ACTIVATING THE PATIENT'S IMMUNE SYSTEM TO FIGHT CANCER

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Solebury Trout Virtual Conference

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Intro & Highlights

2. Mesothelioma
3. Melanoma
4. Peritoneal malignancies
5. Newsflow

GROWING NEED FOR IMMUNE ACTIVATORS

CPIs are revolutionizing cancer treatment…

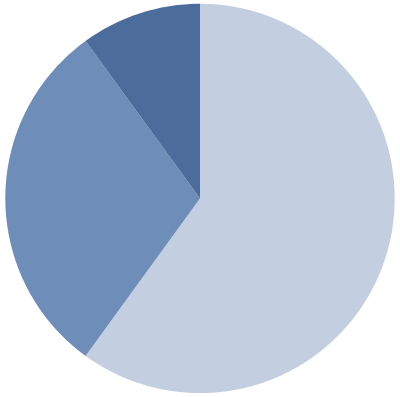
22 bn USD

Global CPI market[1]

44 %

Patients eligible for CPI[2]:

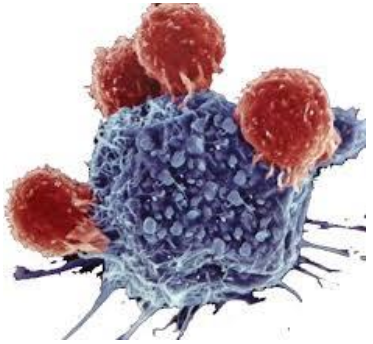
…but not all patients respond to CPIs…



10 - 40 %

Responders

…leading to high medical need for immune activators



[1] Immune Checkpoint Inhibitors Markets Report, 2020 January, ResearchAndMarkets.com

[2] Estimation of the Percentage of US Patients With Cancer Who Are Eligible for and Respond to Checkpoint Inhibitor Immunotherapy Drugs, JAMA Netw Open. 2019 May; 2(5), Haslam A., Prasad V.

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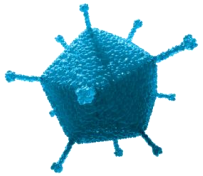
ACTIVATING THE IMMUNE SYSTEM

TO FIGHT CANCER



ONCOS-102 lead clinical asset

- ONCOS oncolytic adenovirus platform targets hard-to-treat **solid tumors**
- One of the **furthest developed** OVs with >180 patients treated to date
- Four ongoing combination trials ensuring **rich news flow** in 2020

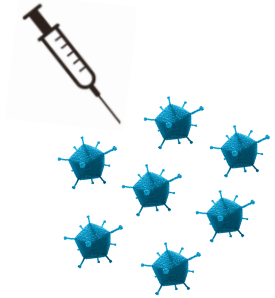
Encouraging clinical efficacy demonstrated

- Strong **single agent** immune activation and clinical data
- **33% ORR** in anti PD-1 refractory melanoma in combination with Keytruda
- Encouraging first set of **clinical and immune data in mesothelioma**

ONCOS-102 MODE OF ACTION MAKES AN IDEAL COMBINATION PARTNER FOR CHECKPOINT INHIBITORS

1 Virus injection
Local delivery

- Intratumoral or intra-peritoneal injection
- Tumor cell infection

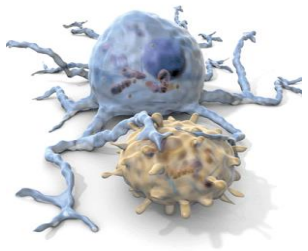


2 Oncolysis
Immune activation

- Lysis of tumor cells
- Inflammatory response
- Tumor antigen release

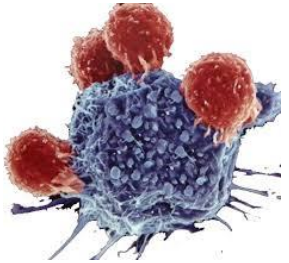
3 Antigen processing
T-cell activation

- Antigen processing
- T-cell activation in lymph nodes

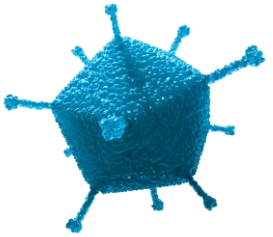


4 T-cell response
Anti-tumor immunity

- T-cell tumor infiltration
- Tumor antigen recognition
- CPIs “releasing brakes”



BENEFITS OF ONCOS-102 ADENOVIRUS



Highly immunogenic, TLR-9 agonist, stimulates inflammation

Well-characterized, well-tolerated and few safety concerns

Versatile DNA backbone, ability to carry multiple transgenes

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
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 intra-arterial	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, intravesical	Phase II
ONCOLYTICS 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	RIVAL	Maraba and Vaccinia viruses armed with multiple transgenes, IV only	Pre-clinical
transgene	V	Invir.IO	Vaccinia virus platform armed with CTLA-4 ++, solid tumors	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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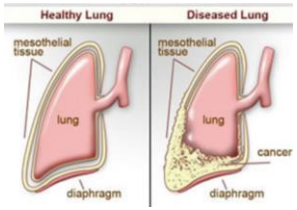
SEVERAL SIGNIFICANT BD TRANSACTIONS IN THE ONCOLYTIC VIRUS SPACE IN 2018-2019

Acquirer	Target	Type of deal	Deal value
Takeda	TURNSTONE BIOLOGICS	**Strategic collaboration** Co-development of multiple vaccinia viruses, Pre-clinical	**USD 120m** near-term **USD >900m** total value
MERCK	Viralytics Developers of Oncolytic Immunotherapies	**M&A** RNA virus, Phase II	**USD 400m** cash acquisition
janssen PHARMACEUTICAL COMPANIES OF Johnson&Johnson	BeneVir	**M&A** Herpes virus, Pre-clinical	**USD 140m** up-front **USD 1b** total value
Boehringer Ingelheim	ViraTherapeutics	**M&A** VSV virus, Pre-clinical	**USD 250m** cash acquisition
AstraZeneca	transgene	**R&D partnership** Co-development of novel vaccinia viruses, Pre-clinical	**USD 10m** up-front Unknown total value

ONCOS DEVELOPMENT STRATEGY

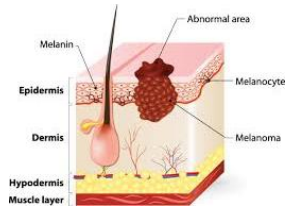
1 Establish path-to-market



Mesothelioma

- ~15.000 patients
- Potential for first line, limited competition

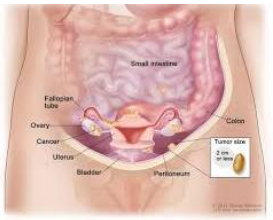
2 Activate refractory tumors



Anti-PD1 refractory melanoma

- Few alternatives for ~50.000 patients
- Benchmarking arena for immune activators

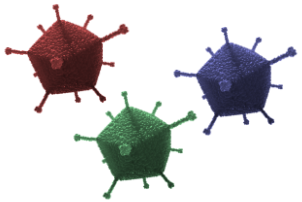
3 Expand CPI indications



Peritoneal malignancies

- Metastases from ovarian and colorectal cancers
- >100.000 patients not responding to CPIs

4 Expand platform



Next generation oncolytic viruses

- Double transgenes
- Novel targets and modes of action

Patient numbers are yearly incidence in EU5, US and Japan, Company estimates based on Global Data

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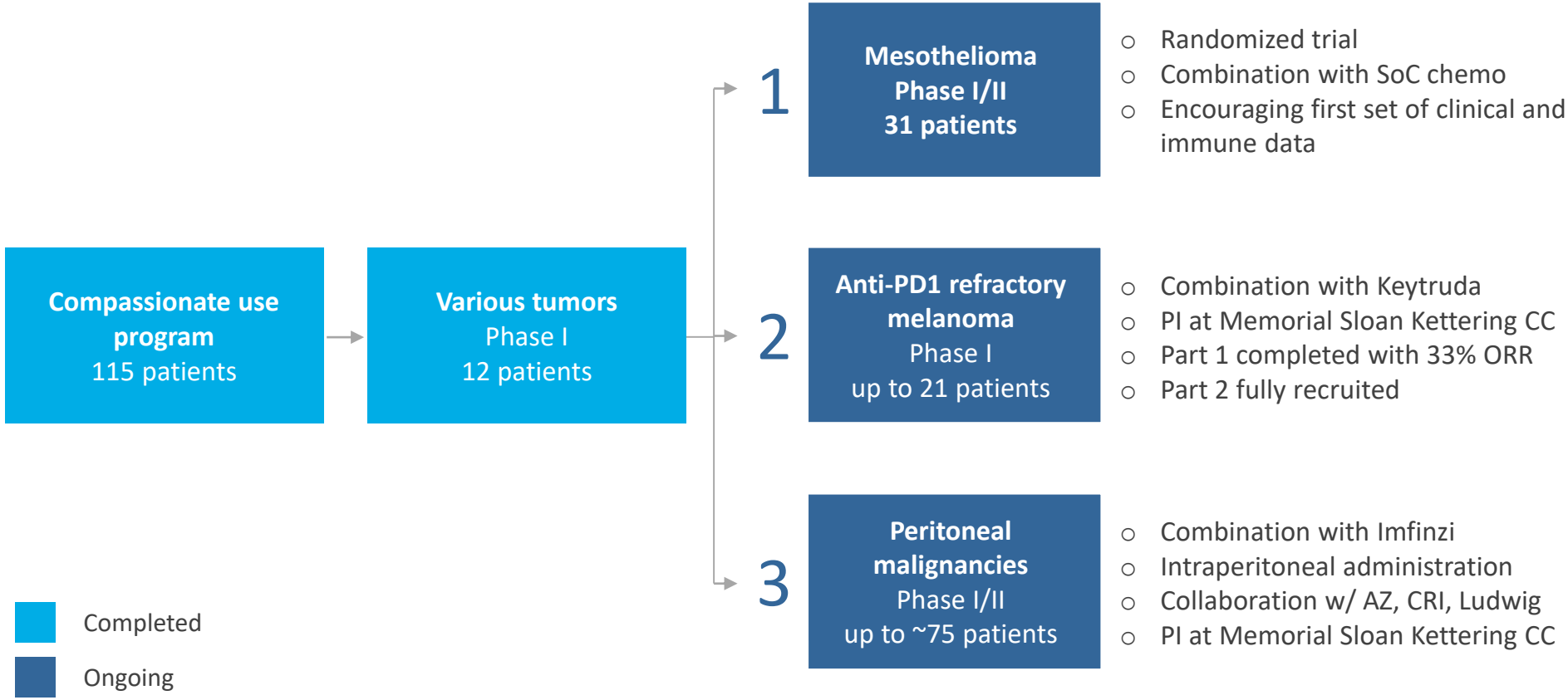
ONCOS-102 CLINICAL DEVELOPMENT PROGRAM



Targovax is also involved in an ongoing combination trial in Prostate cancer were ONCOS-102 is combined with a dendritic cell vaccine (DCVAC). This trial is sponsored by Sotio, a Czech biotech company

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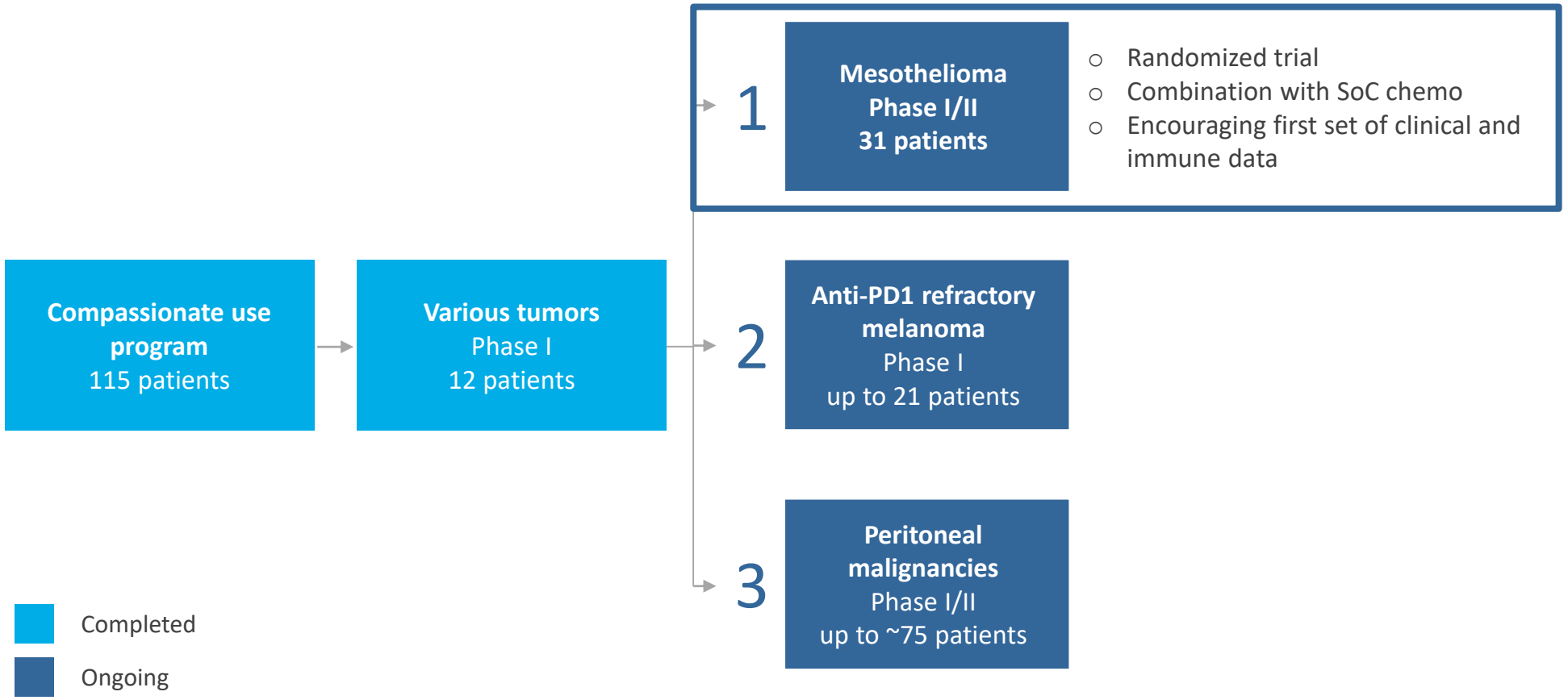
ONCOS-102 CLINICAL DEVELOPMENT PROGRAM



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Mesothelioma

3. Melanoma
4. Peritoneal malignancies
5. Newsflow

MALIGNANT PLEURAL MESOTHELIOMA

HIGH NEED FOR NEW TREATMENT APPROACHES

Surgery

Only 10% of patients suitable for resection

Often diagnosed too late for surgery

Technically challenging

Radiotherapy

Rarely effective due to tumor shape

Hard to focus radiation

Mainly palliative care

Chemotherapy

Standard of care (SoC) with limited efficacy

Only approved option is pemetrexed/cisplatin

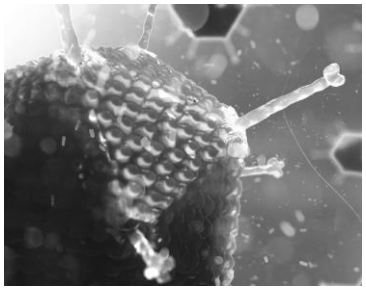
6 month PFS and 12 month median OS in 1st line

Immunotherapy

Mixed signals from early CPI trials

CPIs included in NCCN guidelines as 2nd line option

Possible frontline therapy with orphan drug designation



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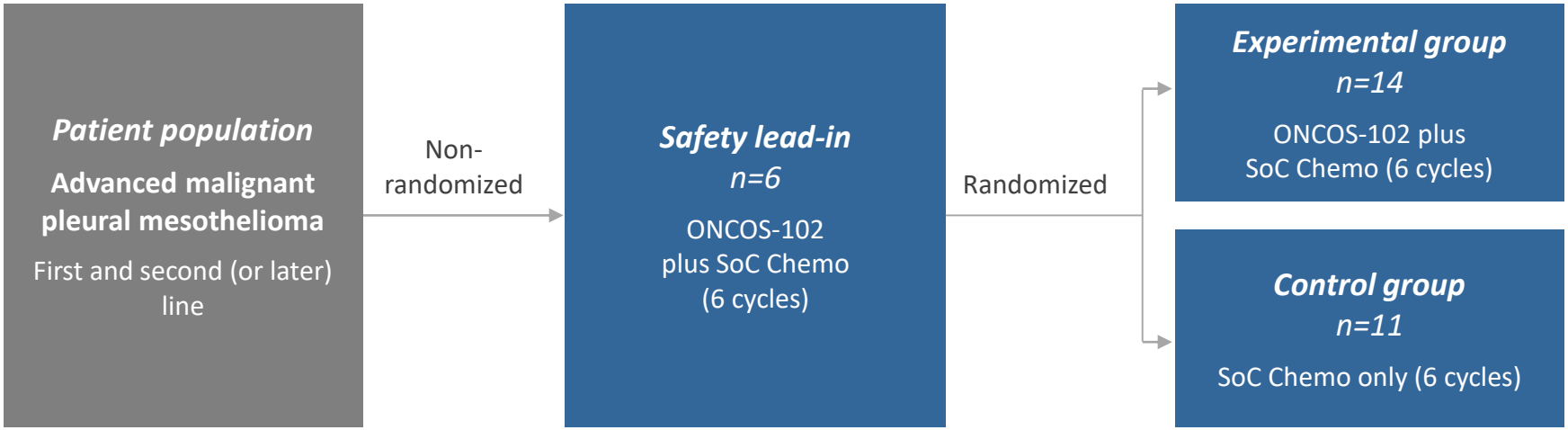
ONCOS-102 MESOTHELIOMA PHASE I/II TRIAL IN COMBINATION WITH CHEMO

STUDY DESIGN



ONCOS-102 MESOTHELIOMA PHASE I/II COMBINATION WITH SOC

PATIENT CHARACTERISTICS AND OUTCOMES

ITT: N = 31 (20+11) PP: N = 30 (19+11)	**Experimental** n= 20	**Control** n= 11	***Comments***
Tumor and disease characteristics at enrollment - Number of lesions - Tumor burden mm (RECIST 1.1) - Stage III - Stage IV	 4.3 87 30% 60%	 3.5 46 27% 46%	*Generally more progressed disease in experimental group*
First line patients (number)	11 of 20	6 of 11	*No previous chemotherapy*
Median Progression Free Survival (mPFS)	8.9 months	6.8 months	*Early data, many patients censored*
Overall Response Rate (ORR, n=10 / n=6)	30%	33%	
Disease Control Rate (DCR, n= 10 / n=6)	90%	83%	
Second (or later) line patients (number)	9 of 20	5 of 11	*Received previous chemotherapy*
Median Progression Free Survival (mPFS)	4.5 months	ND	*Early data, many patients censored*
Overall Response Rate (ORR, n=9 / n=5)	11%	60%	
Disease Control Rate (DCR, n=9 / n=5)	67%	80%	

ITT: Intention to treat
PP: Per protocol

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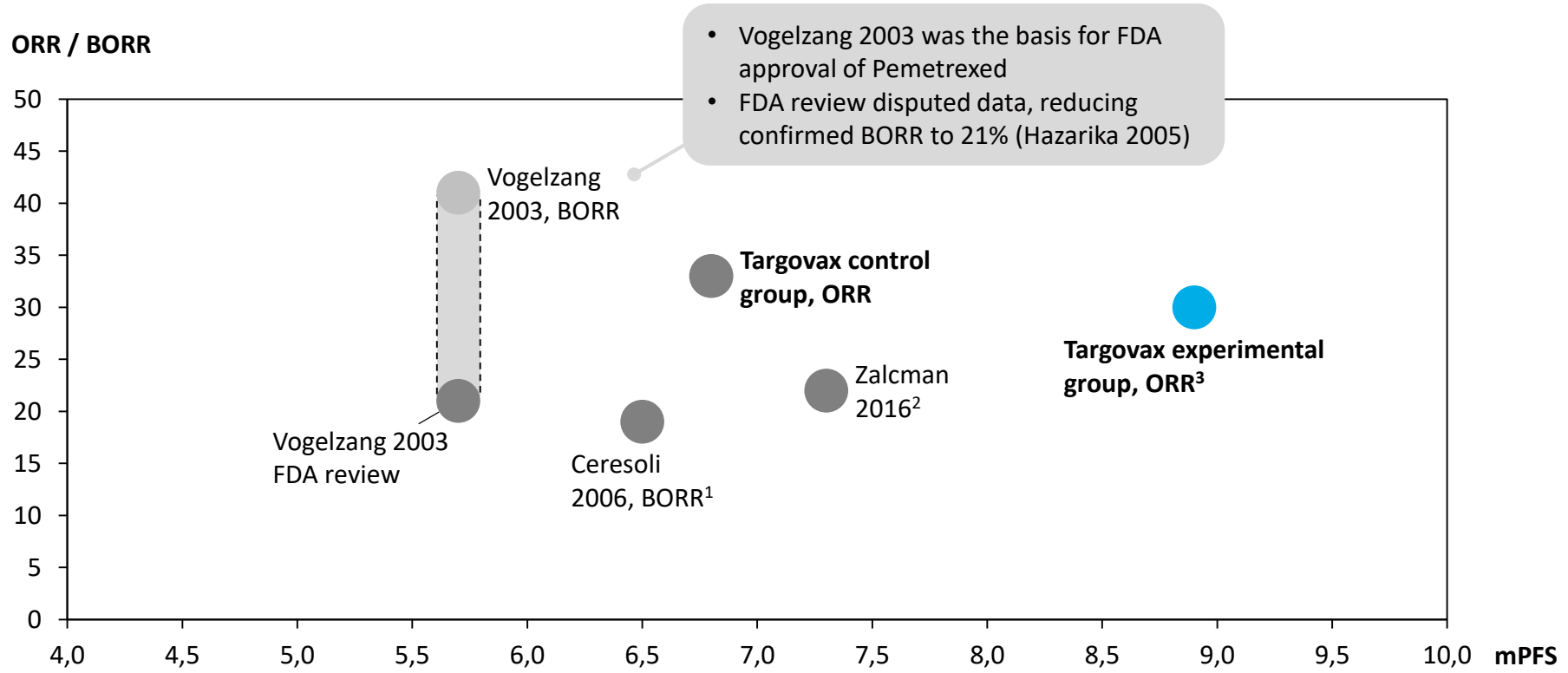
FIRST LINE ONCOS-102 ORR AND EARLY PFS DATA COMPARE FAVORABLY TO HISTORICAL CONTROL

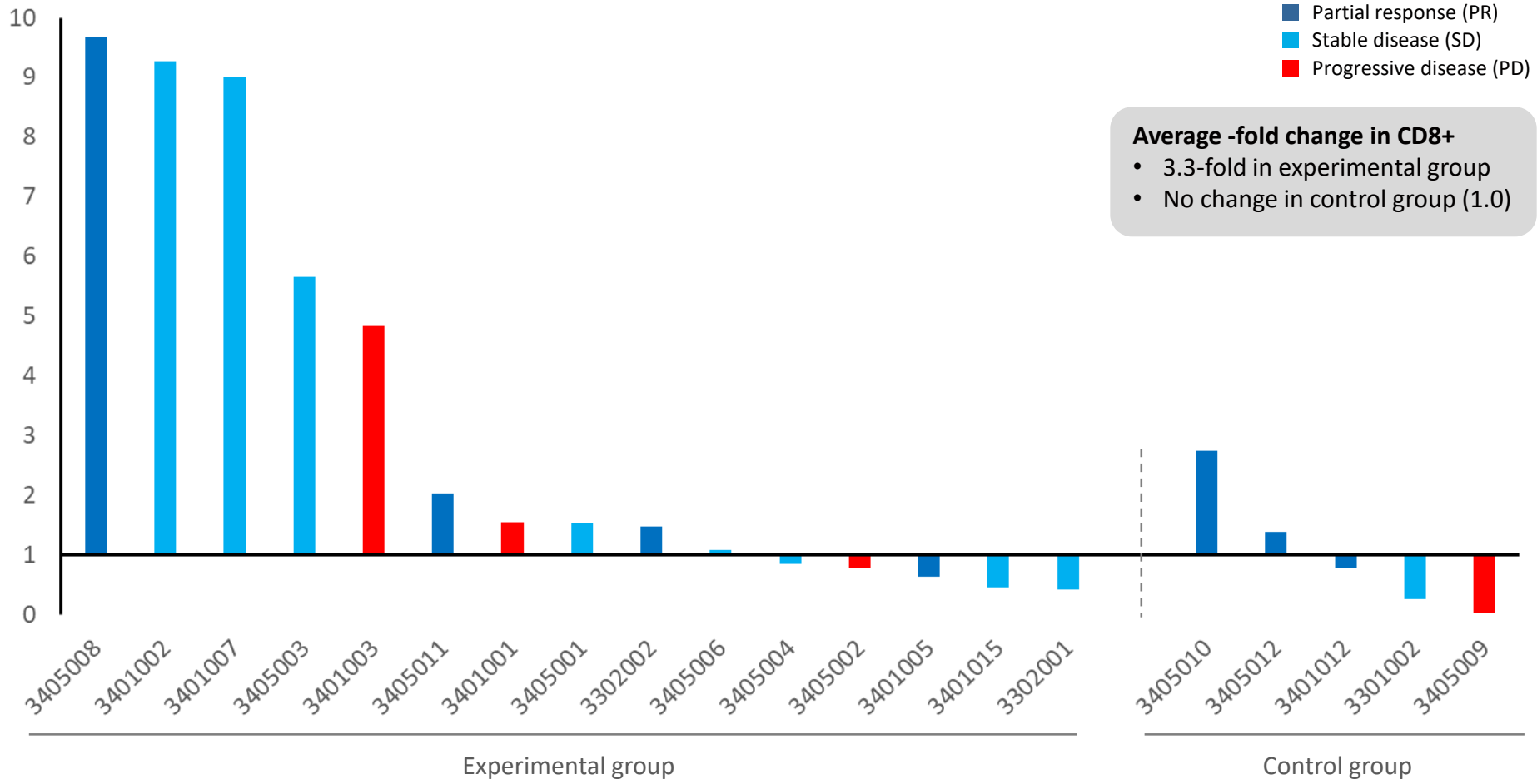


1 Pemetrexed plus carboplatin
2 Zalcman 2016 (Lancet) compared bevacizumab + pem/cis vs pem/cis; data from pem/cis arm only presented on plot. Not specified if ORR or BORR.
3 mPFS in Targovax trial is early and will change: Control group 6 patients (3 censored), Experimental group 11 patients (7 censored)

ONCOS-102 MESOTHELIOMA IMMUNE ACTIVATION

INCREASED T-CELL INFILTRATION IN EXPERIMENTAL GROUP

CD8+ T-cell infiltration -fold change from baseline to day 36 (n=20[1])



Average -fold change in CD8+

- 3.3-fold in experimental group
- No change in control group (1.0)

1: 20 patients with evaluable pre/post biopsies, experimental group n=15 and control group n=5

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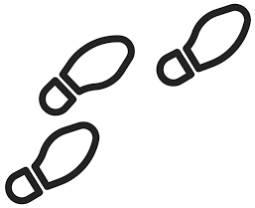
MESOTHELIOMA SUMMARY AND NEXT STEPS

Excellent safety profile

- ONCOS-102 and SoC chemotherapy **combination is well-tolerated**

Clinical activity observed

- Emerging data suggest **benefit for ONCOS-102 treated patients** and compare favorably to historical control
- Increased **T-cell infiltration** and **PD-L1 expression**
- Robust immune activation **associated with clinical benefit**

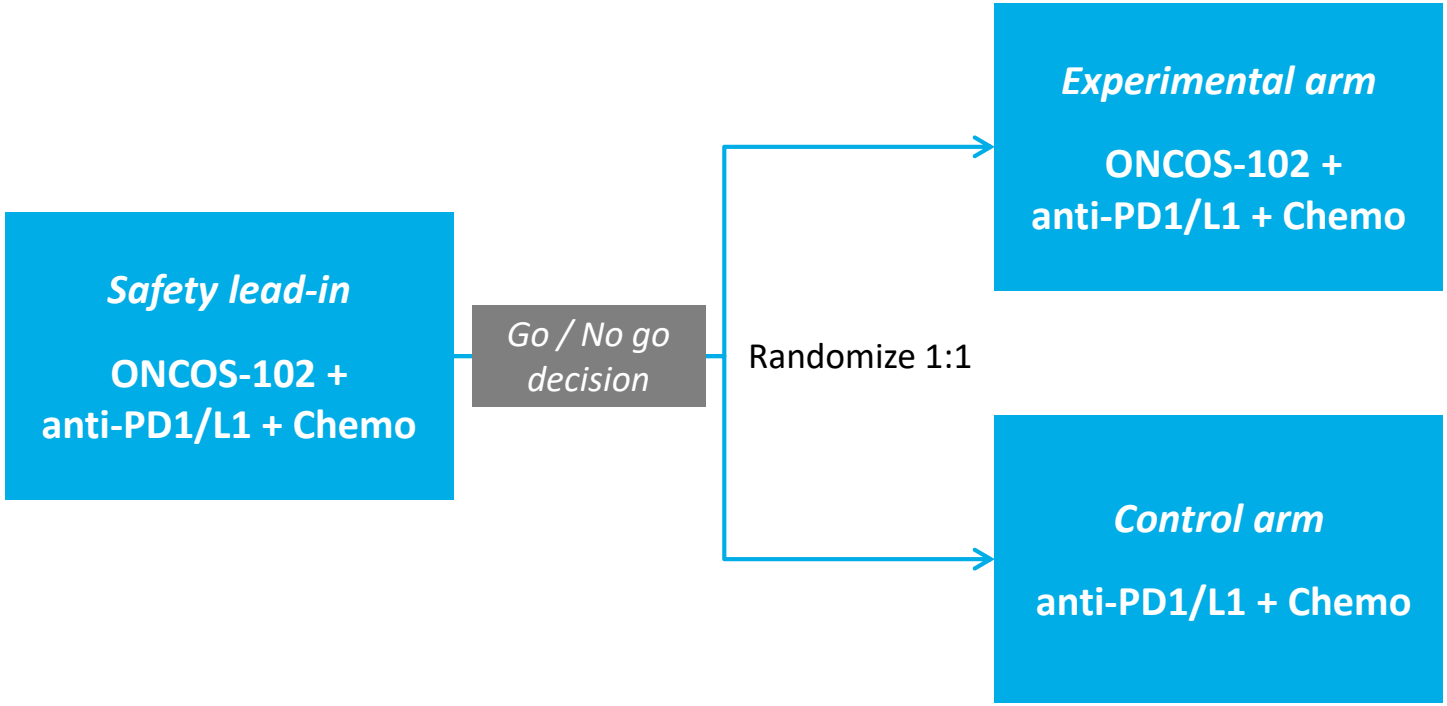


Next steps defined

- **First line** identified as **target population** for follow-up trial
- **Strong rationale** for combination with anti-PD1/L1 CPI
- **Discussion ongoing with pharma partner** for trial collaboration

NEXT STEP: ONCOS-102 + ANTI-PD1/L1 + CHEMO
TRIPLE COMBINATION IN FIRST LINE MESOTHELIOMA

Study population – malignant pleural mesothelioma:
First line, unresectable, advanced and/or metastatic disease
ca. 100 patients



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Melanoma

2. Peritoneal malignancies
3. Newsflow

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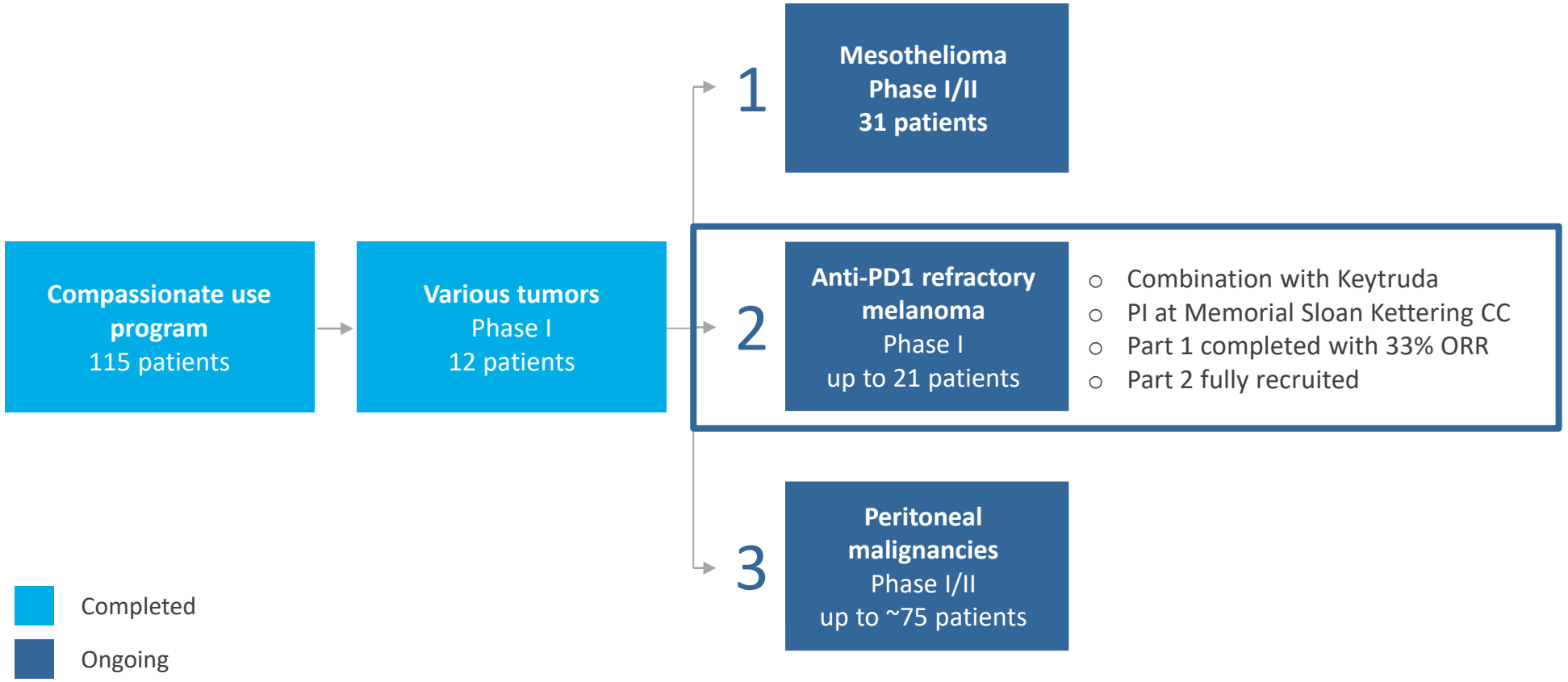
ONCOS-102 CLINICAL DEVELOPMENT PROGRAM



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ANTI-PD1 REFRACTORY MELANOMA

ONCOS-102 AND KEYTRUDA COMBINATION – FULLY RECRUITED

	Part 1	Part 2
Patients	9	12
ONCOS-102 injections	3	12
Overall response rate (ORR)	33%	*2H20*

ONCOS-102 ANTI-PD1 REFRACTORY MELANOMA PART 1

33% ORR AND ROBUST IMMUNE ACTIVATION

Patient population

- Advanced, unresectable **melanoma**
- Disease **progression** following prior treatment with anti-PD1
- Poor prognosis, with **few treatment alternatives**

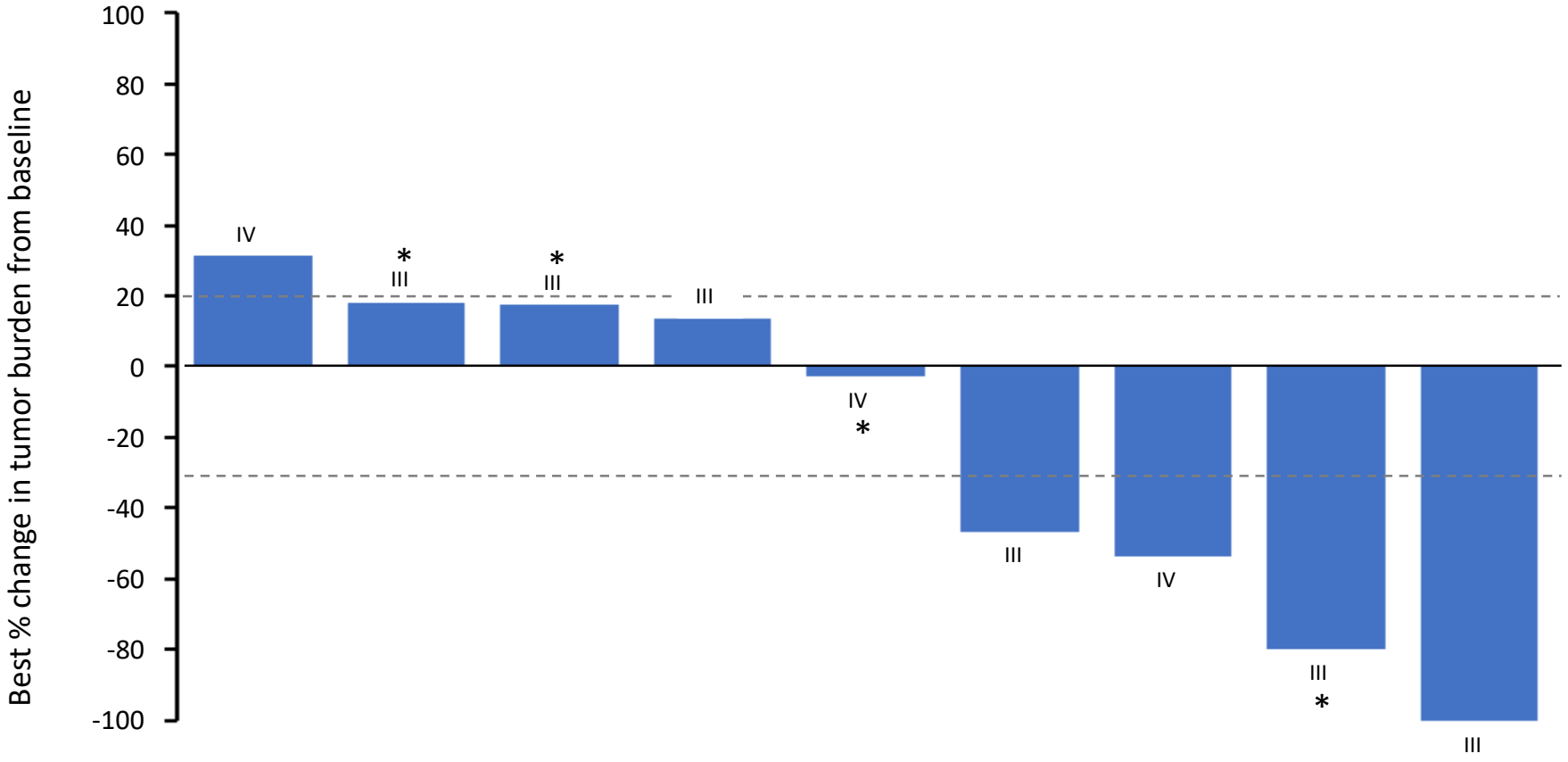
Treatment regime

- **3 ONCOS-102 injections** followed by 5 months of Keytruda

Clinical data

- Well tolerated, no major concerns
- **33% ORR** after 6 months by RECIST 1.1 and irRECIST
  - 1 Complete Response (CR)
  - 2 Partial Responses (PR)
- Robust systemic and local **immune activation**

BEST PERCENTAGE CHANGE IN TARGET LESIONS



* Progressive Disease due to non target progression

Letters and numbers indicating disease stage

Preliminary data

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CASE EXAMPLE: PATIENT WITH COMPLETE RESPONSE

Tumor response, 1 of 1 injected lesion

Baseline	*Week 3*	*Week 9*	*Week 18*	*Week 27 (EoS)*
				
Progression on Keytruda	3x ONCOS-102 only	3x ONCOS-102 & 2x Keytruda	3x ONCOS-102 & 5x Keytruda	3x ONCOS-102 & 8x Keytruda

Patient characteristics

Tumor stage at enrolment:	**IIIb** T4a, N2b, M0	**Prior therapies:**	Surgery (x3) Ipilimumab Dabrafenib + Trametinib Keytruda
RECIST 1.1:	**CR**, week 9-27		

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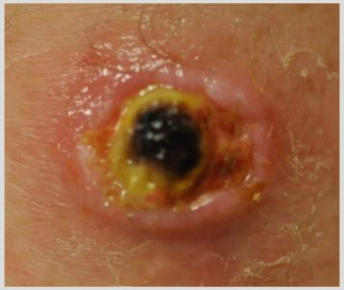
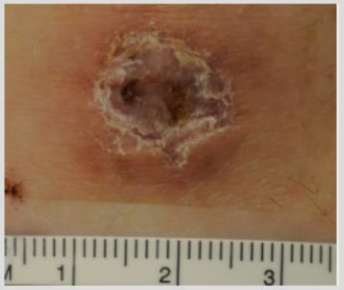
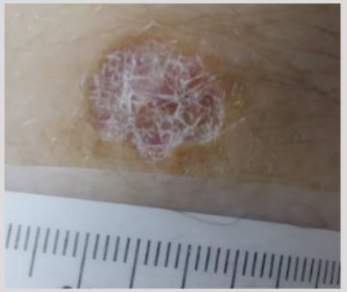
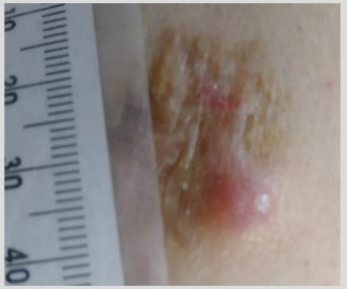
CASE EXAMPLE: PATIENT WITH PARTIAL RESPONSE

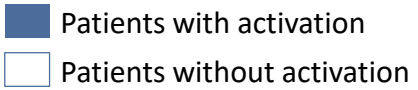
Tumor response, 2 of 2 injected lesions

	Baseline	*Week 3*	*Week 9*	*Week 18*	*Week 27 (EoS)*
Lesion 1 of 2					
Lesion 2 of 2					
	Progression on Keytruda	3x ONCOS-102 only	3x ONCOS-102 & 2x Keytruda	3x ONCOS-102 & 5x Keytruda	3x ONCOS-102 & 8x Keytruda

Patient characteristics

Tumor stage at enrolment:	**IV** T4a, N1b, M1	**Prior therapies:**	Surgery Talimogene-laherparepvec (T-vec) Ipilimumab Keytruda
RECIST 1.1:	**PR**, week 9-27		

ROBUST LOCAL AND SYSTEMIC IMMUNE ACTIVATION



Inflammatory response and innate immune activation

- Pro-inflammatory cytokine increase: IL-6 and / or TNFa
- Increase in systemic IFNγ expression
- Fever/chills

Adaptive immune activation

T-cell tumor infiltration

- Increase in CD8+ T-cell infiltration
- Increase in activated[1] CD8+ T-cells
- PD1+/CD8+ T-cells in treated lesions
- T-cells in non-treated lesions on Week 3

Tumor specific activation

- Systemic increase in tumor specific T-cells, NY-ESO-1 and/or MAGE-A1
- Increase in PD-L1 expression in tumor
- Melanoma specific cancer markers strongly reduced

1 Defined as GRZB+/CD8+ T-cells
Unpublished company data

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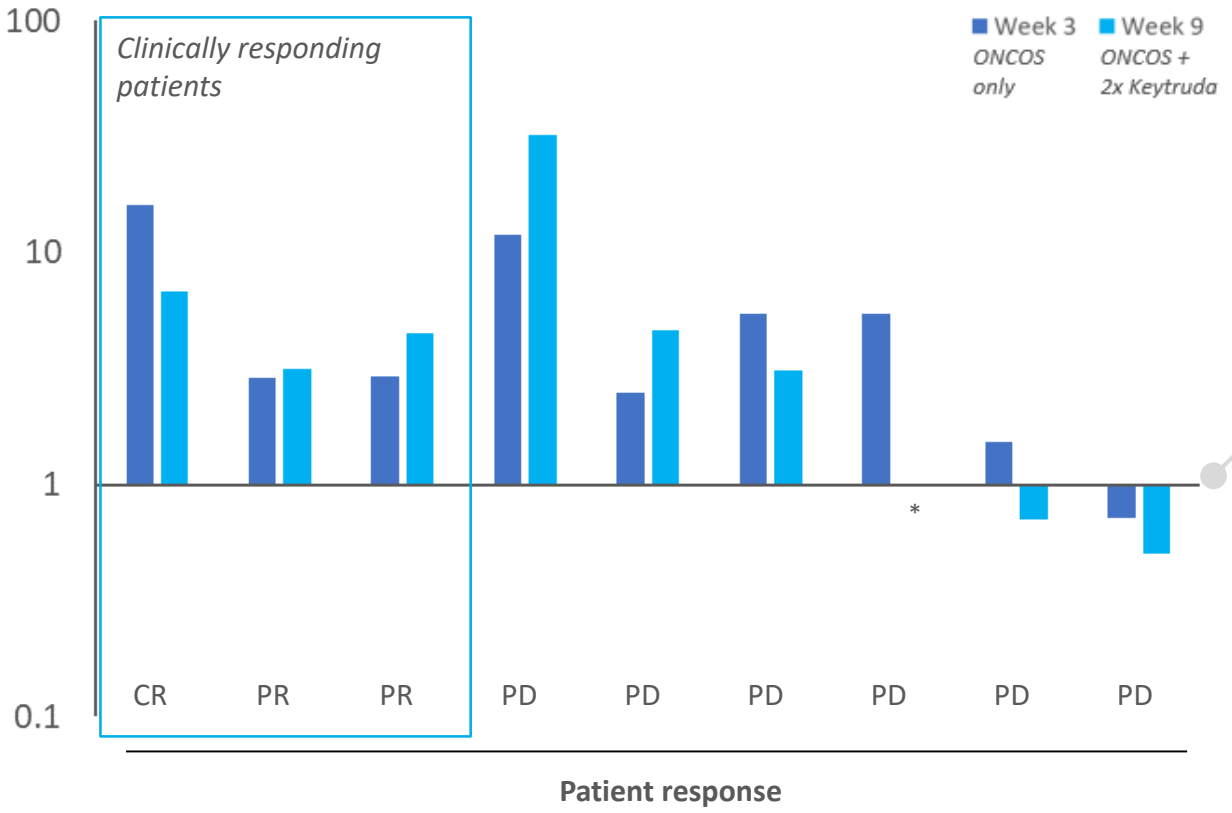
INCREASE IN CD8+ T-CELL INFILTRATION APPEARS TO BE NECESSARY, BUT NOT SUFFICIENT, FOR RESPONSE

CD8+ T-cell infiltration into injected lesions, -fold change from baseline



All 9 patients had low or very low CD8+ T-cell infiltration at baseline

Do not post, unpublished company data

- Week 9 analysis not available

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

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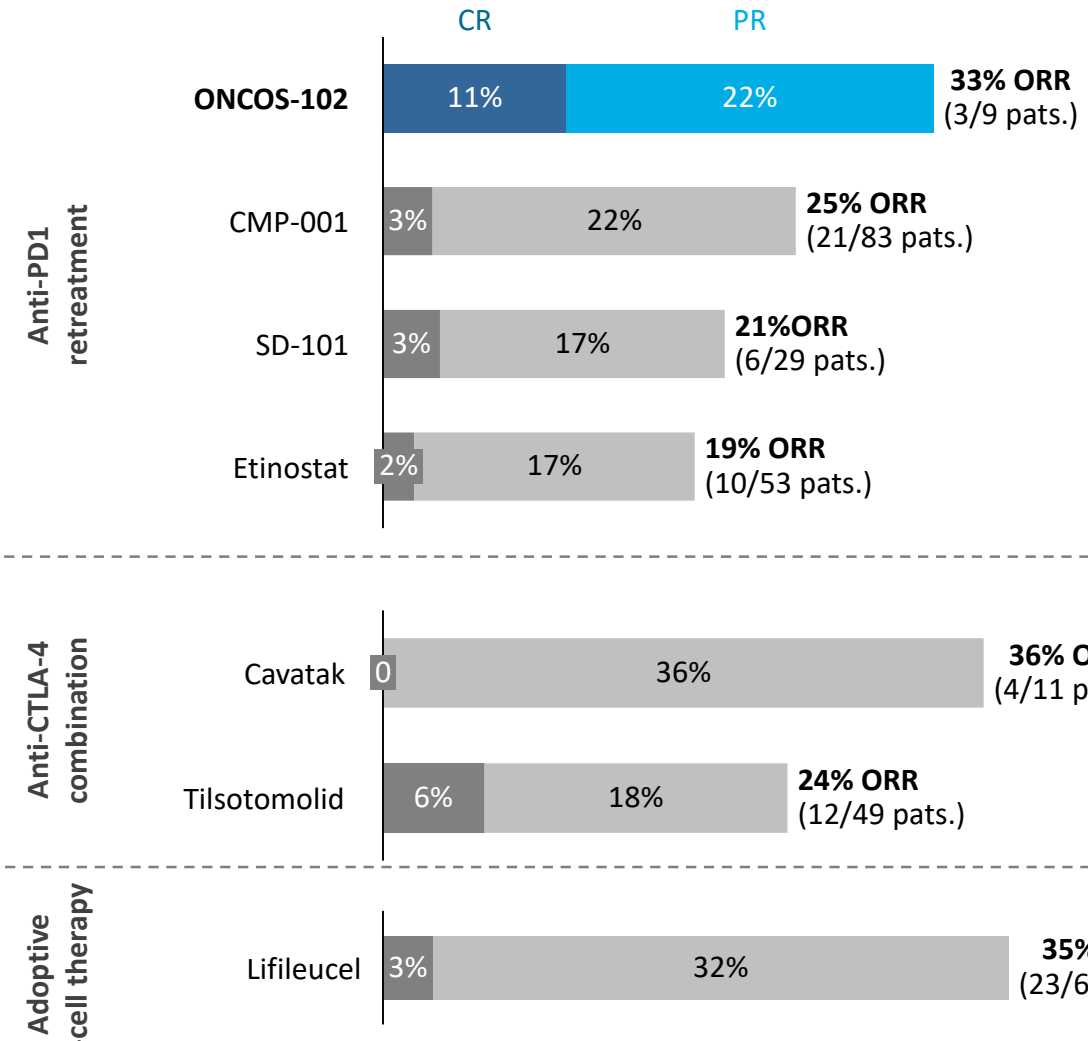
ONCOS-102 + KEYTRUDA DATA IN CONTEXT

ANTI-PD1 REFRACTORY MELANOMA BENCHMARK DATA



Comment

- *Checkmate Pharma, TLR-9 agonist*
- *Data from high dose cohort*
- *Dynavax, TLR-9 agonist*
- *Syndax Pharma, HDAC inhibitor*

Most pats CTLA4 naïve, 10-20% ORR expected

- *Merck (Viralytics), Oncolytic virus, up to 20 injections*
- *Idera, TLR-9 agonist*
- *IOvance, autologous TIL therapy with IL-2*
- *Complex and expensive manufacturing*

SOURCE: Targovax market analysis, November 2019

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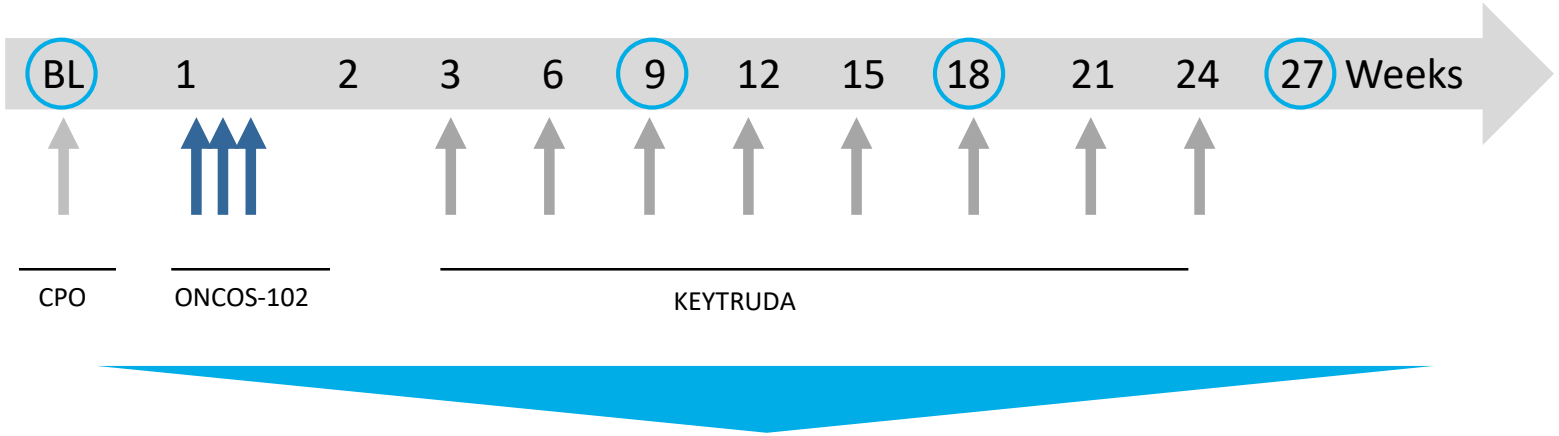
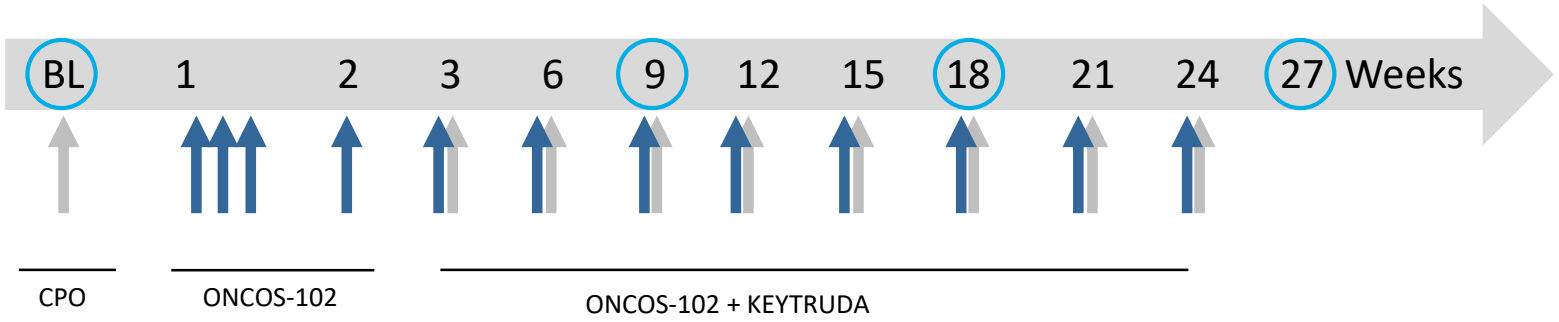
PART 2 WITH EXTENDED DOSING

Part 1:
3 ONCOS-102 injections



Part 2:
12 ONCOS-102 injections



○ *Imaging*

CPO: Cyclophosphamide

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4

Peritoneal malignancies

5. Newsflow

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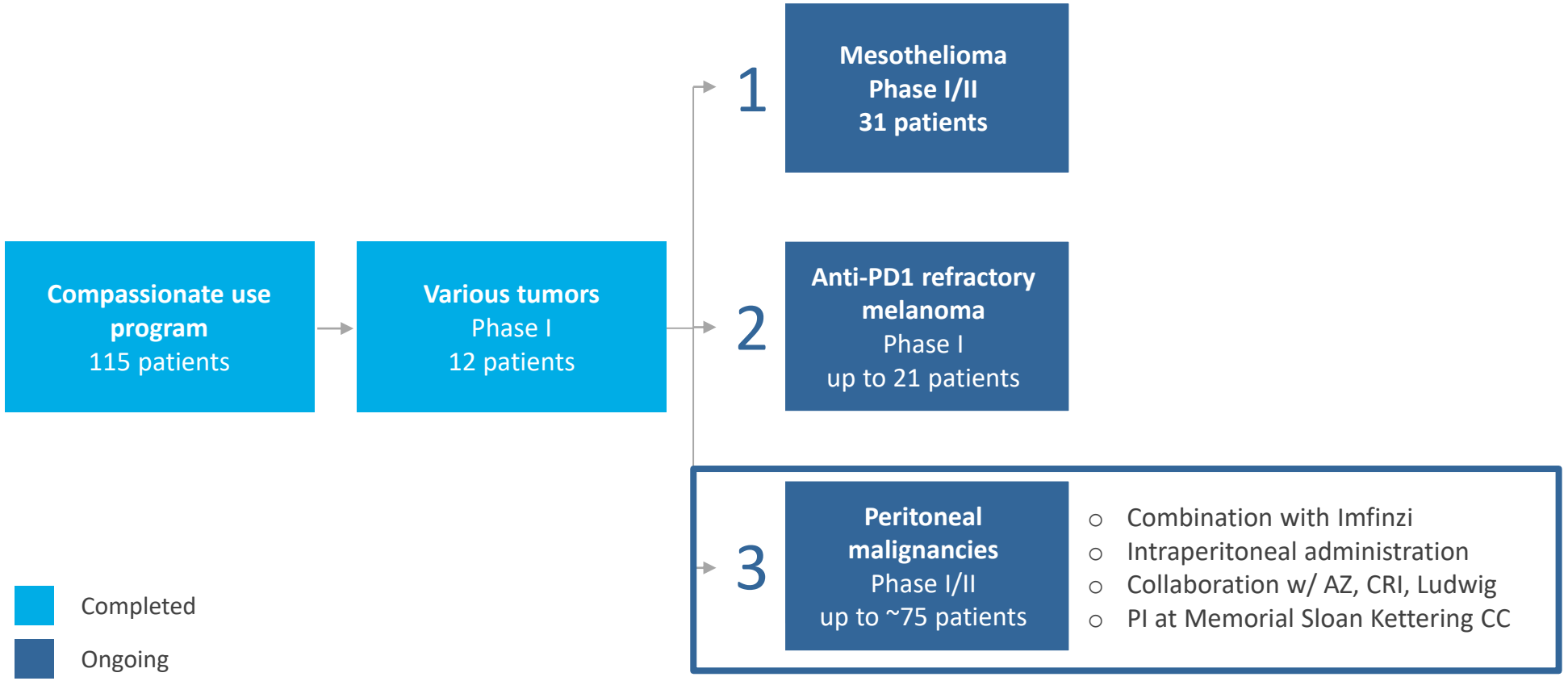
ONCOS-102 CLINICAL DEVELOPMENT PROGRAM



Targovax is also involved in an ongoing combination trial in Prostate cancer were ONCOS-102 is combined with a dendritic cell vaccine (DCVAC). This trial is sponsored by Sotio, a Czech biotech company

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ONCOS-102 IN PERITONEAL MALIGNANCIES

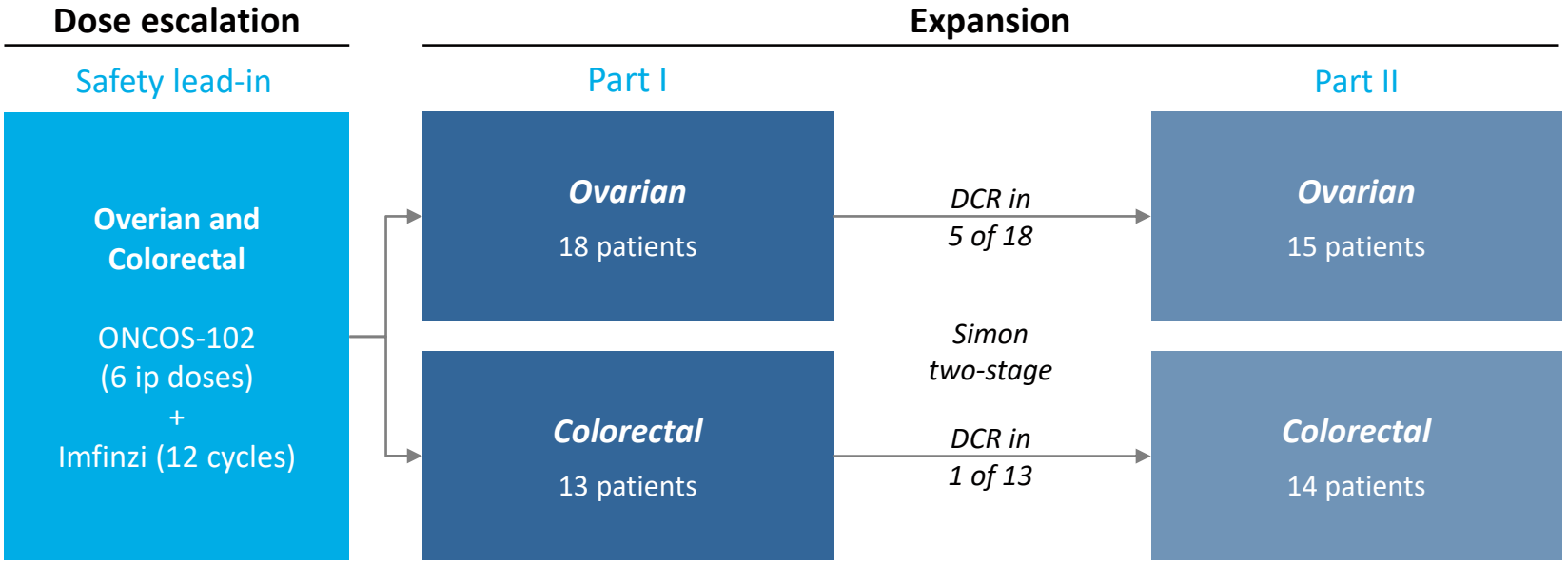
PHASE I/II TRIAL IN COMBINATION WITH IMFINZI

Collaboration

CANCER RESEARCH INSTITUTE
LUDWIG CANCER RESEARCH
AstraZeneca

Patient population

- Platinum-resistant ovarian cancer or colorectal cancer
- Peritoneal disease who have failed prior standard chemotherapy



5 Newsflow

PIPELINE WITH RICH NEAR-TERM NEWS FLOW

Product candidate	Preclinical	Phase I	Phase II	Phase III	Next expected event
ONCOS-102	**Mesothelioma** Combination w/ pemetrexed/cisplatin				**1H 2020** Updated clinical and immune data
	Melanoma Combination w/Keytruda				**2H 2020** Clinical and immune activation data
	Peritoneal malignancies Collaborators: Ludwig, CRI & AstraZeneca Combination w/Imfinzi				*Update by collaborators*
	Prostate Collaborator: Sotio Combination w/DCvac				*Update by collaborator*
ONCOS-200 series	**Next Gen viruses**				**1H 2020** Pre-clinical data

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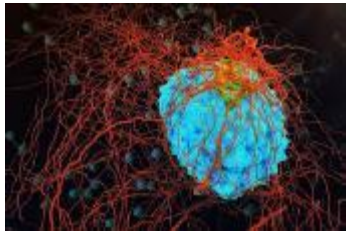
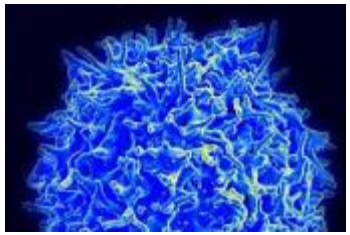
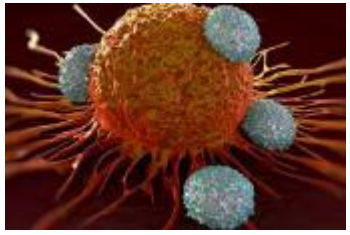
NEXT GENERATION ONCOS VIRUSES HAVE DOUBLE TRANSGENES AND DISTINCT MODES OF ACTION

	Mode of action	Target tumors
 **ONCOS-210 & -212** *Inhibition of tumor growth and vascularization*	○ Interfere with tumor's ability to break down surrounding tissue ○ Induce cell cycle arrest ○ Inhibit angiogenesis	○ Highly invasive or metabolic tumors
 **ONCOS-211** *Counteract immune-suppressive tumor microenvironment*	○ Decrease inhibitory factors from tumor microenvironment ○ Activate T-cells	○ "Cold" uninflamed tumors
 **ONCOS–214** *Enhanced cell killing properties*	○ Induce immunogenic cell death ○ Extend cell killing ability to neighboring non-infected cells	○ High-stroma tumors

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SUFFICIENTLY FUNDED TO ADVANCE CLINICAL PROGRAM BEYOND VALUE INFLECTION POINTS

The company

Cash end of 4Q

70 / **7**

NOK million **USD million**

Raised NOK 101m / USD 11 in Jan 2020

Net cash flow - total 4Q

-34 / **-4**

NOK million **USD million**

Market cap

320 / **32**

NOK million **USD million**

Analyst coverage

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

The shareholders

	Estimated ownership[1]	
Shareholder	**Shares million**	**Ownership**
HealthCap	12.4	16.3 %
RadForsk	4.4	5.8 %
Nordea	4.3	5.7 %
AP4	2.6	3.4 %
Thorendahl Invest	1.5	2.0 %
Danske Bank (nom.)	1.0	1.3 %
Sundt	1.0	1.3 %
Morgan Stanley & Co. Int	0.9	1.2 %
ABN AMRO Global (nom.)	0.9	1.2 %
MP Pensjon	0.9	1.1 %
10 largest shareholders	**29.9**	**39.3 %**
Other shareholders (4 997)	46.1	60.7 %
Total shareholders	**76.0**	**100.0 %**

[1] As per 25 February 2020

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ACTIVATING THE IMMUNE SYSTEM

TO FIGHT CANCER

CLINICALLY PROVEN

One of the furthest developed oncolytic viruses

Strong single agent data

Activation of anti-PD1 refractory tumors

INNOVATIVE PIPELINE

Next generation virus platform in pre-clinical testing

RICH NEWS FLOW

Mesothelioma and melanoma trials fully recruited, expecting readouts during 2020