's immune system to fight cancer

2Q 2019

22 August 2019

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Intro & Highlights

2. Melanoma data
3. Financials and Organization

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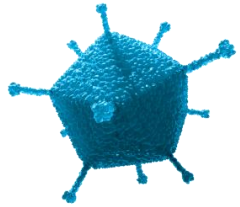
Targovax focus

ONCOS ONCOLYTIC VIRUS

Adenovirus Serotype 5



- Genetically engineered to **selectively infect cancer cells**
- Turns cold **tumors hot**

- One of the **furthest developed** oncolytic viruses
- Strong **single agent and combination data**
- **Four ongoing** clinical trials

- **Combination** with both **checkpoint inhibitors** and **chemotherapy**
- **Rich news flow** over the next 6-12 months

Activates the immune system

Triggers patient-specific immune responses

No need for individualization

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1H 2019 HIGHLIGHTS

R&D

- Treated the first patient in the dose expansion cohort in **melanoma** trial
- Completed enrollment of ONCOS-102 trial in **mesothelioma**
- Finalized first development stage for **new viruses**, filed patents on three viruses
- Published in vivo demonstration of abscopal effect of ONCOS-102 and Keytruda combination in the Journal of Medical Virology

Post-period

- Validated clinical responses in three out of nine patients (33% ORR) and immune activation in all nine patients in part 1 of **melanoma** trial
- Completed dose escalation part of **peritoneal malignancies** trial in combo with CPI Imfinizi. The expansion part opened for patient enrollment

Corporate

- Raised NOK 74m in a private placement, with a subsequent repair issue
- Made a strategic decision to **fully focus** the company's resources and efforts on the ONCOS program

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THE OV DEVELOPMENT LANDSCAPE

Overview of most relevant OVs in current development

Company		Asset/ Program	MoA	Highest Phase
AMGEN	H	Imlygic	HSV with GM-CSF transgene, IT only	Approved 2015 as mono Phase III PD1 combo
transgene	V	Pexa-Vec	Vaccinia virus with GM-CSF and beta-galactosidase transgenes, IT focus	Phase II
MSD	R	Cavatak	Coxsackievirus, non gene modified, IT focus, IV and IP trial ongoing	Phase II
DNAtrix	A	DNX-2401	Chimeric Ad5/3, no transgene, IT and non-systemic IV	Phase II
targovax	A	ONCOS-102	Chimeric Ad5/3 with GM-CSF transgene, IT and IP administration	Phase II
Cold Genesys	A	CG0070	Ad5 with GM-CSF transgene, IT only	Phase II
NCOLYTICS BIOTECH INC	R	Reolysin	Reovirus, non gene modified, IV only	Phase II
PsiOxus THERAPEUTICS	A	Enadenotucirev	Chimeric Ad5, no transgene, IV only	Phase I/II
Replimune	H	RP1	HSV with GM-CSF, GALV, and ipilimumab transgenes, IT only	Phase I/II
LOKON	A	LOAd703	Chimeric Ad5/35 with TMZ-CD40L and 4-1BBL transgenes, IT only	Phase I/II
VYRIAD	R	Voyager V1	VSV virus with NIS and human interferon beta transgenes, IV only	Phase I
WESTERN ONCOLYTICS	R	Ad-MAGEA3	Maraba virus with MAGEA3 transgene, IV and IT	Phase I
Boehringer Ingelheim	R	VSV-GP	Chimeric VSV virus, IV only	Pre-clinical
TURNSTONE BIOLOGICS	V	WO-12	Vaccinia virus armed with TRIF and HPGD transgenes, IV only	Pre-clinical
Oncorus	H	oHSV	Herpes virus with multiple transgenes (PD1, CTLA4 ++), IT only	Pre-clinical

A *Adenovirus* H *Herpes virus* V *Vaccinia virus* R *RNA virus*

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PsiOxus THERAPEUTICS	A	Enadeno		Phase I/II
Replimune	H	RP		Phase I/II
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- One of the furthest developed oncolytic viruses
- Strong single agent data
- Encouraging ORR in anti-PD1 refractory melanoma

A *Adenovirus* H *Herpes virus* V *Vaccinia virus* R *RNA virus*

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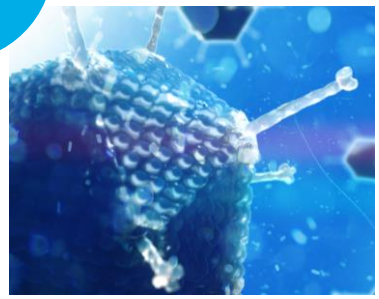
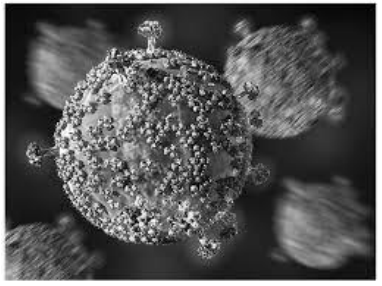
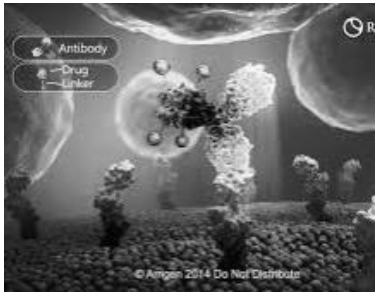
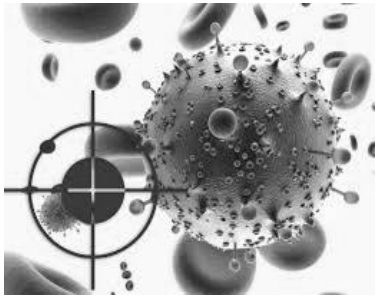
ONCOLYTIC VIRUSES IN THE FUTURE CANCER THERAPY LANDSCAPE

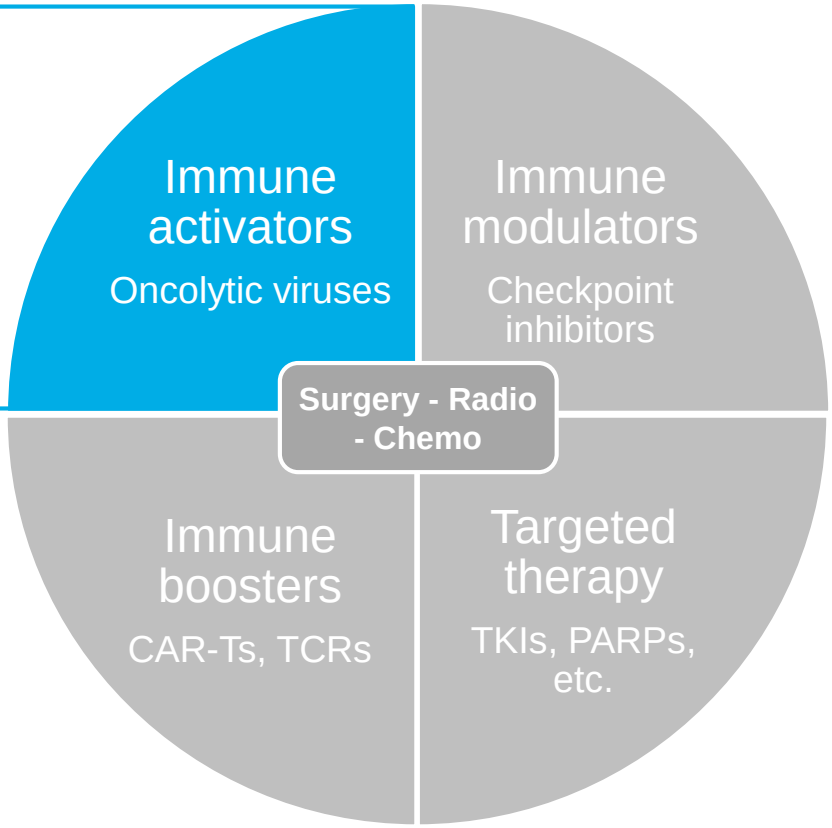
Targovax focus











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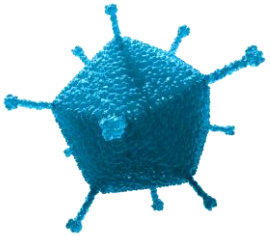
BENEFITS OF ONCOS-102 ADENOVIRUS

Triggers patient-specific immune responses



Highly immunogenic, TLR-9 agonist, turning cold tumors hot

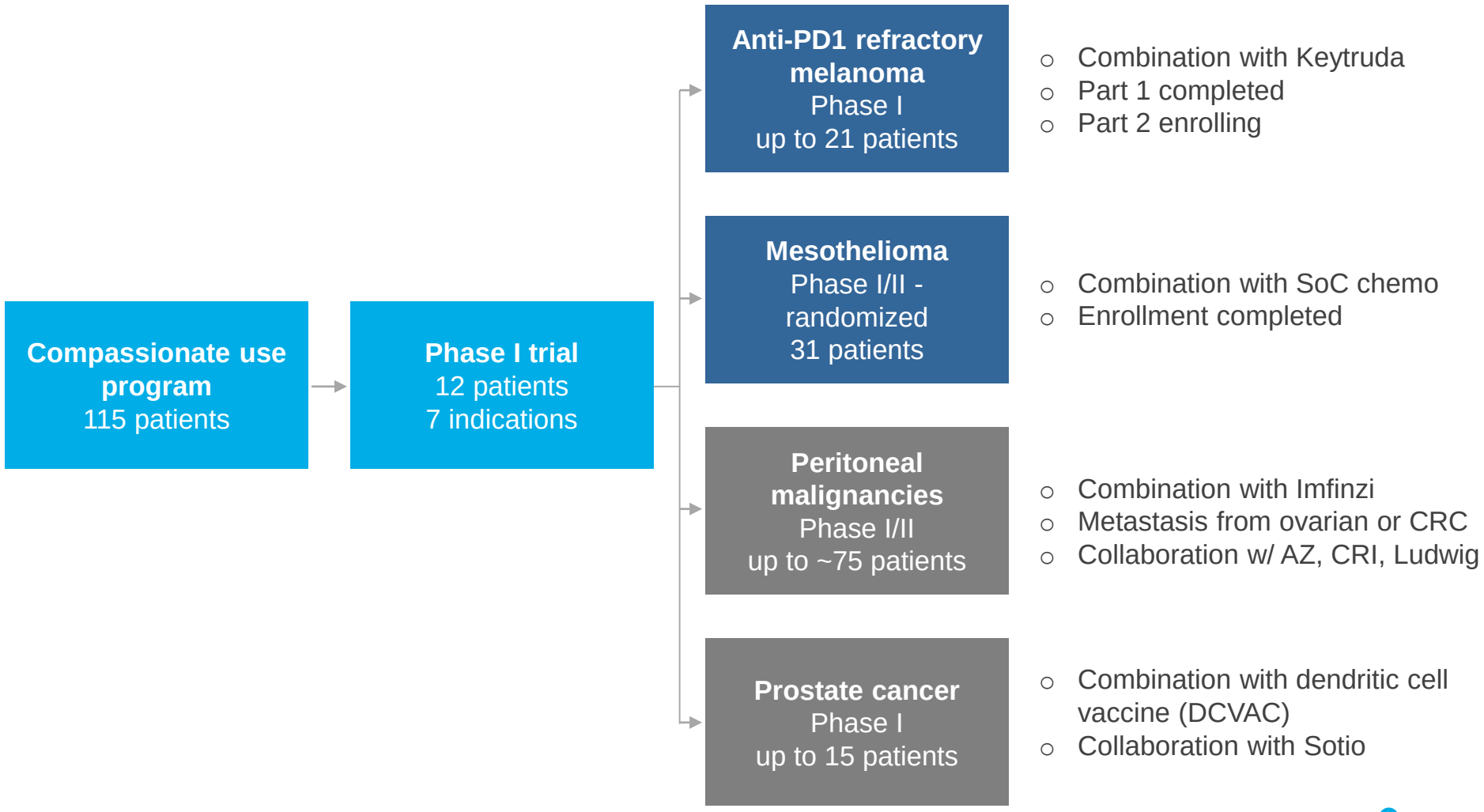
Well-characterized, well-tolerated and few safety concerns

Versatile DNA backbone, ability to carry multiple transgenes

THERE HAS BEEN A NUMBER OF TRANSACTIONS IN THE OV SPACE IN 2018-2019

Acquirer	Target	Type of deal	Deal value
Boehringer Ingelheim	ViraTherapeutics	**M&A** Pre-clinical VSV oncolytic virus, IV delivery	**USD 250m** up-front cash
MERCK	Viralytics Developers of Oncolytic Immunotherapies	**M&A** Phase II RNA oncolytic virus, primarily IT delivery	**USD 400m** up-front cash
janssen PHARMACEUTICAL COMPANIES OF Johnson&Johnson	BeneVir	**M&A** Pre-clinical Herpes oncolytic virus, IV delivery	**USD 140m** up-front cash **Up to USD 1b** total value
AstraZeneca	transgene	**R&D partnership** Co-development of novel vaccinia viruses Pre-clinical	**USD 10m** upfront payment Unknown potential total value

ONGOING ONCOS-102 PHASE I IN MELANOMA



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Melanoma data

3. Financials and Organization

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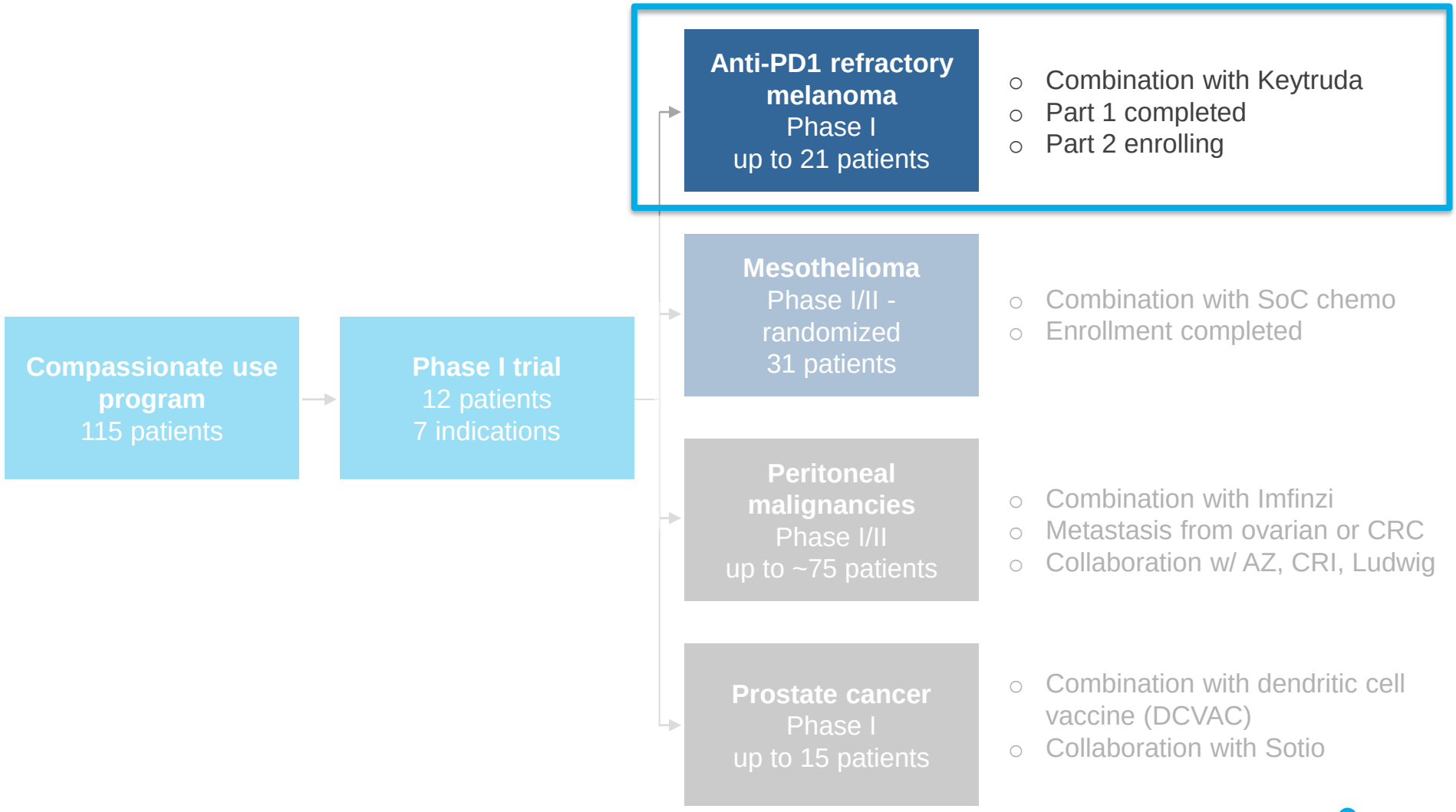
ONGOING ONCOS-102 PHASE I IN MELANOMA



ONCOS-102 melanoma part 1 summary (n=9)

33% ORR AND ROBUST IMMUNE ACTIVATION

Patient population

- Advanced, unresectable **melanoma** with **disease progression following treatment with anti-PD1**
- Typically treated with **2-3 immunotherapies prior to inclusion**
- **Median age 73 years (40-87)**
- Poor prognosis, with **few treatment alternatives**

Treatment regime

- **3 ONCOS-102 injections** followed by 5 months of Keytruda (8 cycles)

Clinical data

- Safety: **Well tolerated**, no major concerns
- **33% Overall response rate (ORR) after 6 months** by RECIST 1.1 and irRECIST
  - 1 Complete Response (CR)
  - 2 Partial Responses (PR)
- **Robust systemic and local immune activation**
  - Systemic increases i pro-inflammatory cytokines (9/9 patients)
  - Increased infiltration of CD8+ T-cells in tumor (8/9 patients)
  - T-cell infiltration into non-injected lesions (2/3 patients)
  - Generation of systemic tumor specific T-cells (4/9 patients)

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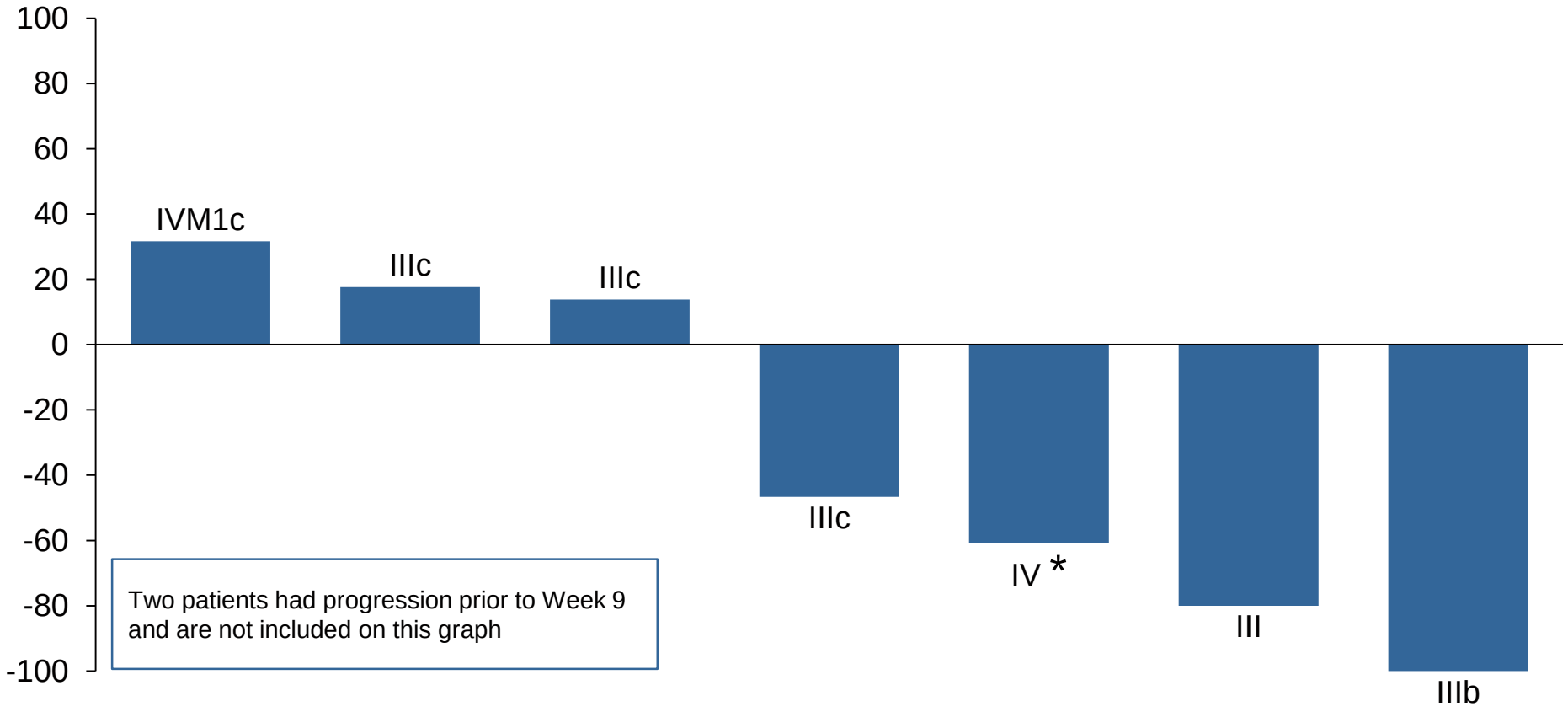
ONCOS-102 anti-PD1 refractory melanoma

BEST PERCENTAGE CHANGE IN TUMOR BURDEN OF TARGET LESIONS



n=9

Letters and numbers indicating disease stage

Preliminary data

* Unconfirmed tumor measurement

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COMPLETE RESPONSE IN ONE OF NINE PATIENTS

following ONCOS-102 and Keytruda combination treatment

Stage IIIb (T4a, N2b, M0)

Prior therapies: Surgery x 3 Yervoy, Tafinlar + Mekinist, Keytruda

Baseline	Week 3	Week 9
		
Progression on Keytruda	*Visible tumor regression after 3x ONCOS-102 injections*	*Complete response after 3x ONCOS-102 injections & 2x Keytruda infusions*

Immune data

Baseline (BL)	Week 3 (from BL)	Week 9 (from BL)
○ CD8+ TILs: Low	16x	7x
○ Activated CD8+: Low	5x	2x
○ PD1 CD8+ TILs: Low	20x	2x
○ MAGE-A1: Detectable	2x	3x

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BROAD AND ROBUST IMMUNE ACTIVATION

Innate immune activation

- Pro-inflammatory cytokine increase: IL-6 (8/8 pts), TNFa (7/8 pts)
- Fever/chills (7/9 pts)

Adaptive immune activation

T-cell infiltration

- CD8+ T-cells in treated lesions (8/9 pts)
- Activated CD8+ T-cells in treated lesions (9/9 pts)
- PD1+ CD8+ T-cells in treated lesions (6/7 pts)
- T-cells in non-treated lesions (2/3 pts) on Week 3

Systemic T-cells

- Increase in systemic IFNg expression (8/8 pts)
- Systemic increase of the relative level of cytotoxic CD8+ and PD1+ CD8+ T-cells (9/9 pts)

Tumor specific activation

- Increase in tumor specific T-cells against NY-ESO-1 and/or MAGE-A1 (4/9 pts)
- Increasing levels of tumor specific T-cells throughout the treatment (4/4 pts)
- PD-L1 expression on tumor cells increased in 6/9 pts
- Melanoma specific cancer marker reduced in 2 of 3 responders

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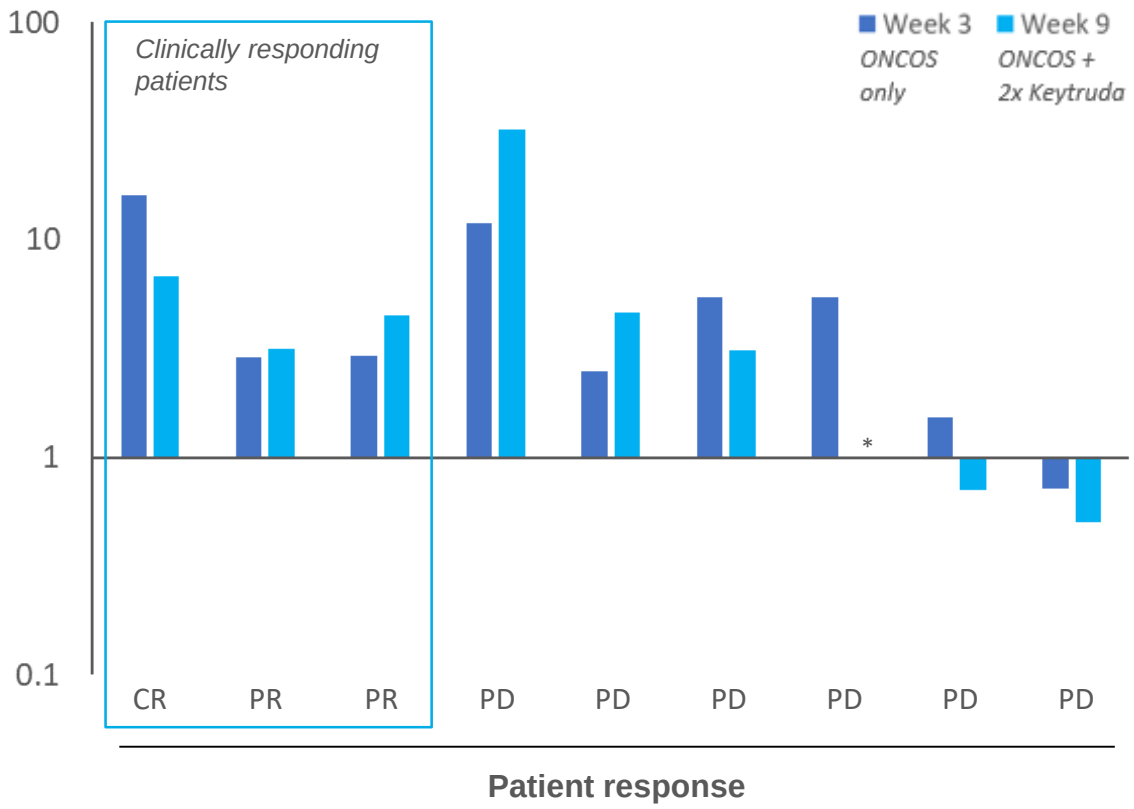
POTENT INCREASE IN CD8+ T-CELL TUMOR INFILTRATION OBSERVED IN MOST PATIENTS

CD8+ T-cell tumor infiltration, -fold change from baseline



Unpublished company data
- Week 9 analysis not available

PD: Progressive disease PR= Partial response CR= Complete response

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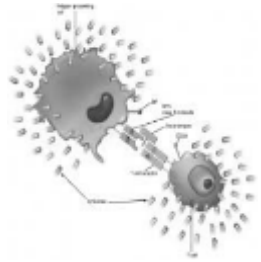
ONCOS-102 + KEYTRUDA MELANOMA TRIAL

1
Safety

- ✓ **Safety reviews completed with no concerns**
- ✓ ONCOS-102 and Keytruda combination is well-tolerated

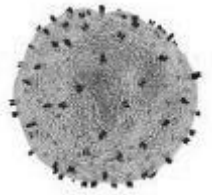
2
Innate immune activation

- ✓ **Systemic increase of pro-inflam-matory cytokines** (IFNg, TNFa, ++ 9/9 patients)
- ✓ Most patients develop fever /chills as a clinical sign



3
Adaptive immune activation

- ✓ **Increased CD8+ T-cell infiltration** in 8/9 patients
- ✓ **Tumor-specific T cells** in 4/9 patients
- ✓ **Activation in non-injected lesions**



4
Clinical efficacy

- ✓ **ORR 33%** in nine patients with one CR (very rare)
- ✓ **Best clinical response (CR) had the strongest immune response**

Preliminary data.

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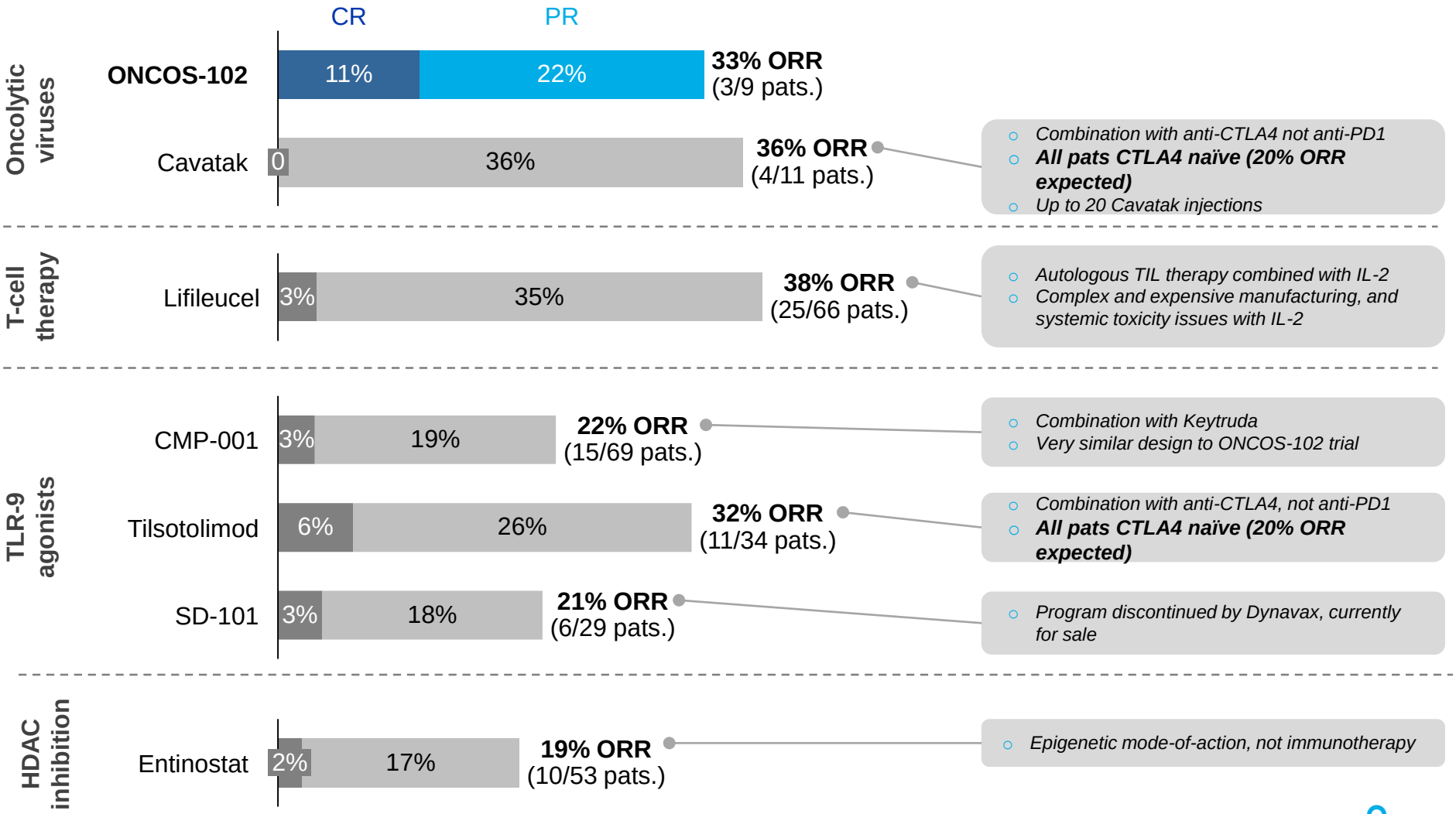
ONCOS-102 + KEYTRUDA DATA IN CONTEXT

Anti-PD1 refractory melanoma benchmark data

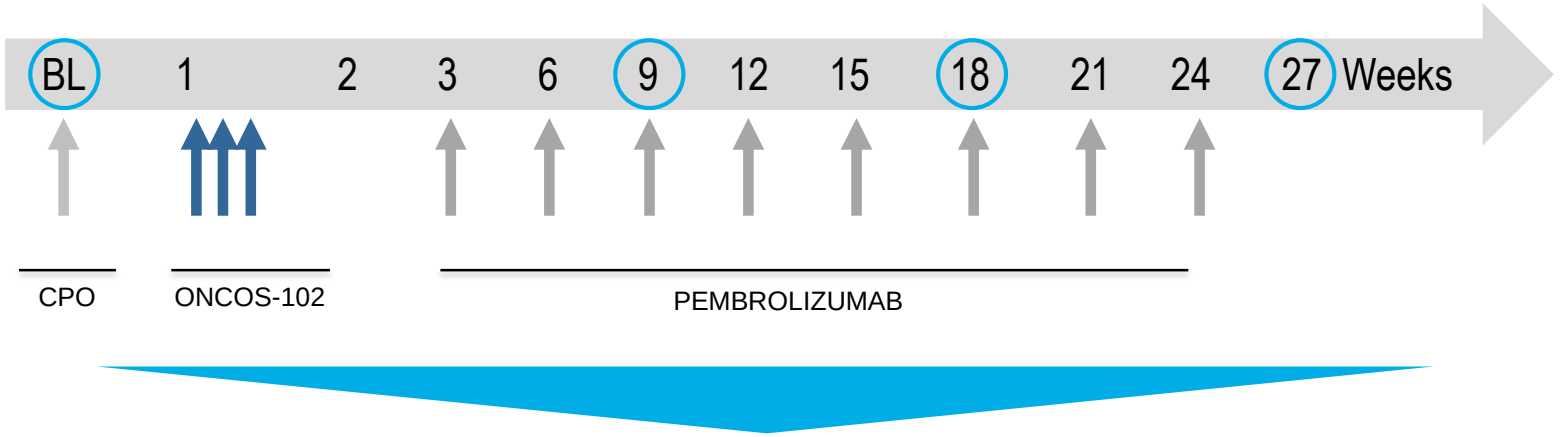


SOURCE: Targovax market analysis, August 2019

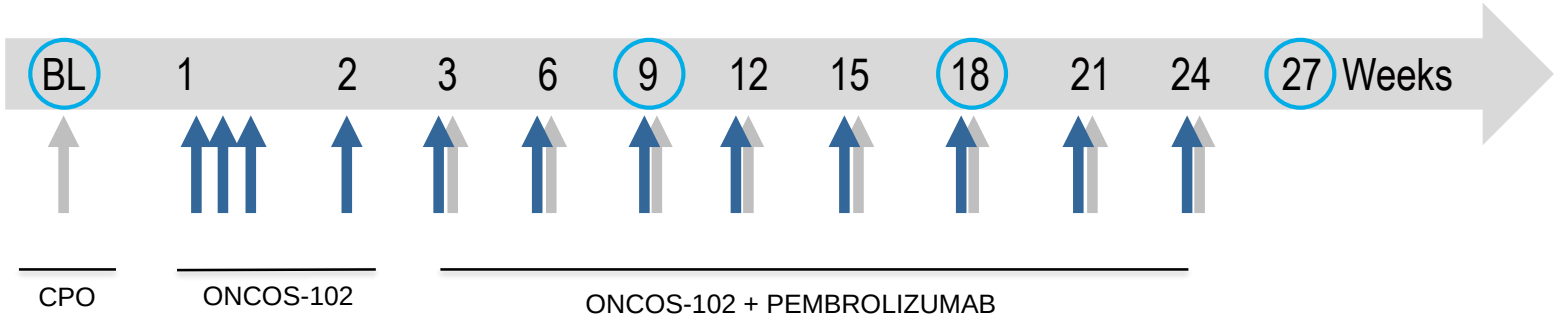
MELANOMA PART 2 IS RECRUITING

up to 12 patients: 12 ONCOS-102 injections combined with 5 months Keytruda

Part 1:
3 ONCOS-102 injections



Part 2:
12 ONCOS-102 injections



○ *Imaging*

CPO: Cyclophosphamide

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3 Financials and Organization

NEW MANAGEMENT TEAM

Sissel Vågen, Head of QA

Ingunn M. Lindvig, PhD, VP RA

Anne-Sophie Møller, PhD, Head of CS

Kristiina Hyvarinen, PhD, Director CMC

Øystein Soug, CEO

Magnus Jäderberg, MD, CMO

Torbjørn Furuseth, MD, CFO

Erik D. Wiklund, PhD, CBO

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PROFIT AND LOSS

NOK m	2Q18	3Q18	4Q18	1Q19	2Q19
Total revenue	**0**	**0**	**0**	**0**	
External R&D expenses	-14	-17	-21	-19	-22
Payroll and related expenses	-15	-12	-14	-14	-18
Other operating expenses	-7	-5	-7	-7	-5
Total operating expenses	**-37**	**-34**	**-42**	**-40**	**-45**
Operating loss	-37	-34	-42	-40	-45
Net financial items	-0	-1	1	-1	-1
Loss before income tax	-37	-35	-41	-41	-46
Net change in cash	-28	-27	-22	-46	30
Net cash EOP	**201**	**173**	**151**	**105**	**135**

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TARGOVAX FINANCIAL POSITION

Operations

Cash end of 2Q

135 / 15

NOK million **USD million**

Net cash flow - total 2Q

30 / 3

NOK million **USD million**

Annual run rate - last four quarters

132 / 13

NOK million **USD million**

The share

Market Cap - at share price NOK ~5

317 / 35

NOK million **USD million**

Daily turnover - rolling 6 month avg.

2.9 / 0.3 / 0.9%

NOK million **USD million**

Analyst coverage

DNB, ABG Sundal Collier, H.C. Wainwright, Arctic, Redeye, Edison

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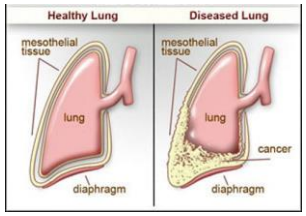
ONCOS DEVELOPMENT STRATEGY

1

Path-to-market
Orphan indication



Target launch indication

- **Mesothelioma**
- Orphan drug status
- Combo with SoC chemo
- Randomized phase II, 31 patients
- Enrollment completed

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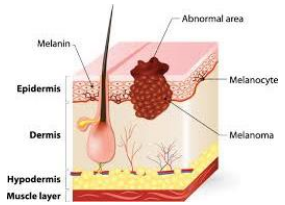
Proof-of-concept
Re-activating CPIs



CPI refractory cancers

- **PD1 refractory melanoma**
- Combo with Keytruda
- Phase I, ~20 patients
- First 9 patients completed
- Second cohort initiated

3

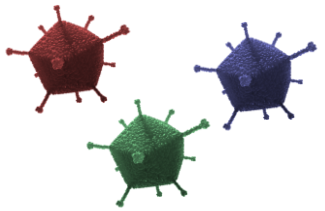
Proof-of-concept
New CPI indication

Indications with no/ limited effect of CPIs

- **Ovarian and colorectal cancer metastasized to peritoneum**
- Combo with Imfinzi
- Collaboration with AZ, CRI, & Ludwig
- Phase I/II, ~75 patients

4

Next generation
oncolytic viruses



Platform expansion with new targets

- Double transgenes
- Novel targets and mode-of-action
- Ongoing *in vivo* testing

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RICH NEAR-TERM NEWS FLOW

ONCOS program pipeline overview

Product candidate	Preclinical	Phase I	Phase II	Phase III	Next expected event
ONCOS-102	**Mesothelioma** Combination w/ pemetrexed/cisplatin				**New year 2019-20** Randomized data
	Melanoma Combination w/Keytruda				**1H 2020** Part 2 data
	Peritoneal metastasis Collaborators: Ludwig, CRI & AZ Combination w/Imfinzi				*Update by collaborator*
	Prostate Collaborator: Sotio Combination w/DCvac				*Update by collaborator*
Next-gen ONCOS	**3 new viruses** Double transgene				**2H 2019** First pre-clinical data

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ACTIVATING THE PATIENT`S IMMUNE SYSTEM

Clinically proven

One of the furthest developed oncolytic viruses

Strong single agent data

Encouraging data in anti-PD1 refractory melanoma

Rich news flow

Four ongoing combination trials

Several upcoming data points next six to twelve months

Innovative pipeline

Next generation oncolytic viruses in pre-clinical testing