

KEYNOTE 695: TAVO™ Phase 2b Melanoma Trial

Preliminary Data for SITC 2018

November 6, 2018

FORWARD-LOOKING STATEMENTS

To the extent statements contained in the following presentations are not descriptions of historical facts regarding OncoSec Medical Incorporated, they should be considered “forward-looking statements,” as described in the Private Securities Litigation Reform Act of 1995, that reflect management’s current beliefs and expectations. You can identify forward-looking statements by words such as “anticipate,” “believe,” “could,” “estimate,” “expect,” “forecast,” “goal,” “hope,” “hypothesis,” “intend,” “may,” “plan,” “potential,” “predict,” “project,” “should,” “strategy,” “will,” “would,” or the negative of those terms, and similar expressions that convey uncertainty of future events or outcomes. Forward-looking statements are not assurances of future performance and include, but are not limited to, statements regarding: (i) the success and timing of our product development activities and clinical trials; (ii) our ability to develop and commercialize our product candidates; (iii) our plans to research, discover, evaluate and develop additional potential product, technology and business candidates and opportunities; (iv) our and our partners’ ability to develop, manufacture and commercialize our product candidates and to improve the manufacturing process; (v) the size and growth potential of the markets for our product candidates, and our ability to serve those markets; (vi) the rate and degree of acceptance of our product candidates; (vii) our ability to attract and retain key scientific or management personnel; (viii) the anticipated timing of clinical data availability; (ix) the anticipated timing of commercial launch of ImmunoPulse® IL-12; (x) our ability to meet our milestones; (xi) our expectations regarding our ability to obtain and maintain intellectual property protection; (xii) the level of our corporate expenditures; (xiii) the assessment of our technology by potential corporate partners; and (xiv) the impact of capital market conditions on us. Forward-looking statements are subject to known and unknown factors, risks and uncertainties that may cause actual results to differ materially from those expressed or implied by such forward looking statements. These statements are also subject to a number of material risks and uncertainties that are described in OncoSec’s most recent Annual Report on Form 10-K filed with the Securities and Exchange Commission, as updated by its subsequent filings with the Securities and Exchange Commission. Undue reliance should not be placed on forward-looking statements. We undertake no obligation to publicly update any forward-looking statements, except as required by law. OncoSec’s investigational drug and device products have not been approved or cleared by the FDA.

KEYNOTE-695

Introduction

- Immune checkpoint inhibitors have become a mainstay in the treatment of melanoma¹
- However, a high unmet medical need remains in metastatic melanoma
 - Most patients do not respond to immune checkpoint inhibition^{2,3}
 - Attempts to potentiate activity by combining ipilimumab and nivolumab has resulted in significant toxicity⁴
- There is currently no approved therapy in the “salvage” setting for immune checkpoint inhibitor-refractory metastatic melanoma patient populations¹
 - KOLs consider ~10% response rate clinically meaningful as this is what they could elicit with additional chemotherapy; however, responses achieved with chemotherapy are not durable⁵
 - Tolerability is an important consideration in this heavily pretreated population

Patient Eligibility Criteria WRT FDA Approved Anti-PD-1 Therapy

- Pathologically documented unresectable melanoma, Stage III/IV, with histological or cytological confirmed diagnosis of unresectable melanoma with progressive locally advanced or metastatic disease
- All patients must be refractory to anti-PD-1 mAbs (pembrolizumab or nivolumab according to their approved label) and must meet all of the following criteria:
 - Received 4+ doses of anti-PD-1
 - Progressive disease after anti-PD-1 mAb according to RECIST v1.1
 - Documented disease progression ≤ 24 weeks of the last dose of anti-PD-1
- No intervening therapies permitted in-between anti-PD-1 failure and TAVO/KEYTRUDA combination
- Prior treatment with an approved BRAF inhibitor if BRAF mutation-positive

KEYNOTE-695

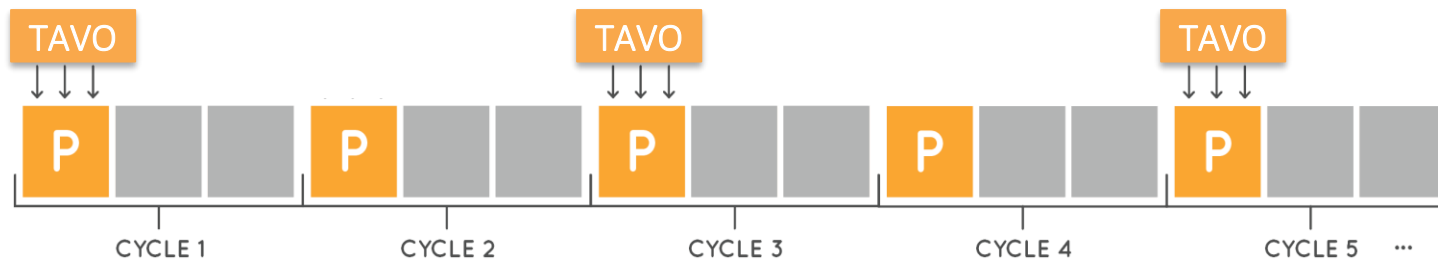
Preliminary Data

- Interim data set as of September 1, 2018
 - 21 enrolled, 19 patients treated
 - 9 patients evaluable for first scan, having completed 12 weeks of treatment
- Preliminary responses (based on RECIST v1.1)
 - 2/9 PRs and 1/9 SD (22% BORR and 33% DCR) at initial tumor evaluation (12 weeks of treatment)
 - Immunological response assessment correlated to observed clinical responses
 - Tumor responses observed in treated and untreated lesions
 - Preliminary response rates are strong in this “salvage” patient population
- Safety Profile
 - Nearly all Grade 1 AE's of predominately transient pain/discomfort
 - One TAVO related Grade 3 SAE of cellulitis was reported and resolved
 - With over a 150 patients treated with TAVO to date, other than two Grade 3 episode of cellulitis, which resolved completely, TAVO-related AEs have been limited to Grade 1, predominately injection site discomfort/pain
- Based on the outcome of the study and feedback from FDA, the Company plans to file for accelerated approval by end of 2019 or early 2020

KEYNOTE-695: TAVO for Stage III/IV Melanoma

Anti-PD-1 IL-12 Stage III/IV Combination Electroporation Study

- Single Arm Phase 2/3 study
- Primary outcome: BORR based on RECIST v1.1
- Secondary outcomes: DOR, PFS and OS
- Eligible patients: anti-PD-1 non-responders with stage III/IV melanoma
 - Received 4+ doses of anti-PD-1
 - Progressive disease according to RECIST v1.1
 - Documented disease progression ≤ 24 weeks of the last dose of anti-PD-1
 - No intervening therapies permitted in-between checkpoint failure and TAVO/KEYTRUDIA® combination



P = Pembrolizumab treatment

- ✓ Orphan designation
- ✓ Fast Track
- Breakthrough status
- Accelerated pathway

Approximately 80 patients
Dosing ongoing in ~20 sites
(U.S. Australia & Canada)
Top, preliminary data at SITC 2018
Complete enrollment by mid-2019

KEYNOTE-695—Response Rates for First 9 Patients Who Completed 12 Weeks of Treatment

Patient Number	Response Rate
61- 007-104	PR
61-004-103	PR
61-008-101	SD
61-007-103	iUPD; iSD (SD TL / new NTL)
01- 009-101	iUPD; WDC (PR TL / new NTL)
61-008-102	iUPD; WDC (SD TL / new NTL)
61-007-102	PD
61-006-102	PD
61-004-102	PD

SUMMARY OF RESPONSE

2 PR

1 SD

3 iUPD

3 PD

Overview

Patient # 61-007-104

- Male 65yrs
- Stage at screening – Stage IVB
- Metastatic disease in lymph nodes (distant), lung and subcutaneous
- Medical history – hip replacement, thumb infection, enlarged prostate, removal of BCC on the neck
- Prior surgery on lesion on abdominal wall, dissection left groin, sentinel & right axillary lymph node. No radiotherapy.
- ***Prior Systemic therapy***
 - ***Pembrolizumab 150 mg IV for 7 cycles => PD***

Medical History

65 year-old white male with Stage IVB melanoma (61-007-104)

Medical History:

- Osteoarthritis with bilateral hip replacements
- Benign prostatic hyperplasia
- Basal cell carcinoma
- Spontaneous pneumothorax

Melanoma History:

February 2014

- Diagnosis melanoma
- Excision of primary lesion right abdominal wall

September 2016

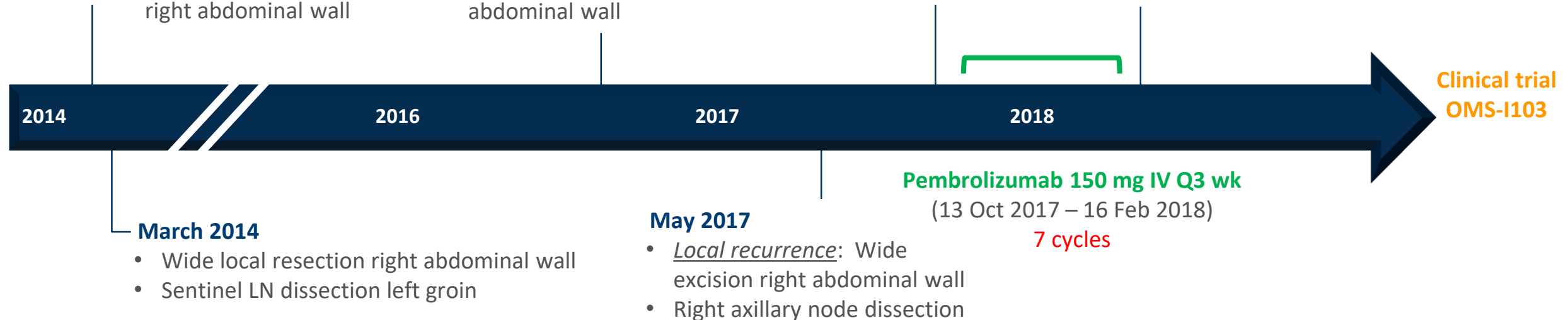
- Local recurrence: Excision right abdominal wall

October 2017

- Distant recurrence: Excision subcutaneous lesion in left forearm
- Distant LN, lung metastases

February 2018

- Disease progression in LN and lungs after 7 cycles



Measures and PI ORR Assessment

Patient # 61-007-104

- @ Cycle 5 (2 TAVO treatments)
- Target Lesion PR
- Non target lesion non CR / non PR
- No new lesions

- Measures

	TL1 skin (treated)	TL2 skin (treated)	TL3 lymph (untreated)
Baseline	16mm	25mm	28mm
Cycle 5 (~12 wks)	4mm	27mm	6mm

Clinical Trial Experience and 12-week Response

Patient # 61-007-104

9 April 2018:

Screening

- Melanoma, Stage IVB, with subcutaneous lesions, lung and LN involvement
- ECOG PS: 0

16 April 2018 – 9 July 2018

Treatment as per protocol Cycle 1 – 5

- IT-tavo-EP: Days 1, 5, 8 every other cycle (each 6 weeks)
- Pembrolizumab (200 mg IV): Day 1 of each 3-week cycle

Adverse events Cycle 1 – 5

- Grade 1 injection site pain
 - Investigator deemed related to process of EP and not to the injected treatment

9 July 2018 (cycle 5, day 1):

Tumor response at 12 weeks

- Target lesions: PR*
 - 46.4% decrease in sum of diameters
 - Abscopal effect
- Non target lesions: non CR/ non PR
- No new lesions identified

* RECIST 1.1 = PR; iRECIST = iPR

April – July 2018

Continue treatment
as per protocol

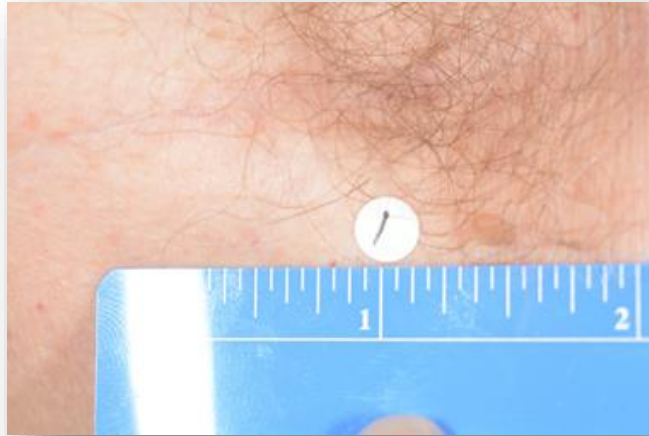
Longest diameter*, mm	TL1 (subcutaneous)	TL2 (subcutaneous)	TL3 (LN)	Sum of TL
Baseline	16	25	28	69
12 weeks	4	27	6	37

*LN is measured per RECIST 1.1 on shortest axis.

Images of Baseline vs. 12 Week Assessment Lesions

Patient # 61-007-104

Baseline



12 weeks

Lesion #1: No photo available due to the tumor being undetectable post treatment.



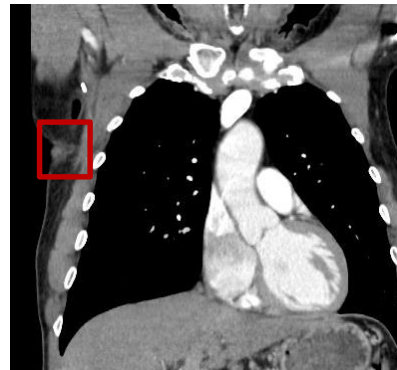
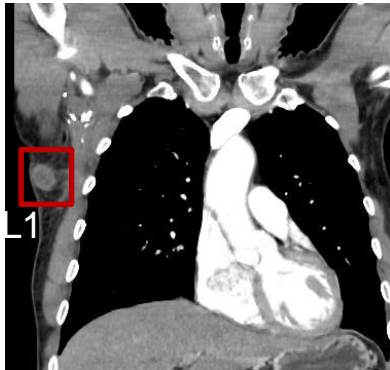
CT Images of Baseline vs. 12 Week Assessment Lesions

Patient # 61-007-104

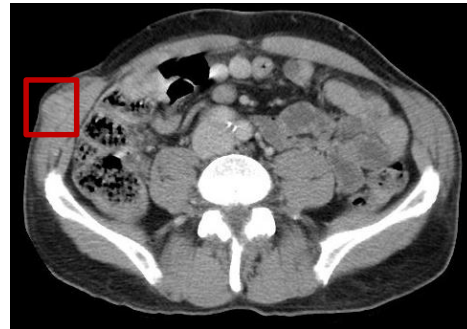
Pre-Treatment

12 Weeks

TL1



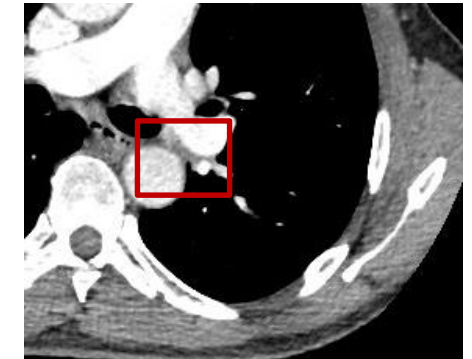
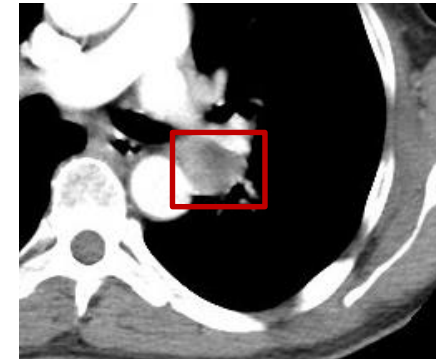
TL2



Pre-Treatment

12 Weeks

TL3
(untreated)



The untreated lesion is a left hilar node, far away from the treated lesions.

KEYNOTE-695—Response Rates for First 9 Patients Who Completed 12 Weeks of Treatment

Patient Number	Response Rate
61- 007-104	PR
61-004-103	PR
61-008-101	SD
61-007-103	iUPD; iSD (SD TL / new NTL)
01- 009-101	iUPD; WDC (PR TL / new NTL)
61-008-102	iUPD; WDC (SD TL / new NTL)
61-007-102	PD
61-006-102	PD
61-004-102	PD

SUMMARY OF RESPONSE

2 PR

1 SD

3 iUPD

3 PD

Overview

Patient # 61-004-103

- Female 71yrs
- Stage at screening – Stage IVB
- Metastatic disease in lymph nodes (distant), lung and subcutaneous
- Medical history – hypothyroidism, Vaginal prolapse, BCC, SCC
- Prior surgery on skin excisions, wide excisions. No radiotherapy.
- ***Prior Systemic therapy***
 - ***Pembrolizumab 150 mg IV for 9 cycles***
 - ***Ipilimumab & nivolumab 4 cycles***
 - ***Nivolumab 2 cycles => PD***

Medical History

71 Year-old White Female with Stage IVB Melanoma (61-004-103)

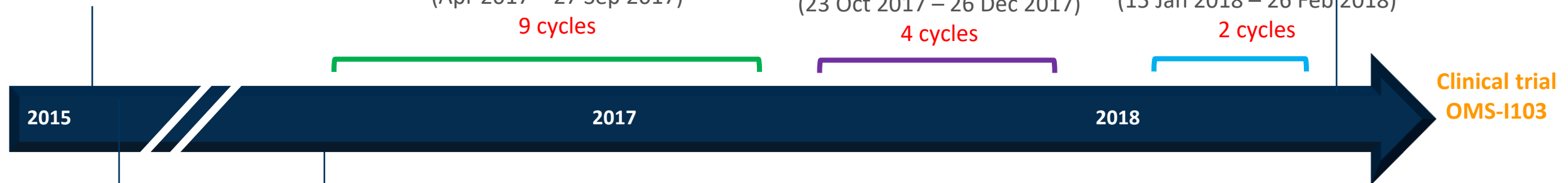
Medical History:

- Hypothyroidism
- Multiple basal cell carcinomas and squamous cell carcinomas
- Vaginal prolapse
- Constipation, insomnia, anxiety, and night sweats

Melanoma History:

October 2015

- Diagnosis of melanoma
- Skin excision



November 2015

- Wide local excision

March 2017

- Local recurrence:
- Wide excision of forehead
- 3 core biopsies

Measures and PI ORR Assessment

Patient # 61-004-103

- @ Cycle 5 (2 TAVO treatments)
- Target Lesion PR
- Non target lesion non CR / non PR
- No new lesions

- Measures

	TL1 skin	TL3 skin
Baseline	32mm	24mm
Cycle 5 (~12 wks)	22mm	17mm

Clinical Trial Experience and 12-week Response

Patient # 61-004-103

10 May 2018:

Screening

- Melanoma, stage IVA, with skin lesions
- ECOG PS: 0

24 May 2018 – 16 August 2018

Treatment as per protocol Cycle 1 – 5

- IT-tavo-EP: Days 1, 5, 8 every other cycle (each 6 weeks)
- Pembrolizumab (200 mg IV): Day 1 of each 3-week cycle

Adverse events Cycle 1 – 5

- Grade 1 pruritis: related to pembrolizumab; not related to TAVO or EP
- Grade 1 night sweats: not related to any of the treatments or EP
- Grade 2 diarrhea: related to pembrolizumab and TAVO; not related to EP

16 August 2018 (cycle 5, day 1):

Tumor response at 12 weeks

- Target lesions: PR*
 - 30% decrease in sum of diameters
- Non target lesions: non-CR/non-PD
- No new lesions

* RECIST 1.1 = PR; iRECIST = iPR

May – August 2018

Continue treatment as per protocol

Longest diameter, mm	TL1 (skin)	TL3 (skin)	Sum of diameters TL
Baseline	32	24	56
12 weeks	22	17	39

Baseline vs. 12 Week Assessment

Target and Non-Target Lesion Images (61-004-103)

Baseline



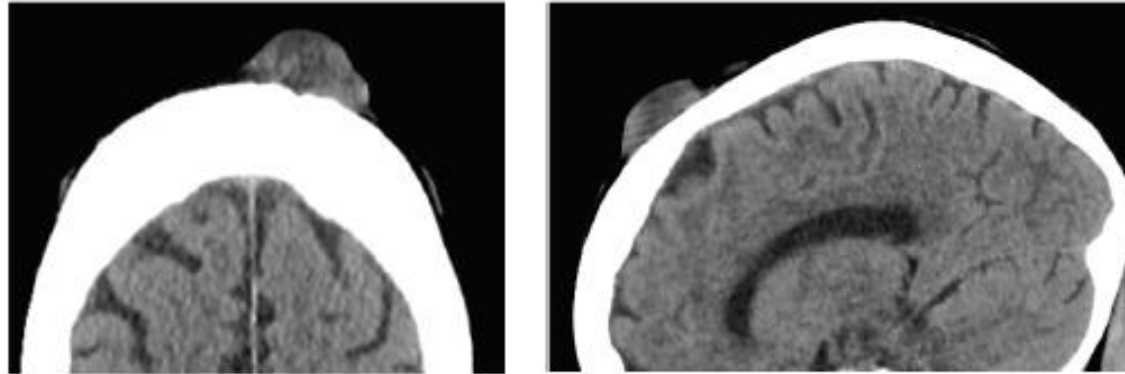
12 weeks



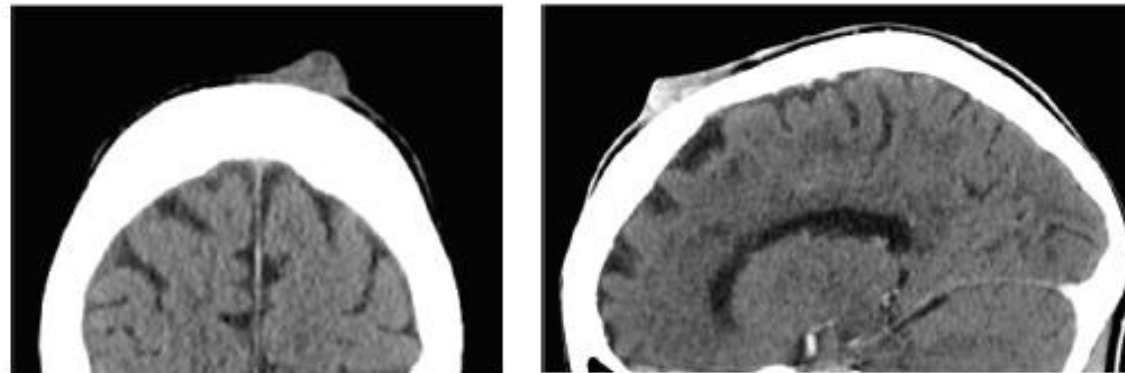
Axial Images Baseline vs. 12 Week Assessment

Target and Non-Target Lesion Images (61-004-103)

Baseline



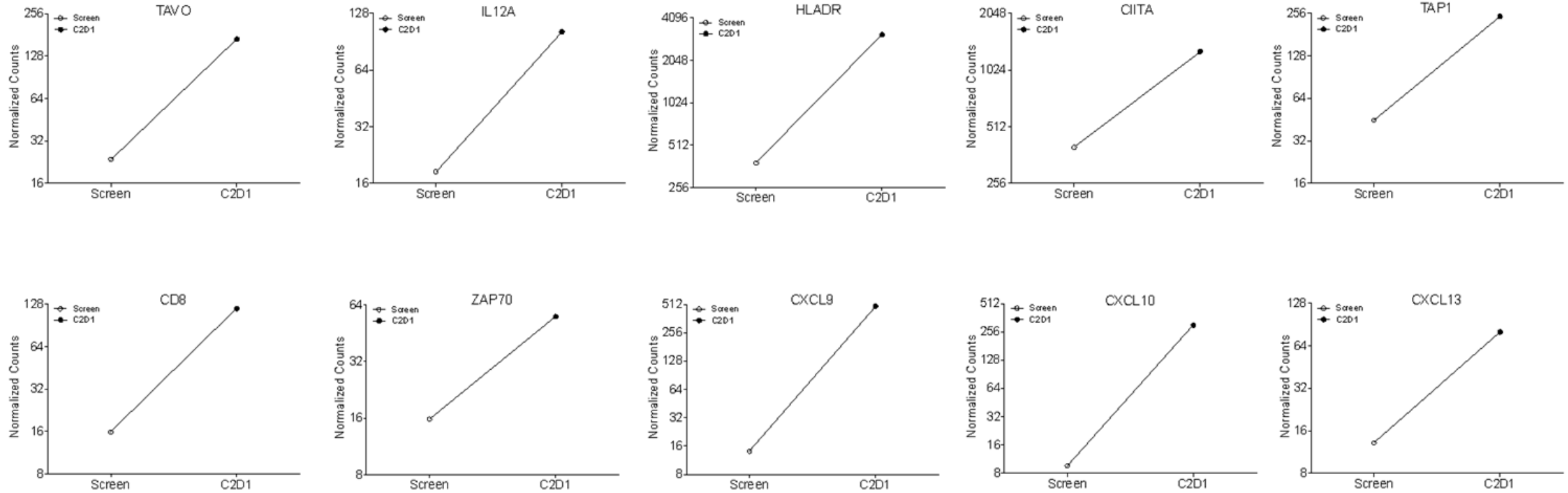
C2D1



Axial images from patient #61-004-103 showing large exophytic scalp lesions.

Intratumoral Gene Expression

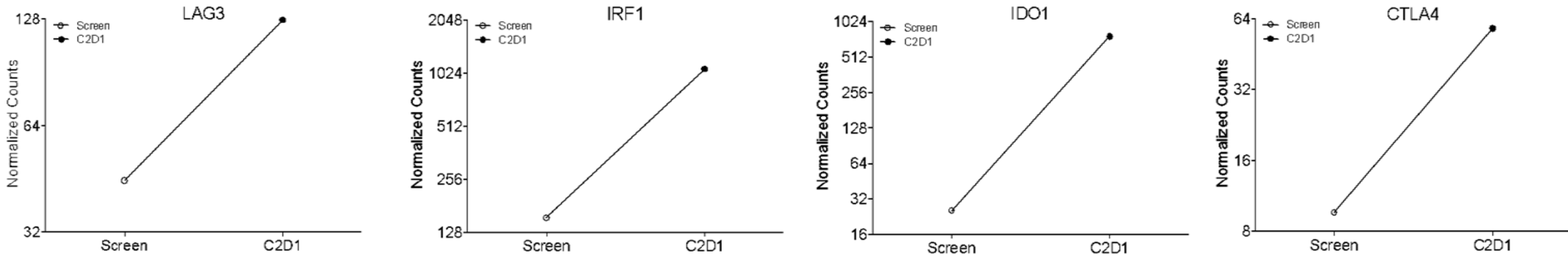
Patient # 61-004-103



Intratumoral gene expression in a PR demonstrates increased antigen presentation and T cell activation / trafficking

Intratumoral Gene Expression

Patient # 61-004-103



Intratumoral gene expression in a PR demonstrates a treatment-related increase in adaptive resistance

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01- 009-101	iUPD; WDC (PR TL / new NTL)
61-008-102	iUPD; WDC (SD TL / new NTL)
61-007-102	PD
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61-004-102	PD

SUMMARY OF RESPONSE

2 PR

1 SD

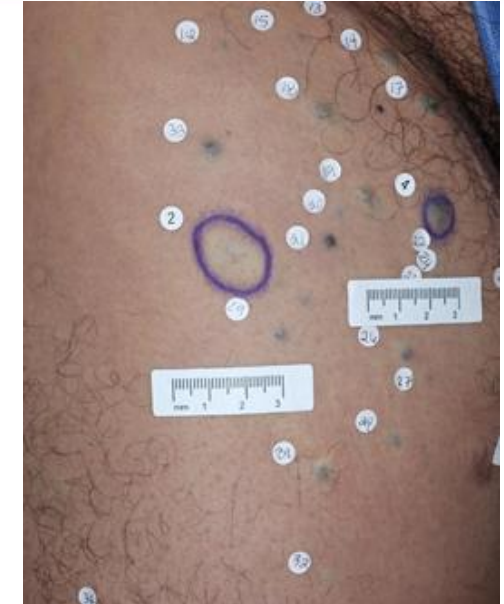
3 iUPD

3 PD

Overview

Patient # 61-008-101

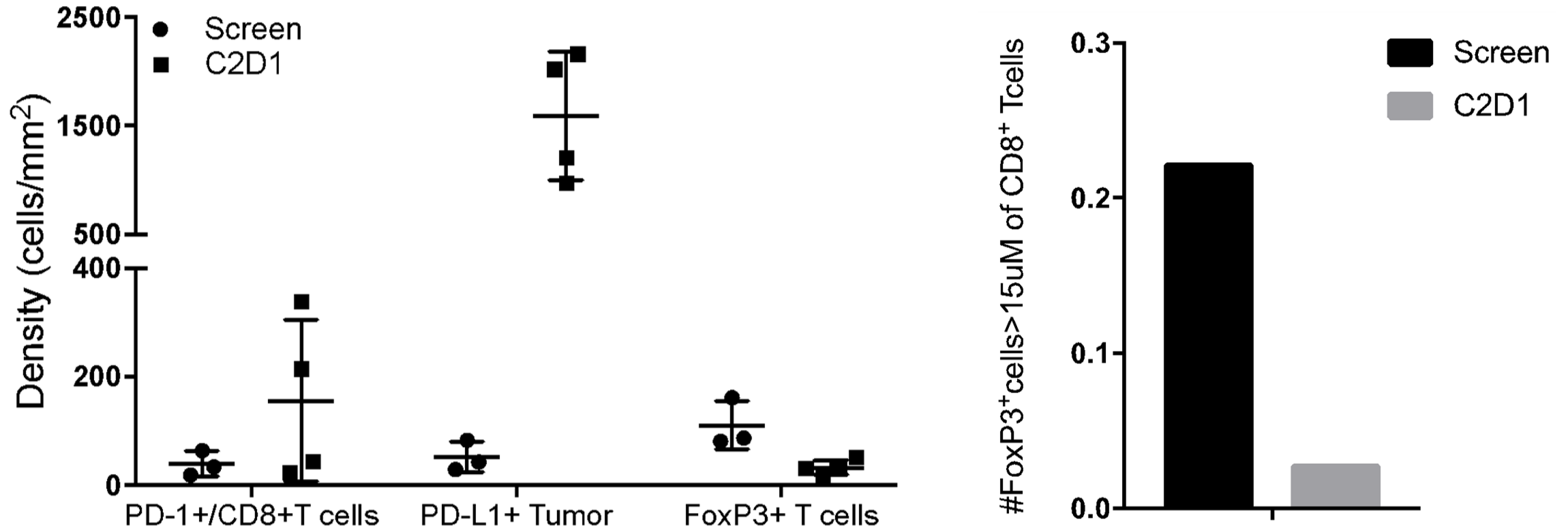
- 57 year-old white male with stage IVA melanoma
- 10 cycles of pembro 200 mg
- Surgery arm for melanoma / axillary clearance / axillary SLNB
- No radiation therapy
- 16Jul2018 (cycle 5, day 1):
 - Target lesion: SD (0% decrease in sum of diameters)
 - Non target lesions: non CR / non PD
 - No new lesions



	TL1 skin	TL2 skin	Sum of TL
Screening	19 mm	11 mm	30 mm
Cycle 5	19 mm	11mm	30 mm

Multispectral IHC

Patient # 61-008-101



Multispectral IHC: patient has an “immuno-active” lesion after a single cycle of treatment

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61-004-103	PR
61-008-101	SD
61-007-103	iUPD; iSD (SD TL / new NTL)
01- 009-101	iUPD; WDC (PR TL / new NTL)
61-008-102	iUPD; WDC (SD TL / new NTL)
61-007-102	PD
61-006-102	PD
61-004-102	PD

SUMMARY OF RESPONSE

2 PR

1 SD

3 iUPD

3 PD

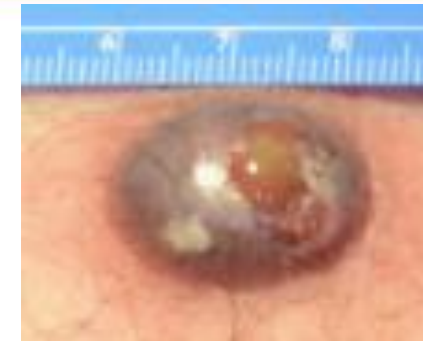
Overview

Patient 61-007-103

- 70 year-old white male with stage IVB melanoma
- 4 cycles of pembro 210 mg
- Surgery Lymph node / heel
- No radiation therapy
- 16Mar2018 (cycle 5, day 1):
 - Target lesions: Stable Disease (13% decrease in sum of diameters)
 - Non target lesions: non CR / non PD
 - New lesions: yes but iSD

- Patient is still on treatment

Baseline



12 weeks



	TL1 skin	Sum of TL
Screening	23 mm	23 mm
Cycle 5	20 mm	20 mm

KEYNOTE-695—Response Rates for First 9 Patients Who Completed 12 Weeks of Treatment

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61-007-103	iUPD; iSD (SD TL / new NTL)
01- 009-101	iUPD; WDC (PR TL / new NTL)
61-008-102	iUPD; WDC (SD TL / new NTL)
61-007-102	PD
61-006-102	PD
61-004-102	PD

SUMMARY OF RESPONSE

2 PR

1 SD

3 iUPD

3 PD

Overview

Patient # 01-009-101

- 39 year-old white female with stage IVC melanoma
- Prior treatments:
 - Temozolmide 4 cycles
 - Nivolumab 18 cycles
 - Ipi 3 cycles
 - Trametinib / IL-2 2 cycles
 - Epadacostst 4 cycles
 - Interferons / pembrolizumab 4 cycles
 - Ipi & nivo 4 cycles
- Surgery intussusception repair
- No radiation therapy
- Patient receive only sub-optimal dose of TAVO due to difficulty in administration
- Aug 2018 (cycle 5, day 1):
 - Target lesions: SD (<10% decrease in sum of diameters)
 - Non target lesions: non CR / non PD
 - New lesions and patient withdrew



	TL1 skin	TL2	TL4
Screening	82 mm	28 mm	22 mm
Cycle 5	pending	pending	pending

KEYNOTE-695—Response Rates for First 9 Patients Who Completed 12 Weeks of Treatment

Patient Number	Response Rate
61- 007-104	PR
61-004-103	PR
61-008-101	SD
61-007-103	iUPD; iSD (SD TL / new NTL)
01- 009-101	iUPD; WDC (PR TL / new NTL)
61-008-102	iUPD; WDC (SD TL / new NTL)
61-007-102	PD
61-006-102	PD
61-004-102	PD

SUMMARY OF RESPONSE

2 PR

1 SD

3 iUPD

3 PD

Overview

Patient # 61-008-102

- 72 year-old white male with stage IVB melanoma
- Prior treatments:
 - Encorafenib 2 cycles
 - Binimetinib 2 cycles
 - Dabrafenib 30 cycles
 - Trametinib 30 cycles
 - Pembrolizumab 18 cycles [200mg]
- Surgery scalp
- No radiation therapy
- Aug 2018 (cycle 5, day 1):
 - Target lesion: SD (0% decrease in sum of diameters)
 - Non target lesion: NE
 - New lesions
- Patient withdrew from study



	TL1 skin	TL2	SUM TL
Screening	20 mm	14 mm	34 mm
Cycle 5	18 mm	15 mm	33mm

KEYNOTE-695—Response Rates for First 9 Patients Who Completed 12 Weeks of Treatment

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61-008-101	SD
61-007-103	iUPD; iSD (SD TL / new NTL)
01- 009-101	iUPD; WDC (PR TL / new NTL)
61-008-102	iUPD; WDC (SD TL / new NTL)
61-007-102	PD
61-006-102	PD
61-004-102	PD

SUMMARY OF RESPONSE

2 PR

1 SD

3 iUPD

3 PD

Overview

Patient # 61-007-102

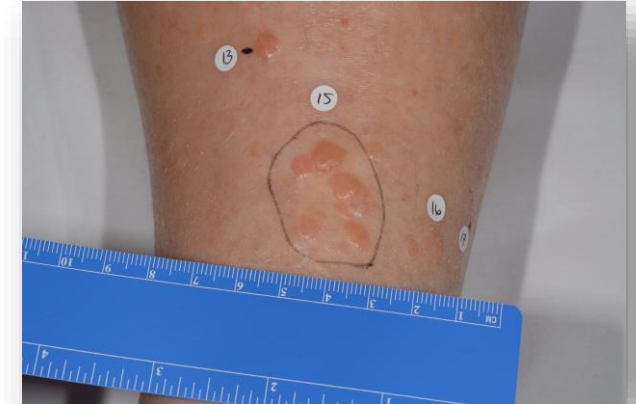
- 74 year-old white female with stage IIIC melanoma
- Prior treatment:
 - Pembrolizumab 4 cycles
 - Ipi & nivo 4 cycles
- Surgery
- No radiation therapy
- April 2018 (cycle 5, day 1):
 - Target lesions: PD
 - Non target lesions: PD
 - New lesions
- No longer on treatment

	TL5 skin	TL2	TL3 (vaginal mass)
Screening	15 mm	69 mm	22 mm
EOS	15 mm	84 mm	24 mm

Overview

Patient # 61-006-102

- 61 year-old white female with stage IVA melanoma
- Prior treatment:
 - Pembrolizumab 11 cycles
 - Ipi 4 cycles
 - Nivo 16 cycles
- Surgery / groin excision / subcut mets
- No radiation therapy
- Mar2018 (cycle 5, day 1):
 - Target lesions: SD
 - Non target lesions: non CR / non PD
 - New lesions
- No longer on treatment



	TL15 skin
Screening	13 mm
Cycle 5	13 mm

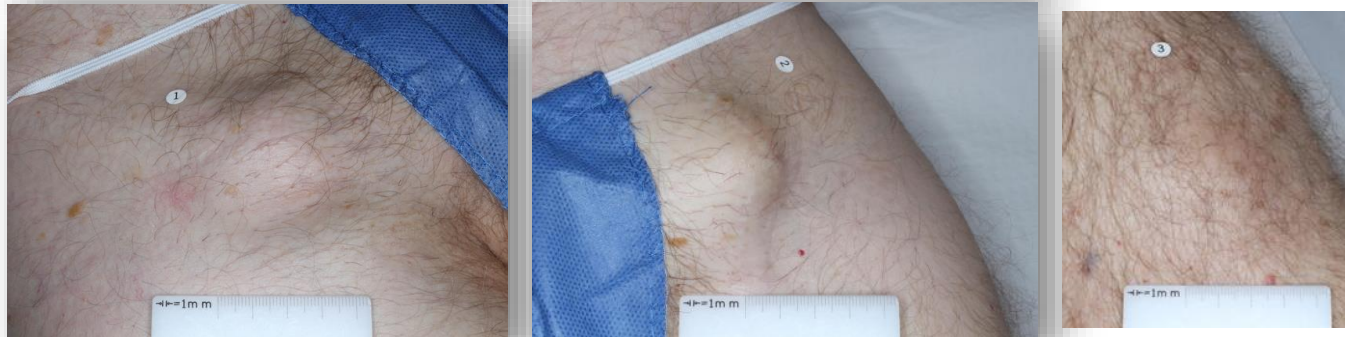
ORR and Tumor Measures

71 Year-old White Male with Stage IVA Melanoma (61-004-102)

Baseline
Images



Cycle 5
Images



	TL1 LN	TL3 skin SC	TL4 skin	TL5 skin SC	TL9 skin	Sum of TL
Screening	31mm	71mm	24mm	33mm	39mm	198
Cycle 5	35mm	47mm	11mm	41mm	42mm	176

17Jul2018 (cycle 5, day 1):
Tumor response at 12 weeks

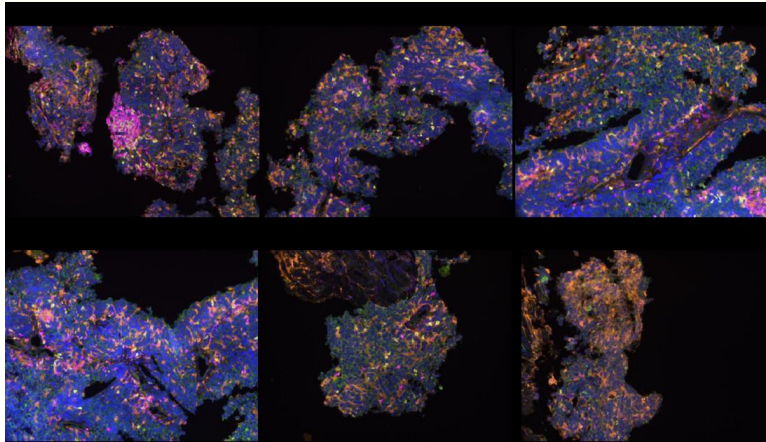
- Target lesions: SD
 - 11% decrease in sum of diameters
- Non target lesions: PD
- New lesions

Patient was found to have a new lytic lesion in the distal femur. The lesion was examined and determined to be high potential for a pathological femoral fracture and patient was electively hospitalized, underwent left femoral intramedullary rod insertion, and could no longer be treated.

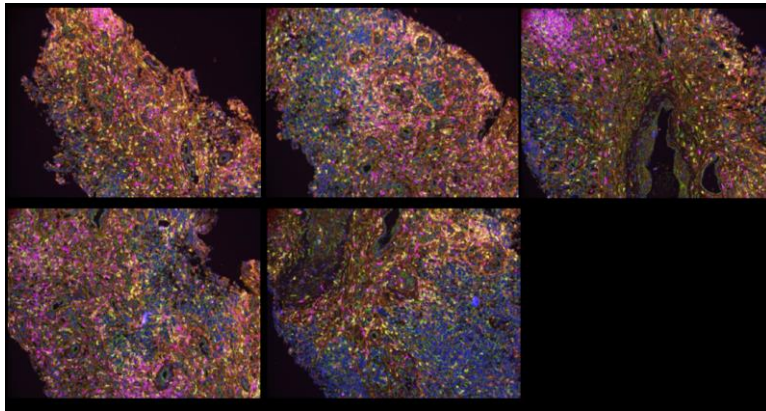
Immunologic Impact via mIHC

Patient # 61-004-102

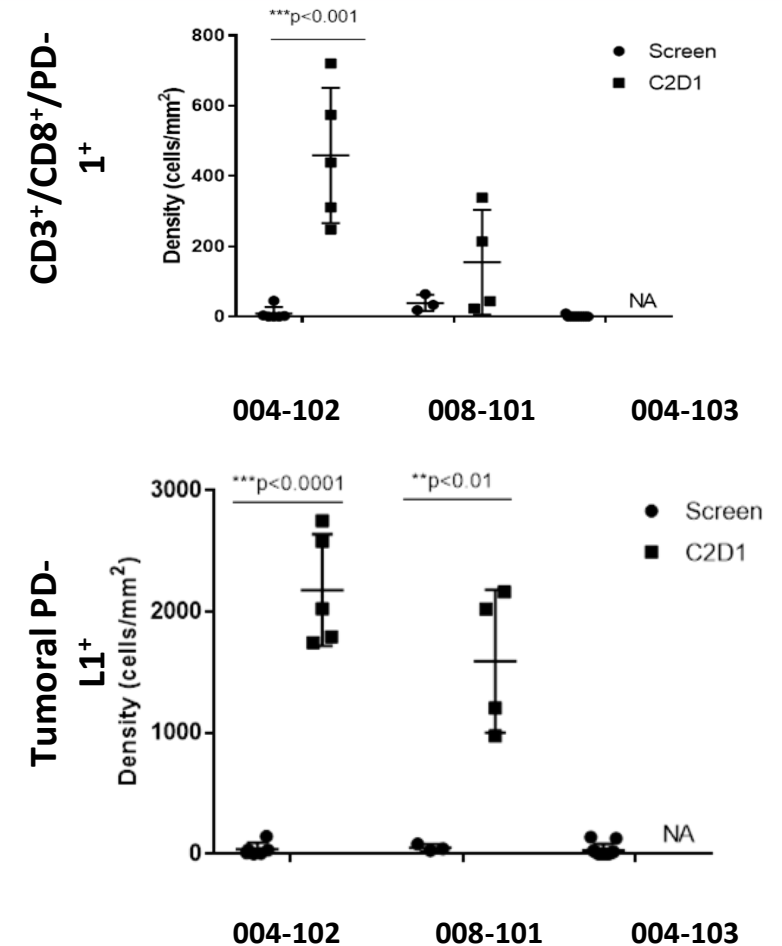
61-004-102
Screen



61-004-102
C2D1



PD-L1 CD3 CD8 FoxP3 CD163 Melanoma cocktail DAPI



mIHC Demonstrates a Powerful Treatment-related Increase in TIL Density with 1 Cycle of TAVO™/PEMBRO in an Immunologically Cold Lesion

PRELIMINARY SAFETY

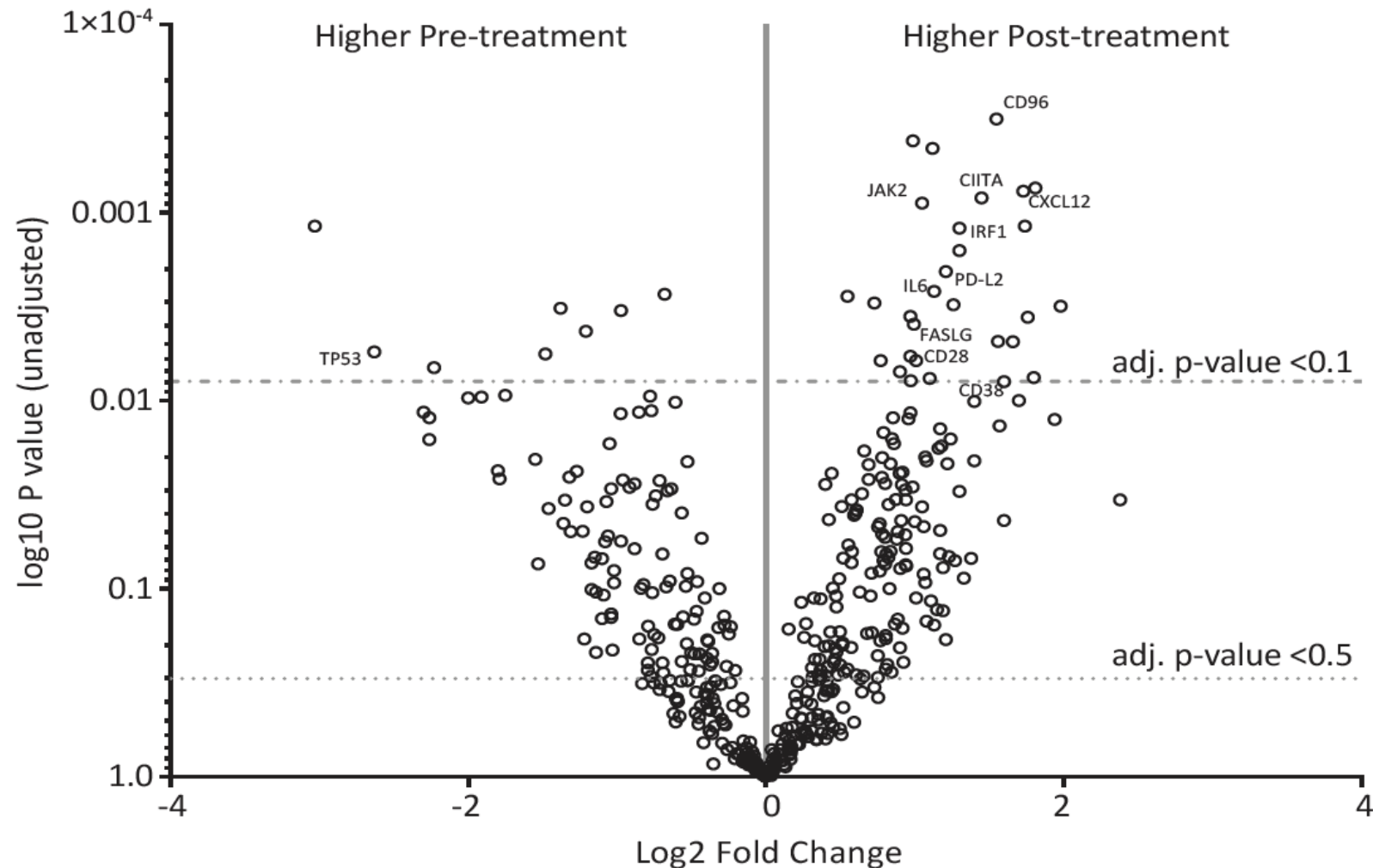
KEYNOTE-695 — TAVO™ + Pembrolizumab Tolerability in Patients Who Completed 12 Weeks of Treatment

	TAVO™-related AEs	Pembrolizumab-related AEs	Total AEs/SAEs related to study drugs
Grade 1, n (%)	5/9 (55.6)	3/9 (33.3)	8/9 (88.9)
Grade 3, n (%)	1/9 (11.1)	2/9 (22.2)	3/9 (33.3)

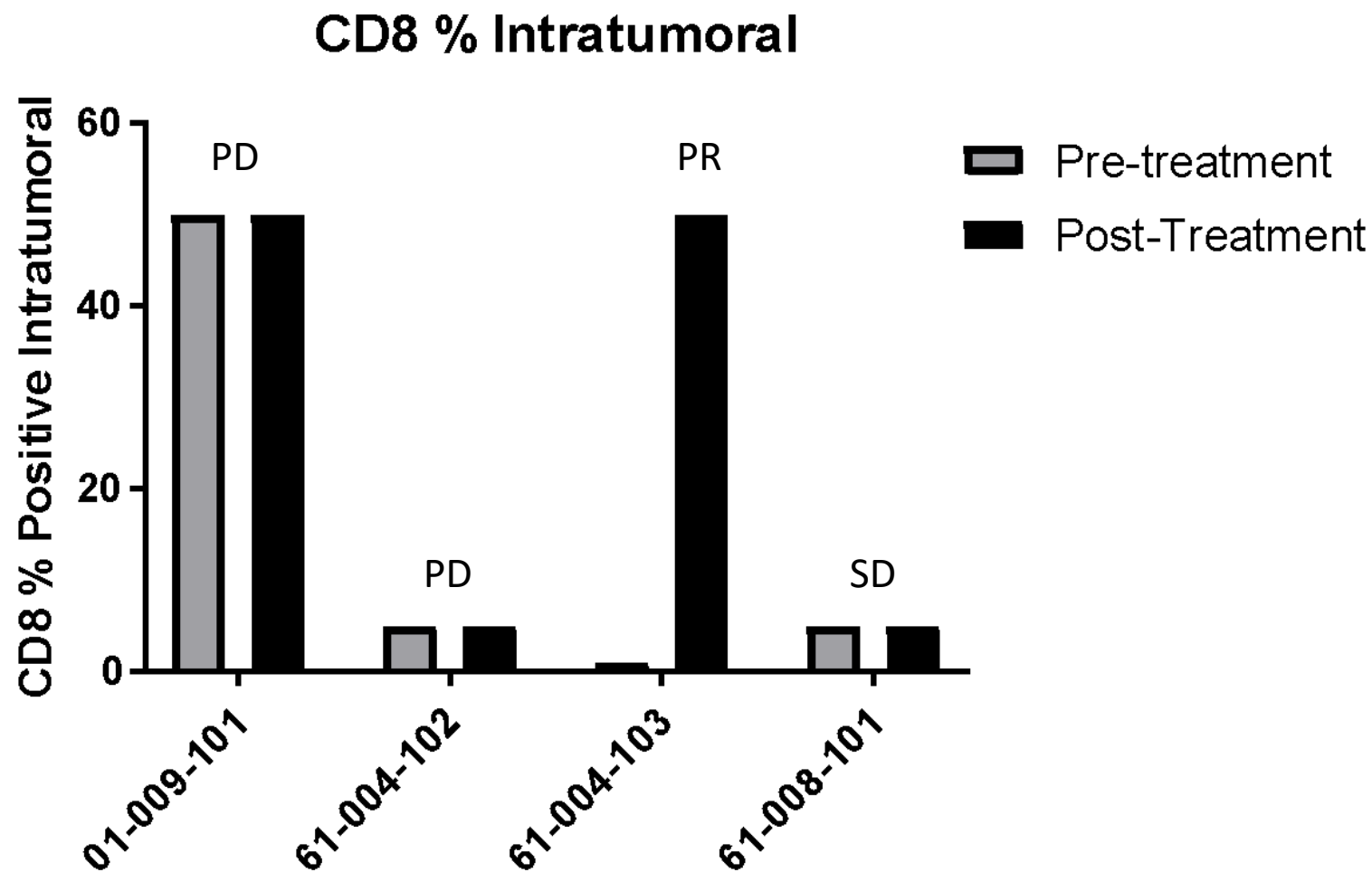
TAVO™-related AEs were limited to grade 1 injection site discomfort/pain, except for one grade 3 episode of cellulitis, which resolved completely

ADDITIONAL PRELIMINARY BIOMARKER DATA

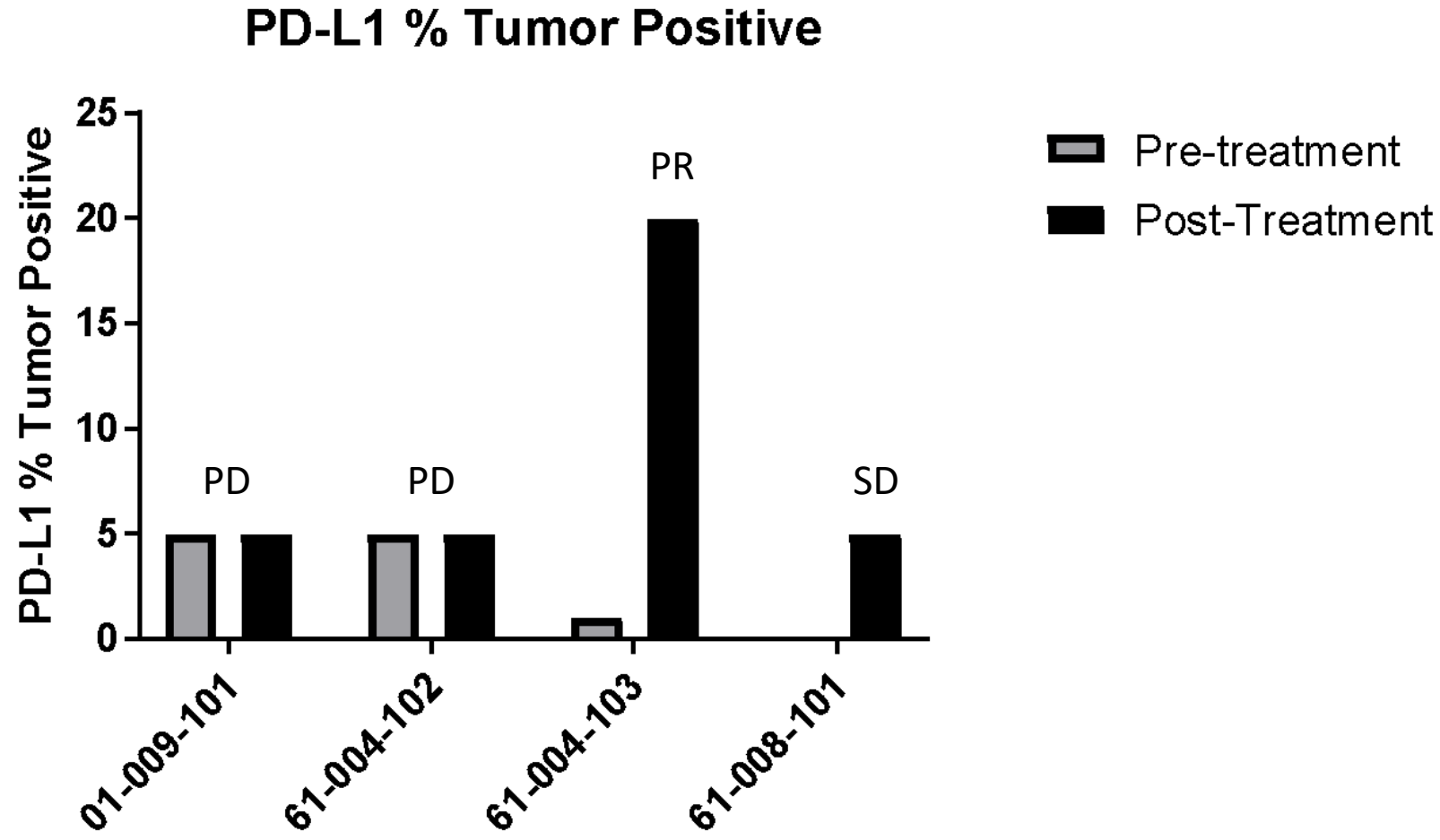
A treatment-related upregulation of immune-based transcripts in the tumor microenvironment was observed in 7 matched biopsies



IHC: PR Has Increase in the Density of CD8⁺ TILs

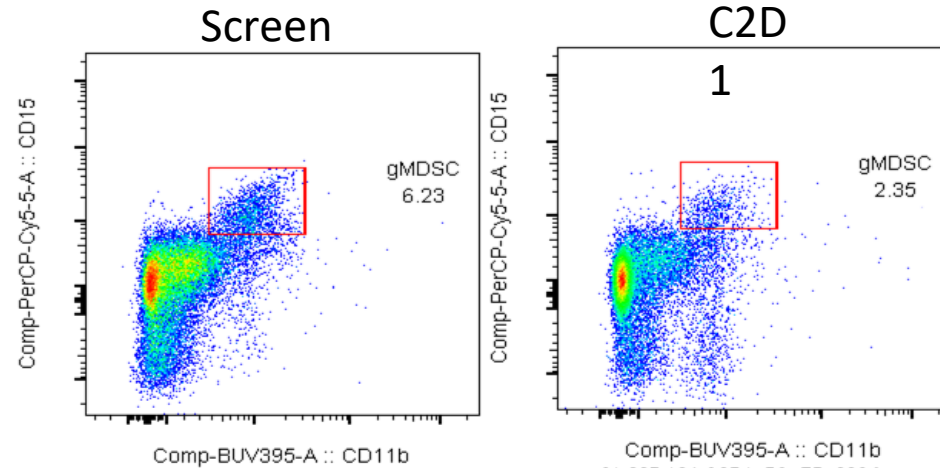


IHC: PR/SD Have Increased PD-L1⁺ Tumor Cells

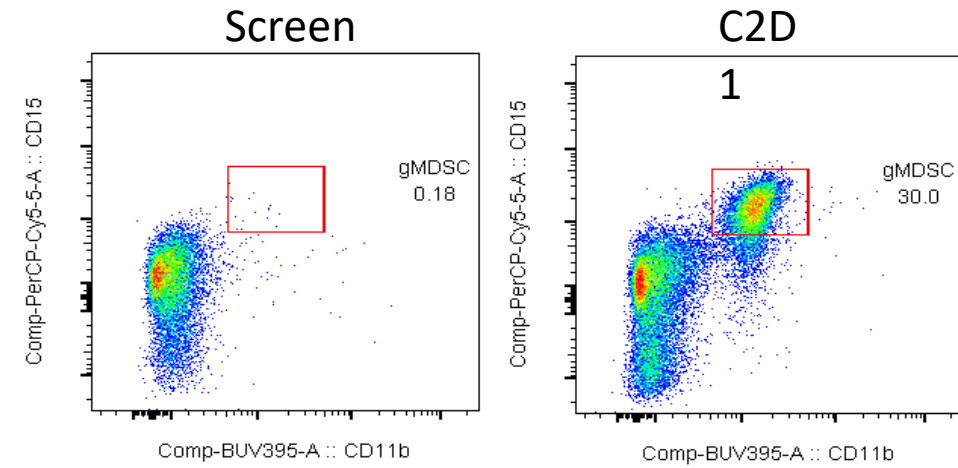


gMDSC Reduced in PR/SD Patients

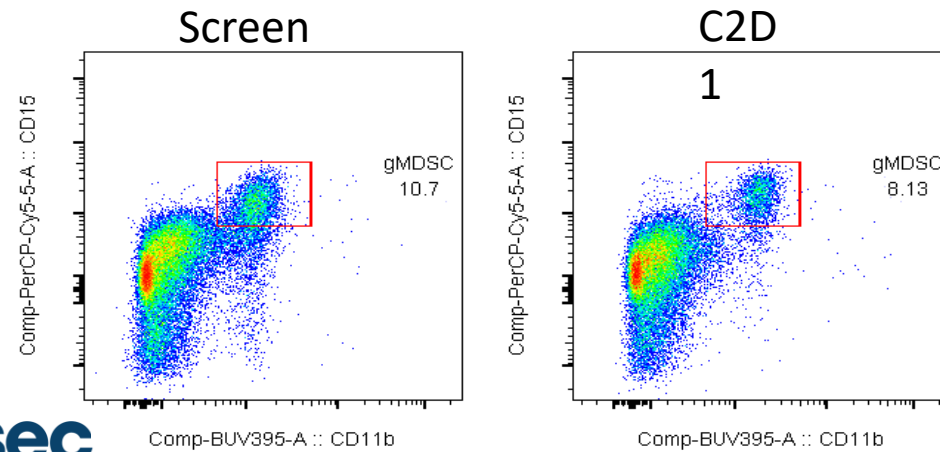
Partial Response (61-007-104)



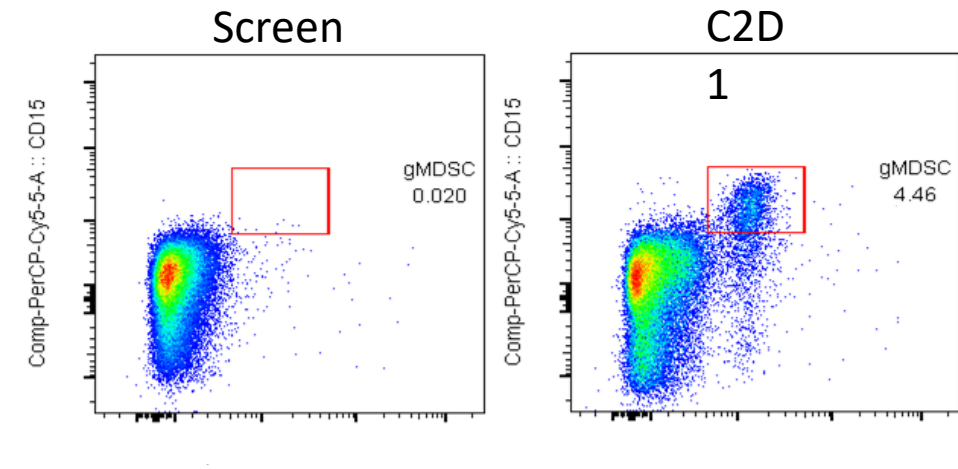
Progressive Disease (61-007-103)



Stable Disease (61-008-101)

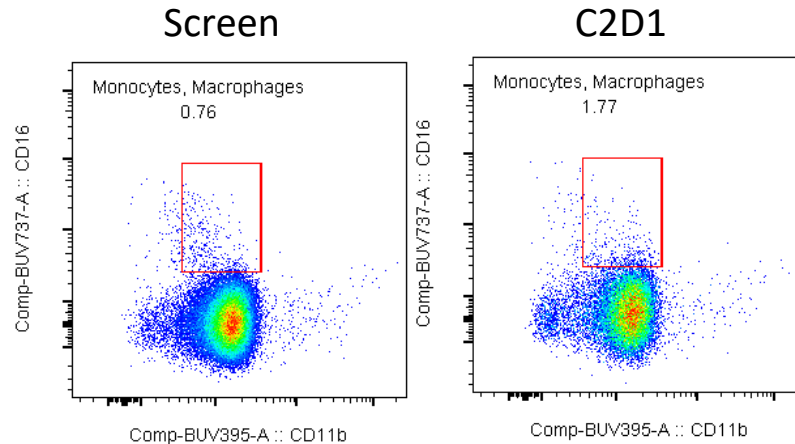


Progressive Disease (61-007x-102)

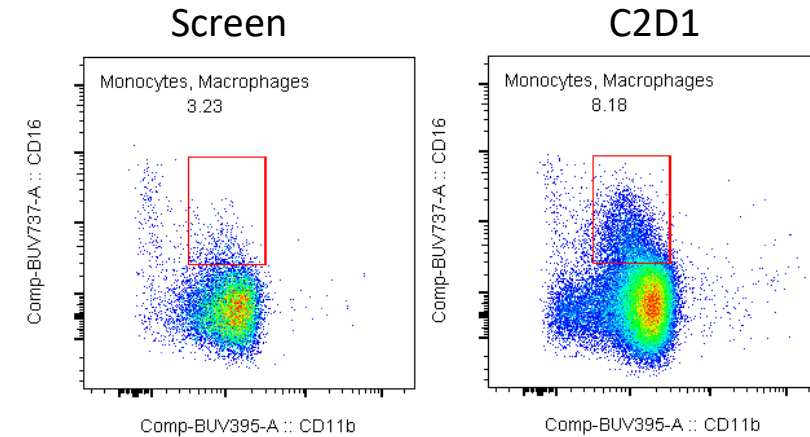


Decreased Monocytes/Macrophages in PR/SD

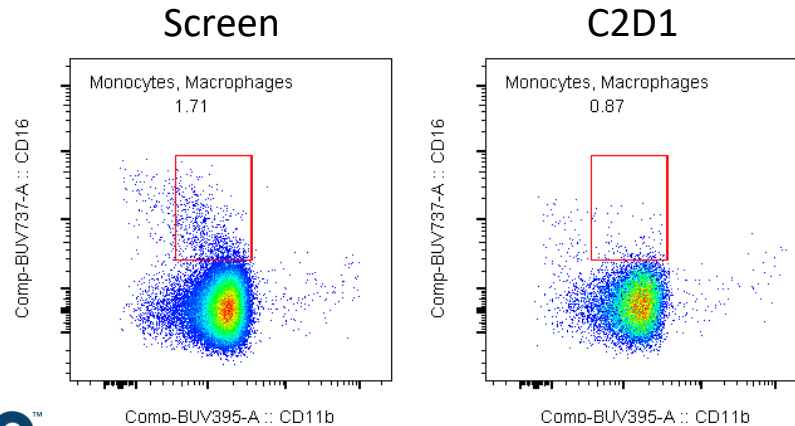
Partial Response (61-007-104)



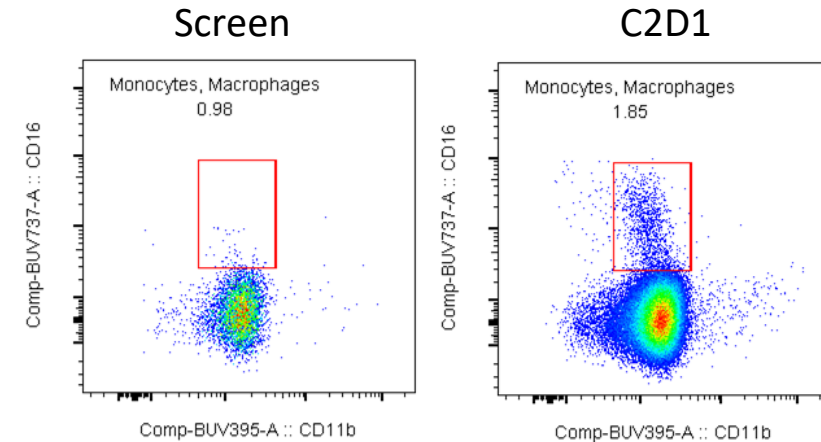
Progressive Disease (61-007-103)



Stable Disease (61-008-101)

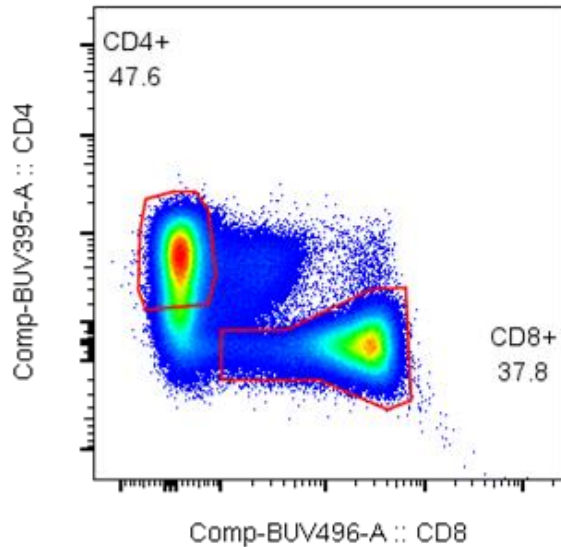


Progressive Disease (61-007-102)

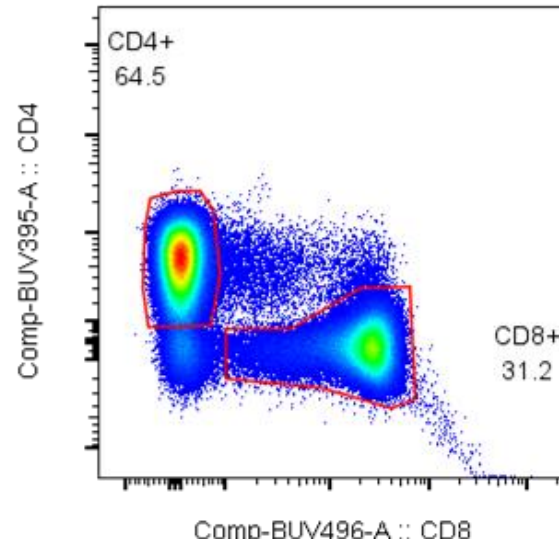


Increased Frequency of Peripheral CD8⁺ T Cells in PR/SD Patients After 1 Cycle of Treatment

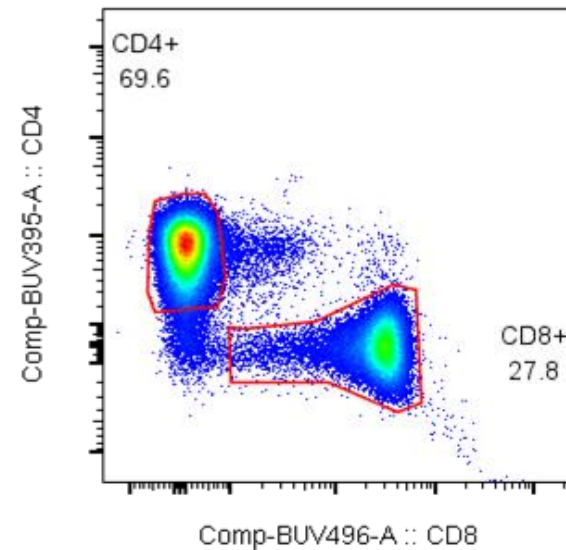
PR (61-007-104)



SD (61-008-101)



PD (61-007-103)



PD (61-007-102)

