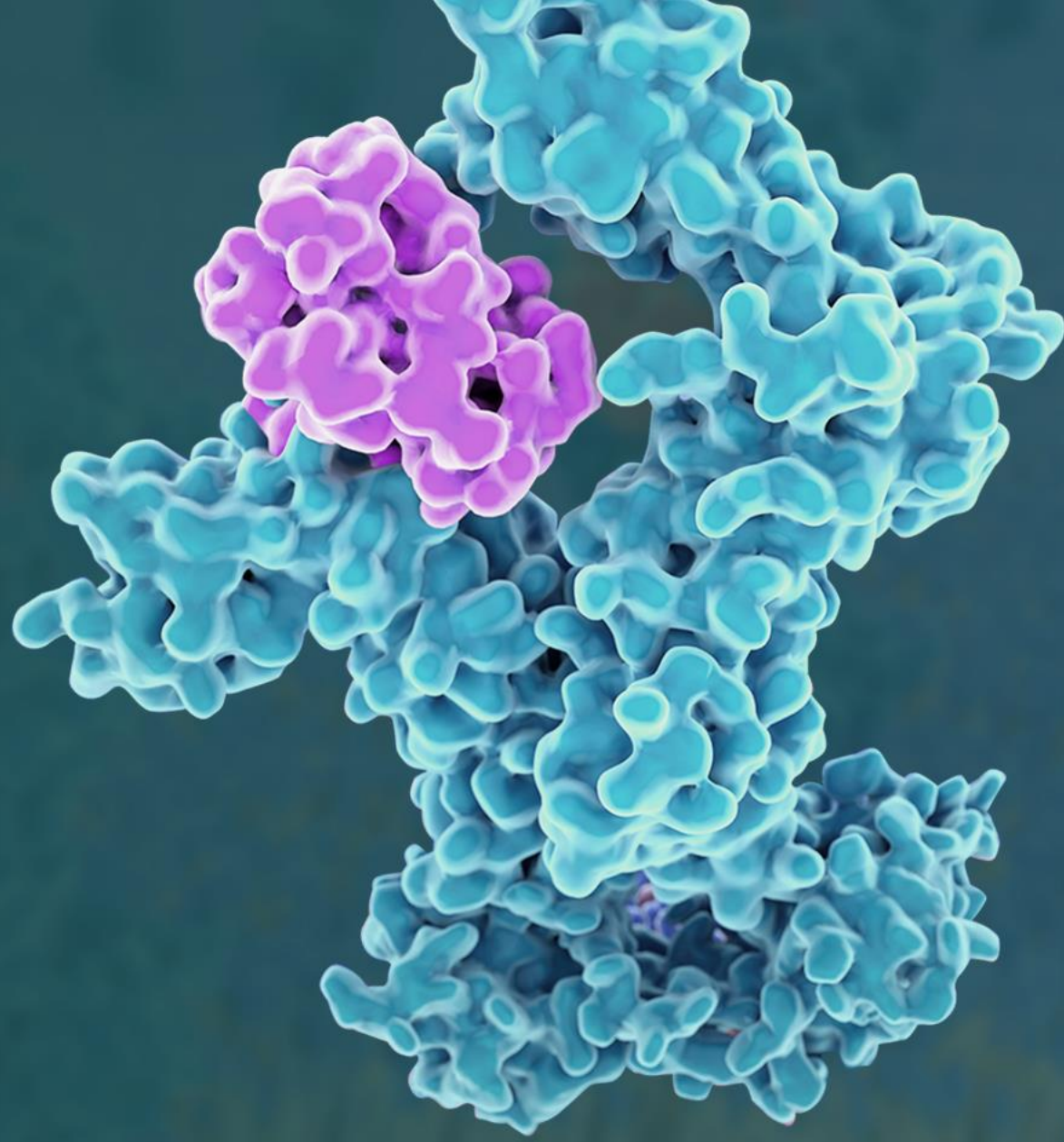
Evolutionary Cytokines Revolutionary Medicines



MEDICENNA

Sachs Oncology Innovation Forum 2024 | TSX: MDNA | OTCQB: MDNAF

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MEDICENNA Overview

Clinical Stage Immunotherapy Company

MDNA11 – Phase 1/2

for Advanced Solid Tumors

Bizaxofusp (MDNA55) – Phase 3 Ready

for Recurrent Glioblastoma

Multiple 'Pipeline in a Product' Assets

Pre-Clinical Autoimmune, Neuromuscular, Inflammation and Oncology Assets in Deal-Heavy Spaces

TSX: MDNA | OTCQB: MDNAF

2024 Anticipated Catalysts

MDNA11
- Monotherapy Expansion Data
- KEYTRUDA® Combination Data

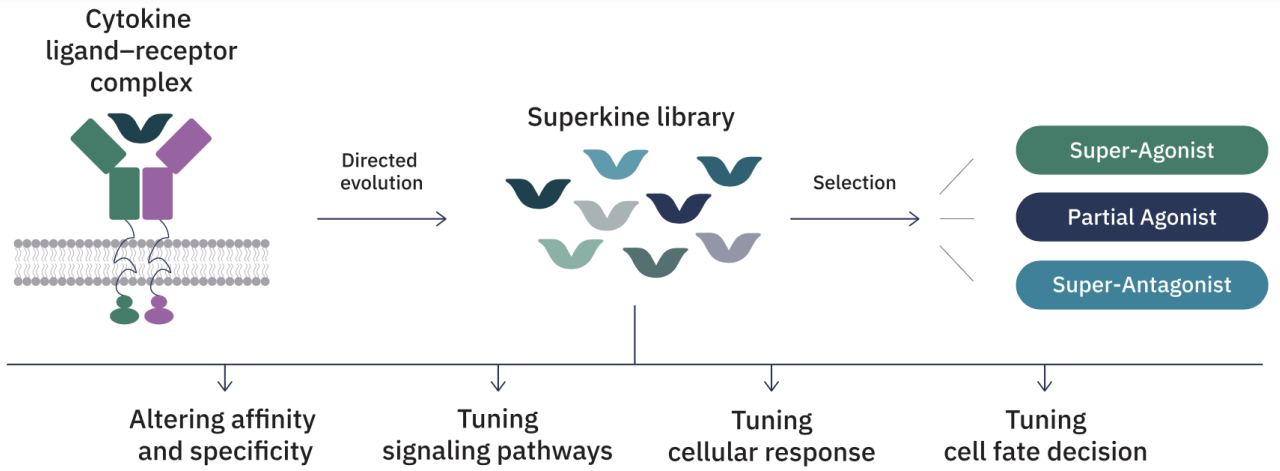
Bizaxofusp
- Breakthrough Therapy Designation
- EMA Alignment for Trial Design
- Partnership for Phase 3

Funded through 2026

Generating value by advancing Superkines

Superkine Platform

Transforming IL-2, IL-4 and IL-13 into Best-in-Class Superkines Using Directed Evolution



Our IL-2, IL-4 and IL-13 Superkines are known to modulate immune activity in many diseases, each providing "A Pipeline in a Product" opportunity

Superkine Design and Development

Generate Tunable Superkine Library

Transform interleukins using directed evolution to enhance desired properties

Enhance via Protein Fusion

To improve PK, add a second MOA, or confer new capabilities

Lead Selection & Development

Advance the most promising candidates towards clinical studies

Robust Pipeline of Next Generation Superkines

Candidate	Indication	Discovery	Preclinical	Phase 1	Phase 2	Phase 3
Bizaxofusp (MDNA55) IL-4–Toxin Fusion	Recurrent Glioblastoma (GBM)	Phase 3 Ready Asset				2024 ASCO ANNUAL MEETING *Poster Presentation*
MDNA11 IL-2 Super Agonist monotherapy	Melanoma, cSCC, BCC Merkel cell, MSI-H/dMMR					SACHS ASSOCIATES OIF Forum *Complete Phase 1 Data*
MDNA11 IL-2 Super Agonist KEYTRUDA® combo	Various solid tumors					SACHS ASSOCIATES OIF Forum *Initial Safety Data*
MDNA113 Anti PD-1-IL-2 Masked BiSKIT	Various solid tumors expressing IL-13Rα2					
MDNA209 IL-2/15 Pathway Super Antagonist	Autoimmune Diseases					
MDNA413 IL-4/13 Pathway Super Antagonist	Oncology and Th2-mediated diseases					

MDNA11

Clinical-Stage Asset in Phase 1/2 with a Monotherapy Treatment Arm and a Combination Arm with KEYTRUDA®

MEDICENNA

MDNA11: Long-acting 'Beta-enhanced Not-alpha' IL-2 Superkine

- **MDNA11 is designed to overcome the limitations of rhIL-2**
- **High dose aldesleukin (rhIL-2) is FDA approved for metastatic melanoma and renal cell carcinoma, but its broad use is limited by short half-life, severe toxicity & Treg stimulation**

Targeted mutations:

To increase IL-2Rβ affinity and eliminate IL-2Rα binding

Human albumin fusion:

To extend half-life and promote intra-tumoral accumulation

IL-2 Component — $(G_4S)_3$ linker — **Human Albumin**

Enhanced β-binding

Activation of $CD8^+$ T & NK cells

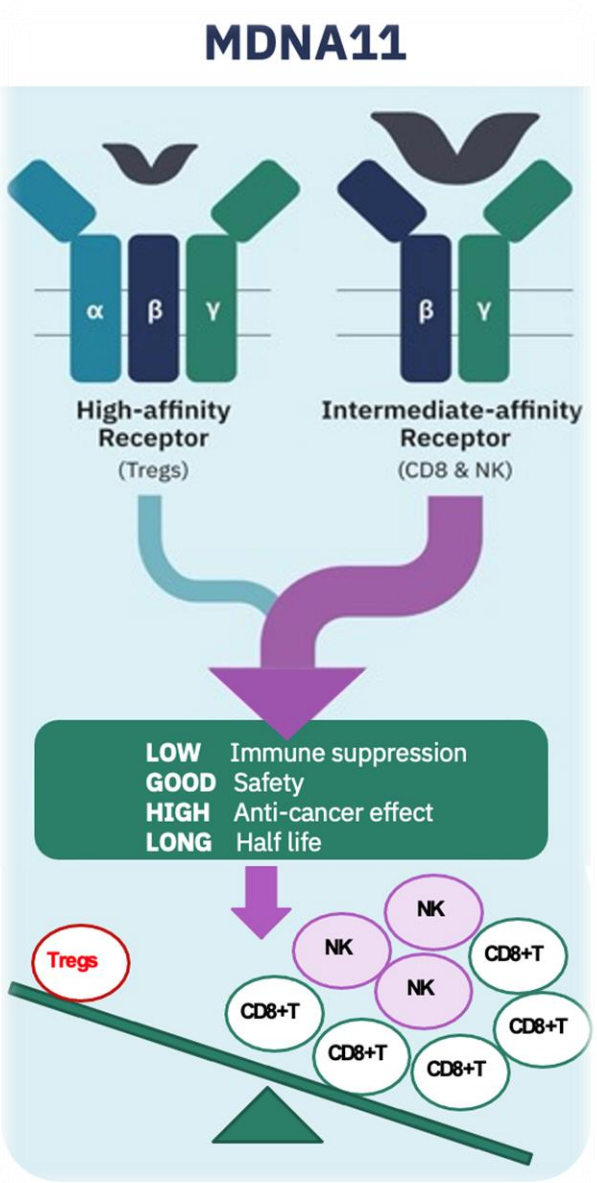
+

No-α binding

Reduced Treg activation & improve safety

=

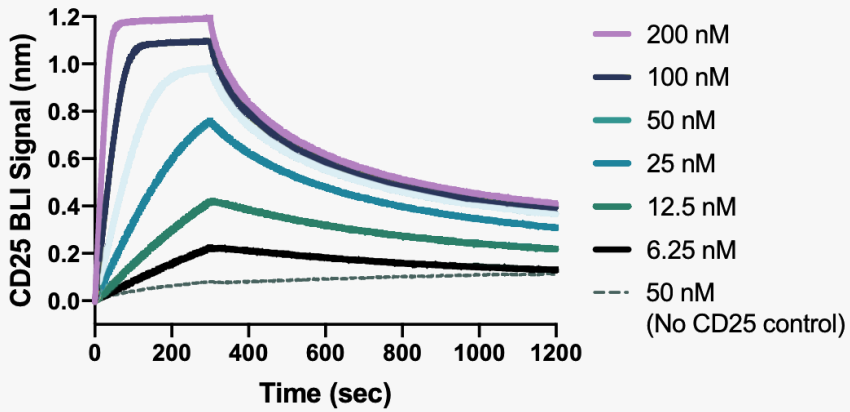
Superior anti-cancer response



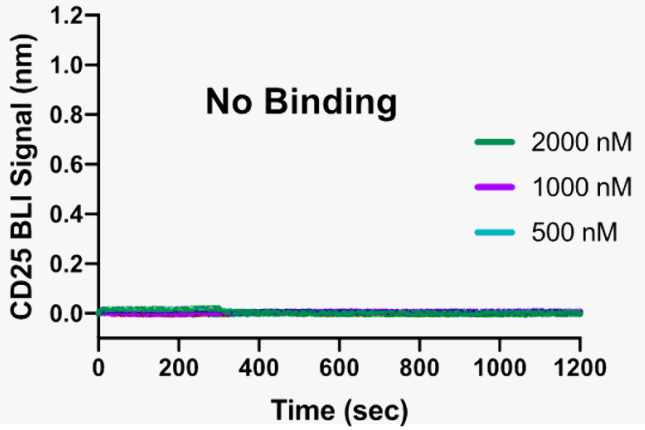
MDNA11 Selectively Binds IL-2Rβ vs. rhIL-2

No IL-2Rα (CD25) Binding and Enhanced Affinity and Selectivity for IL-2Rβ (CD122) Compared to rhIL-2

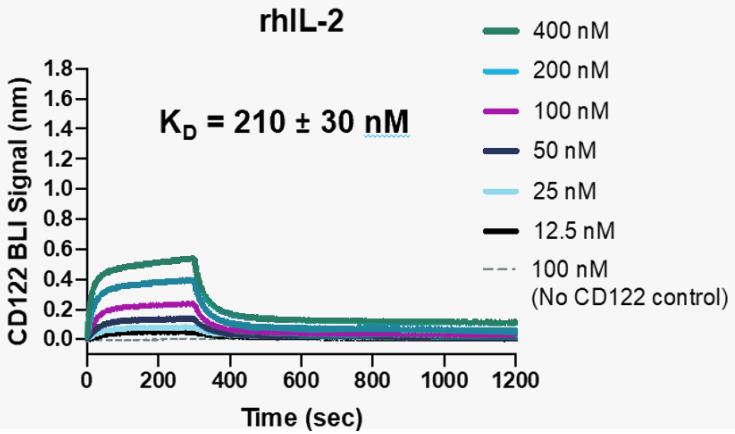
rhIL-2 – IL-2Rα Binding



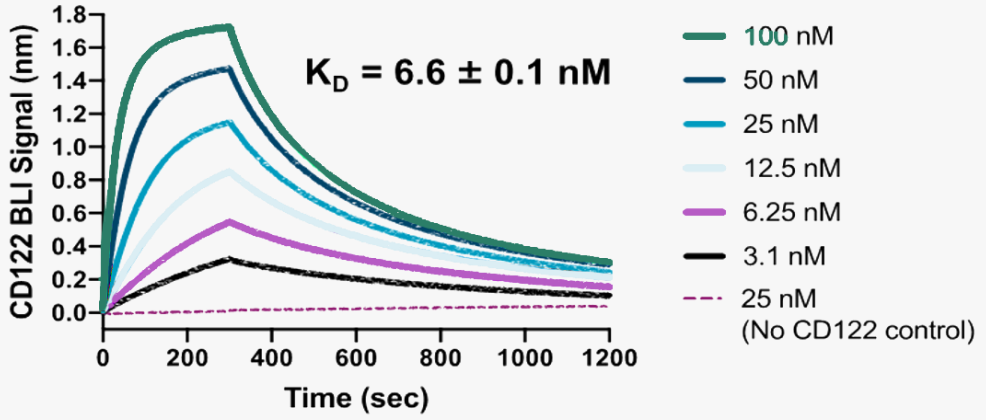
MDNA11 – IL-2Rα Binding



rhIL-2 – IL-2Rβ Binding



MDNA11 – IL-2Rβ Binding



MDNA11: Best-in-Class Potential

	MDNA11	Proleukin[1]	NKTR-214	SAR'245[2]	ALKS 4230[3]	WTX-124[4]	XTX202[5] discontinued mono	STK-012[6]	TransCon IL-2β/γ[7]
No binding to IL-2Rα	√	✗	✗	√	√	✗	√	✗	Minimal binding
Enhanced IL-2Rβγ Binding	√	✗	✗	✗	✗	✗	✗	✗	✗
QW, Q2W or Q3W Dosing	√	✗	√	√	✗	√	√	√	√
Tumor Accumulation	√	✗	✗	✗	✗	√	✗	✗	✗
No Pegylation Liabilities	√	√	✗	✗	√	√	√	✗	✗
Durable Single-Agent Activity	√	√	✗	✗	?	?	✗	?	?

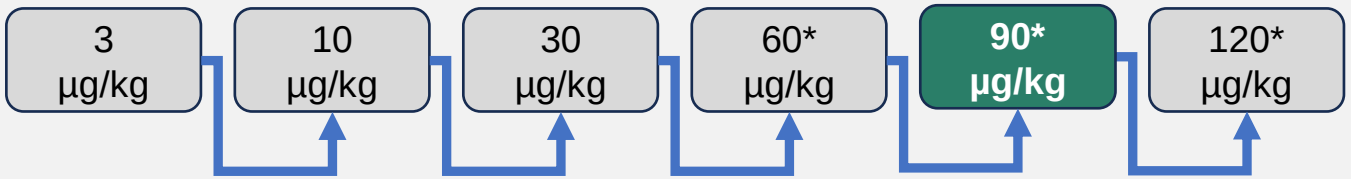
MDNA11's strong anti-tumor activity, desirable safety profile and convenient outpatient dosing regimen paves the way for a potential best-in-class therapy with significant commercial potential

[1]Nature Rev. Drug Discovery 2021; [2] Nature Comm 2021 Ptacin; 3 JITC 2020 Lopes; 4 Cancer Immunol Res 2022 Nirschl; [5]ASCO 2021 O'Neil; [6]AACR 2024 Izar; [7]J Immunother Cancer 2022 Rosen and Company's Oncology Program Update on 5/31/23. Additional information from https://clinicaltrials.gov/

ABILITY-1: First-in-human Trial of MDNA11 in Advanced Solid Tumors (NCT05086692)

MDNA11 Monotherapy Dose Escalation (IV Q2W)

- Modified 3+3 design
- Identify monotherapy Recommended Dose for Expansion (RDE)



* Step-up dosing (SUD)

Monotherapy Dose Expansion (Phase 2)

- MDNA11 @ RDE (90 µg/kg Q2W) in selected checkpoint inhibitor (CPI) resistant solid tumors:
  - Melanoma
  - Non-melanoma skin cancer (cSCC, BCC, MCC)
  - MSI-H/dMMR tumors

MDNA11 (Q2W) + Pembrolizumab (Q6W) Dose Escalation

Select PD1/L1 refractory and CPI-naive indications

- Identify combination RDE (cRDE) for MDNA11

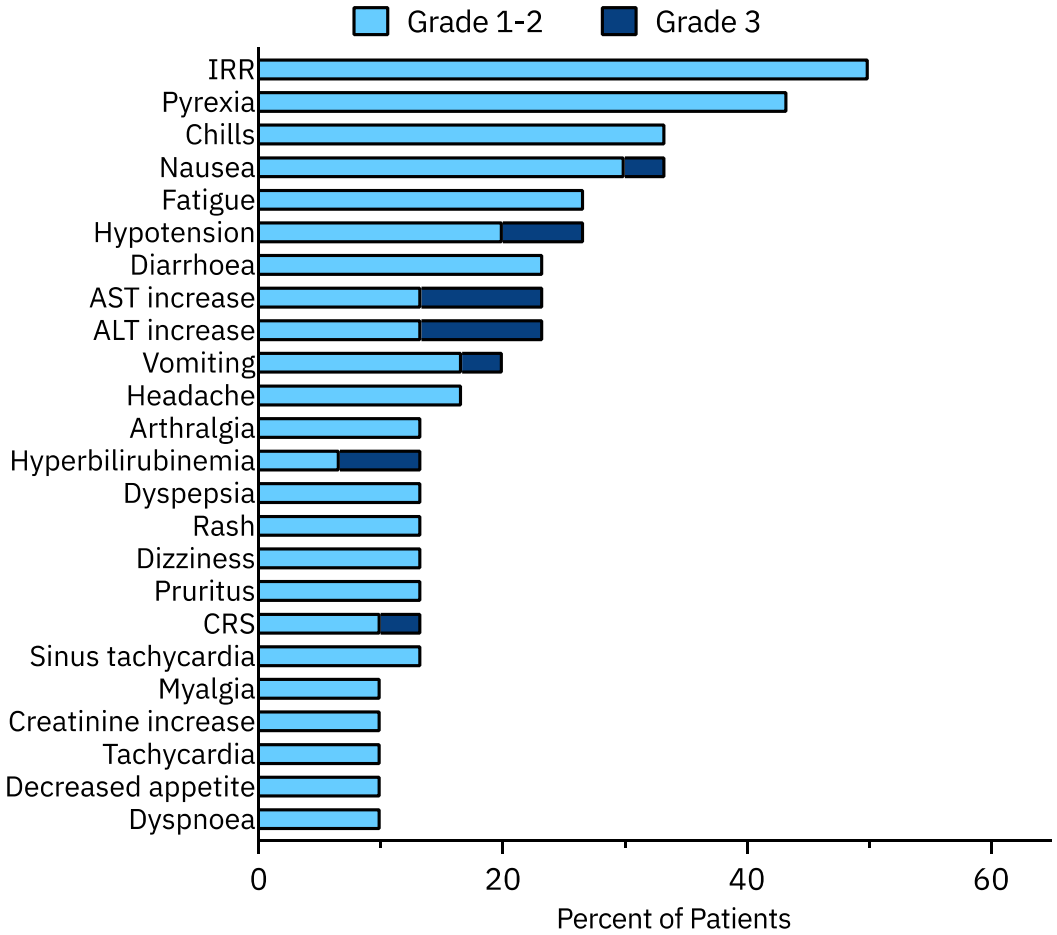
Combination Dose Expansion (Phase 2)

- MDNA11(Q2W, cRDE) + Pembrolizumab (400 mg, Q6W)
- Melanoma and other select advanced solid tumors

ABILITY-1: **A** **B**eta-only **IL**-2 **I**mmuno**T**herap**Y** Study

Desirable Safety Profile Across All Doses in Monotherapy Escalation

Most Common Treatment Related Adverse Events (TRAEs in ≥10% of Patients)



	No. (%) of Patients	
	All Grades (N=30)	Grade 3 (N=30)
All AEs	30 (100%)	20 (66.66%)
Treatment related AEs	30 (100%)	11 (36.6%)
All SAEs	12 (40%)	8 (26.6%)
Treatment related SAEs	9 (30%)	5 (16.6%)

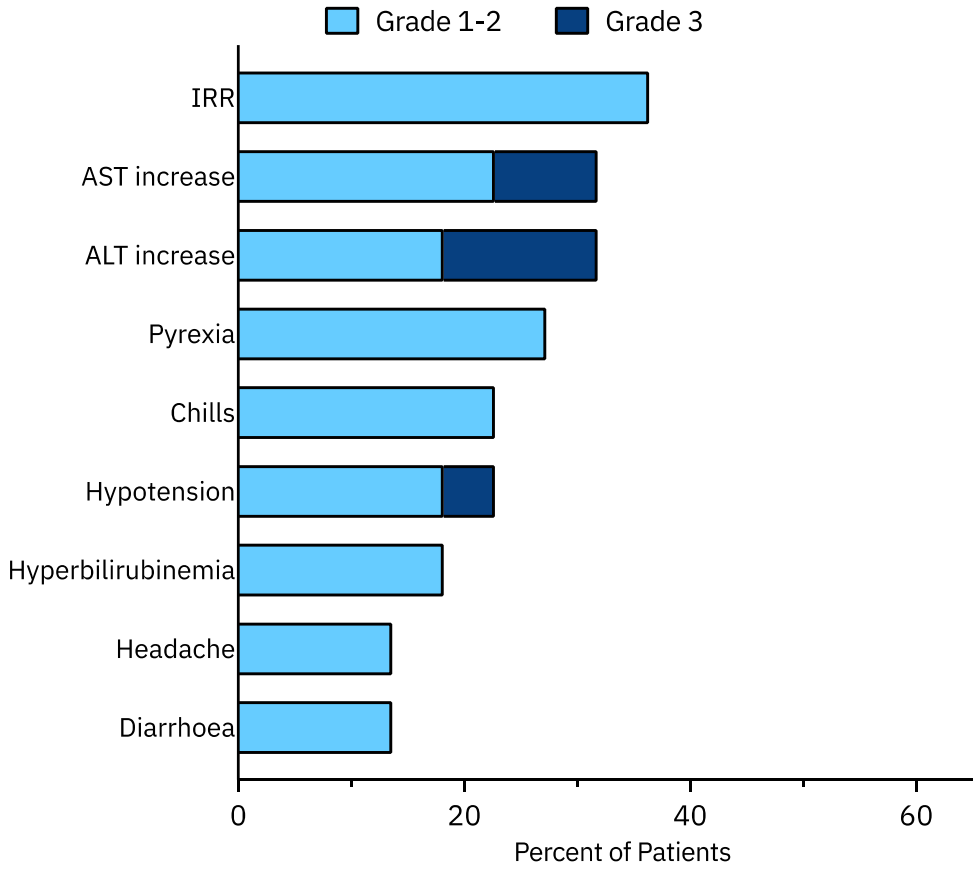
- **No dose limiting toxicity (DLT)**
- No grade 4 or 5 TRAE
- 96.3% of TRAEs were grade 1-2; majority resolved within ≤72 hours
- Grade 3 LFT elevations were asymptomatic and transient; resolved prior to next scheduled dose
- Grade 3 hypotension seen in patients with baseline adrenal insufficiency

Median duration of treatment is 10 weeks (1- 90 weeks)

IRR, Infusion Related Reaction

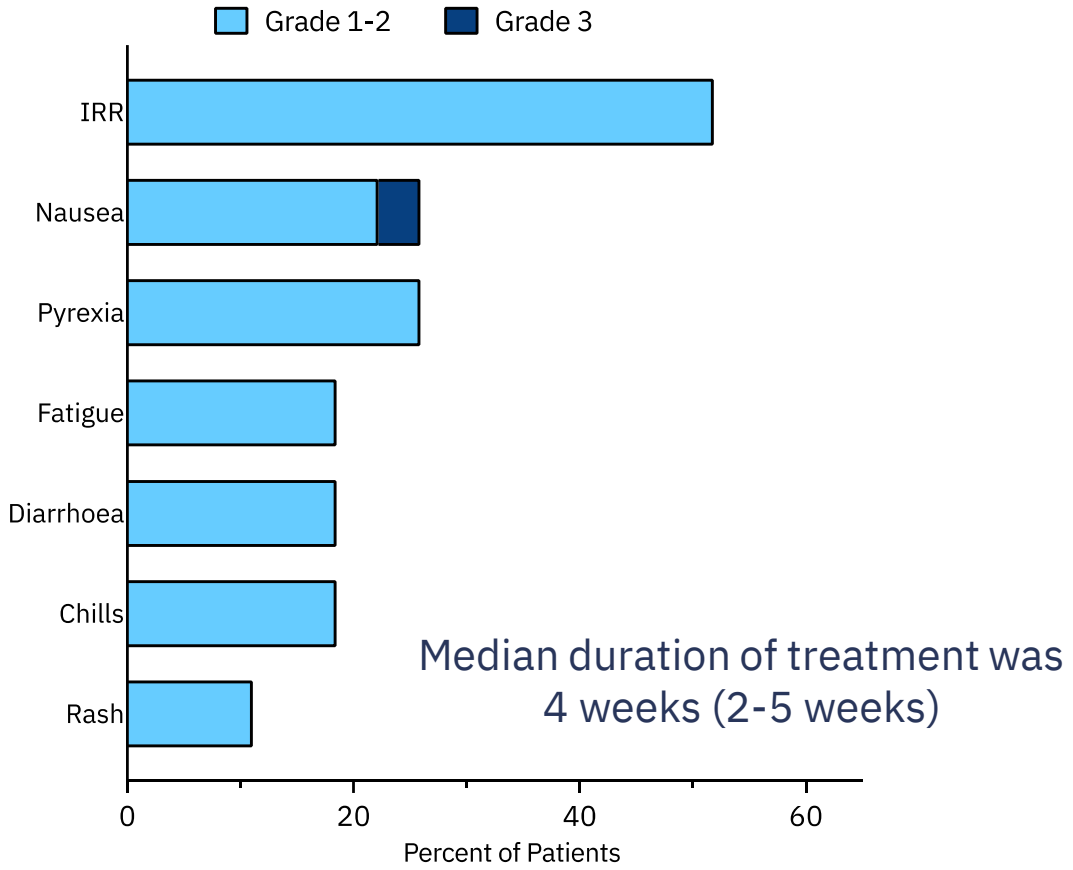
Tachyphylaxis Observed with Step-up Dosing

Most Common TRAEs (≥10% of Patients) At Step up Doses#



#In cohorts with Step up dosing: Cohort 4 & 5: 2X30 µg/kg, Cohort 6: 30, 60 and 90 µg/kg, Dose evaluation: 30 & 60 µg/kg

Most Common TRAEs (≥10% of Patients) During DLT Period*



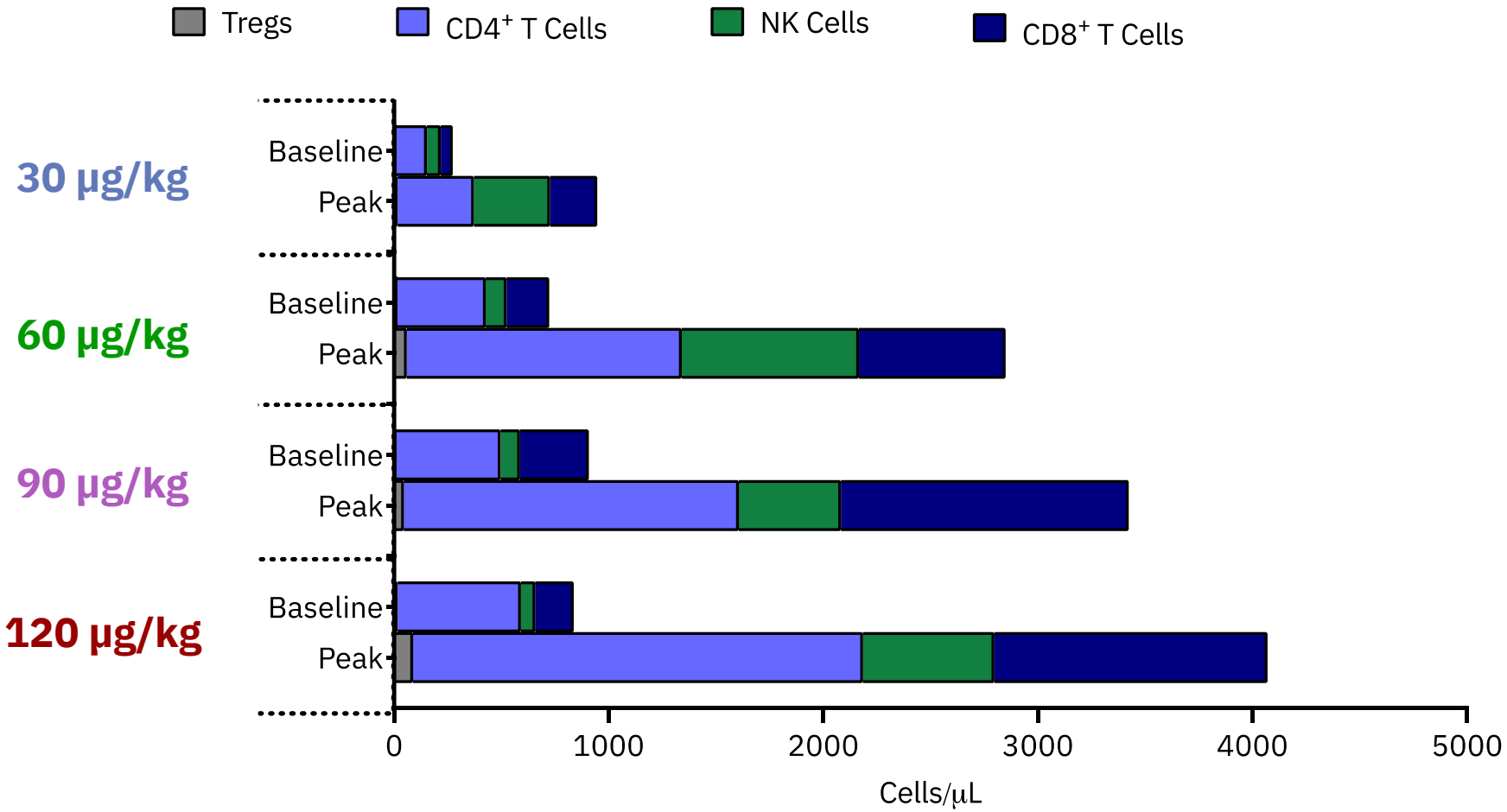
Median duration of treatment was 4 weeks (2-5 weeks)

*28 days from first target dose

IRR, Infusion Related Reaction

MDNA11 Preferentially Expands Circulating Effector Immune Cells

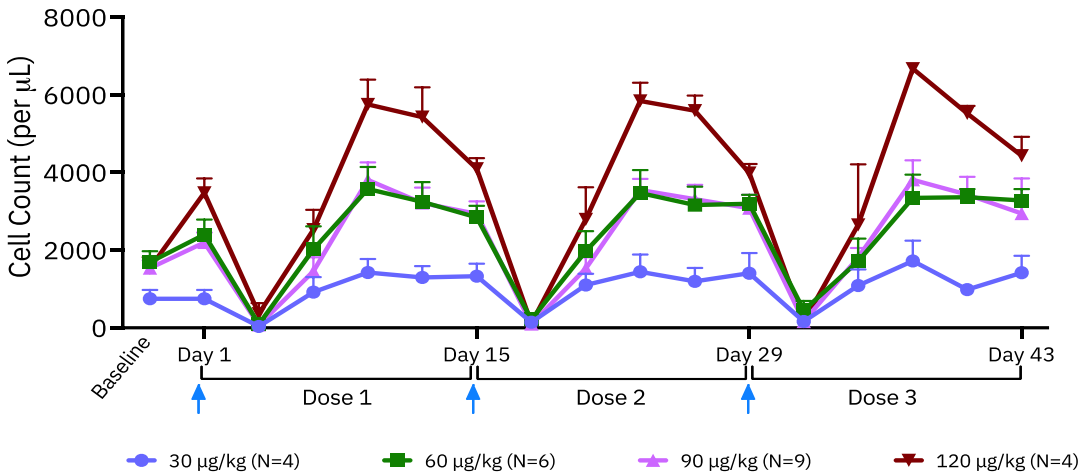
CD8⁺ T Cells Demonstrate the Most Expansion Compared to Baseline



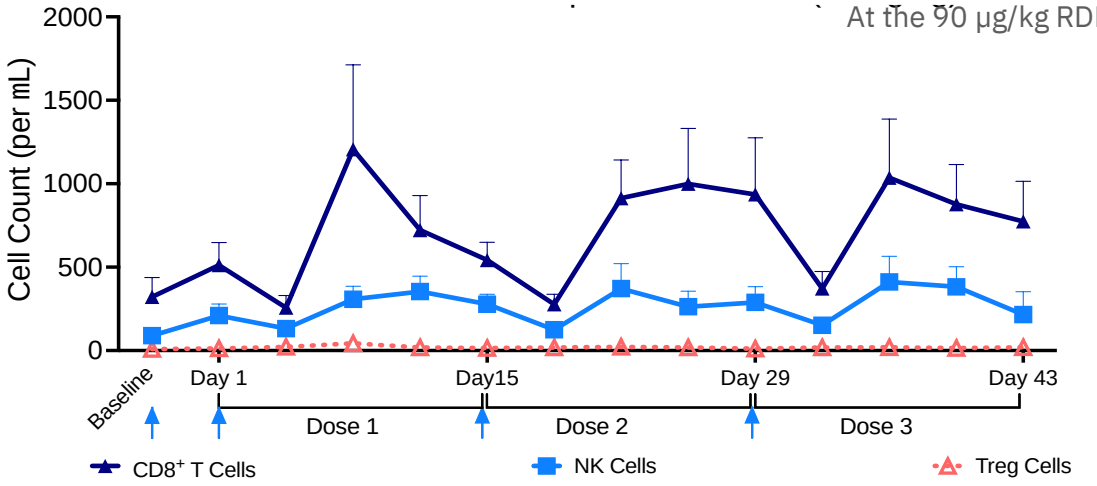
Immune cells were assessed by flow cytometry and the numbers were calculated based on the absolute lymphocyte count
Peak values are from day 8 post treatment following dose 1, 2 or 3
Tregs: $CD4^+CD25^+$ $FOXP3^+$, NK Cells: $CD3^-$ $CD56^+$

Optimal Immune Response: Sustained Effector Cell Expansion with Repeat Dosing

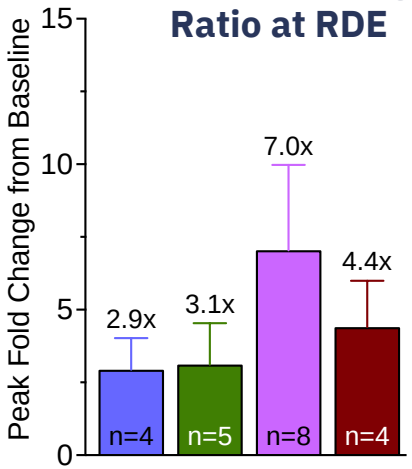
Dose Dependent Increase in Total Lymphocyte Counts



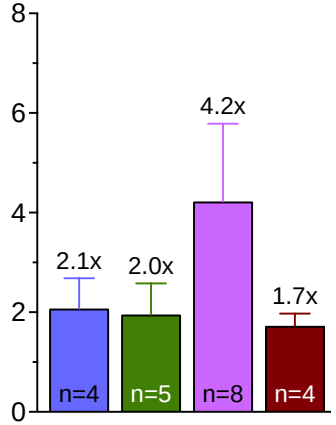
Preferential Expansion of CD8⁺ T and NK Cells but not Tregs



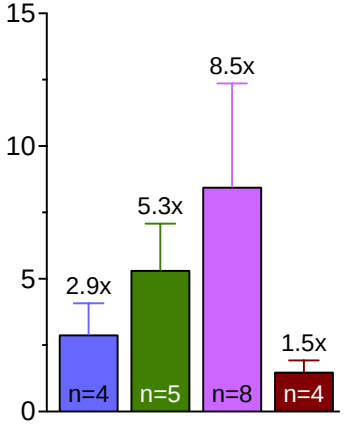
Peak CD8/Treg Ratio at RDE



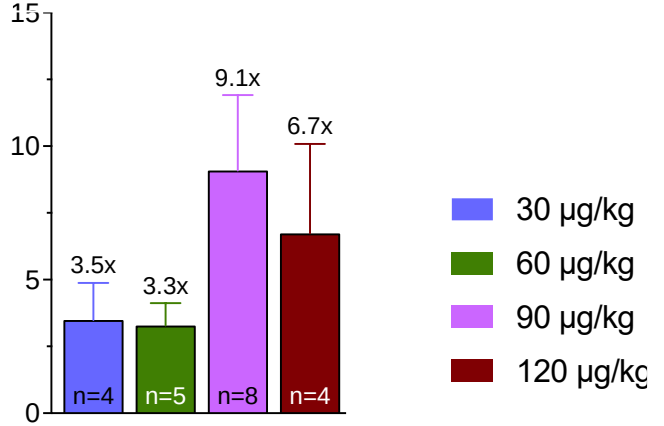
Robust Expansion of Activated CD25⁺CD8⁺ T Cells



Expansion of Co-stimulated OX40⁺CD8⁺ T Cells



Increase in Dysfunctional OX40⁺Tregs



Enhanced ‘Stemness’, Activation and Memory With Diminishing Immune Suppressive Function

TCF1:

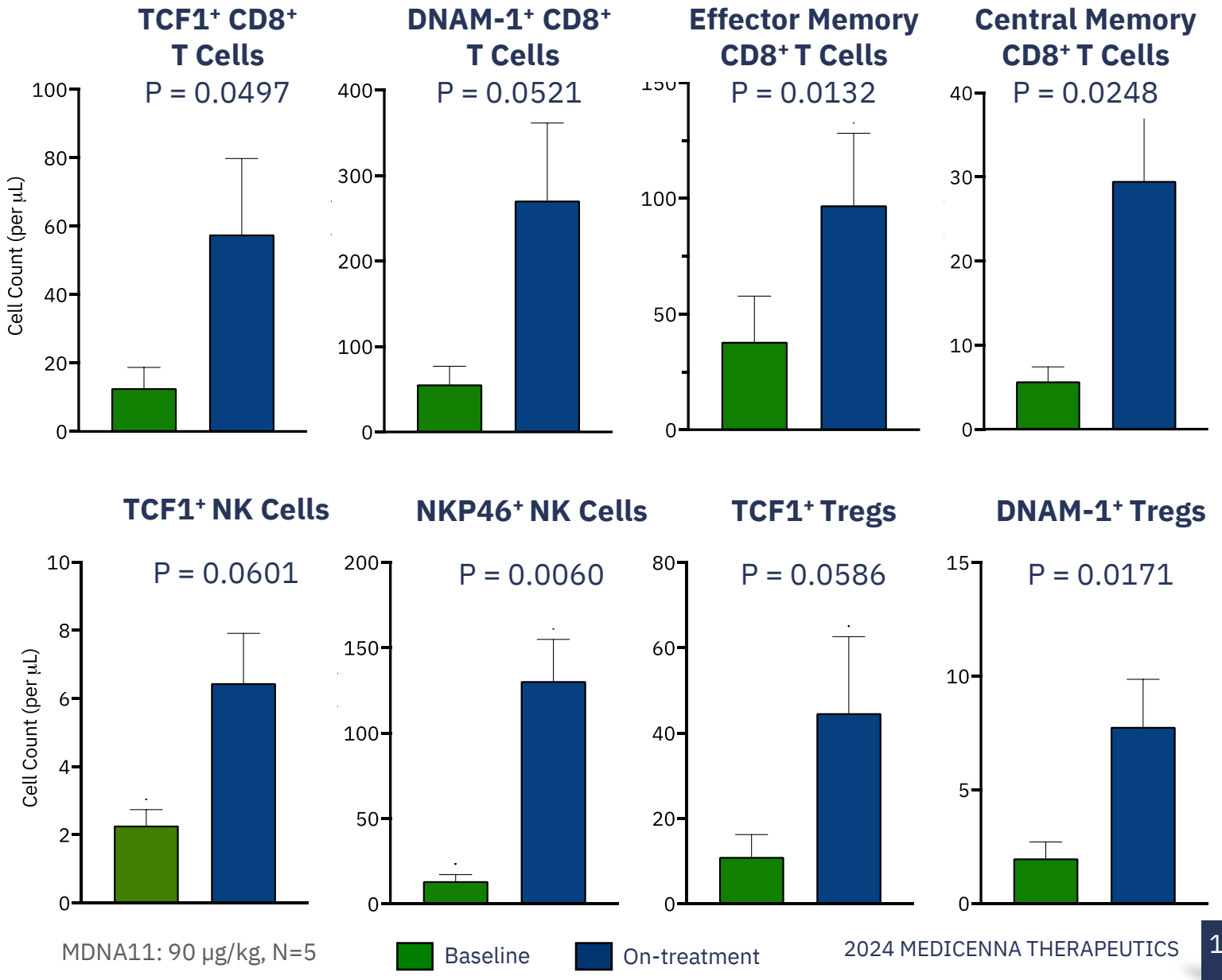
- Positive regulator of CD8⁺ T and NK cell ‘**stemness**’ (i.e., self renewal, proliferation and effector functions)
- Represses FoxP3 leading to dysfunctional Tregs and loss of immune suppression

DNAM-1 (CD226):

- Positive regulator of immune effector function of CD8⁺ T and NK cells
- Attenuates immune suppressive activity of Tregs

NKP46:

- Positive regulator of NK cell activation (increased cytotoxic activity and cytokine production)



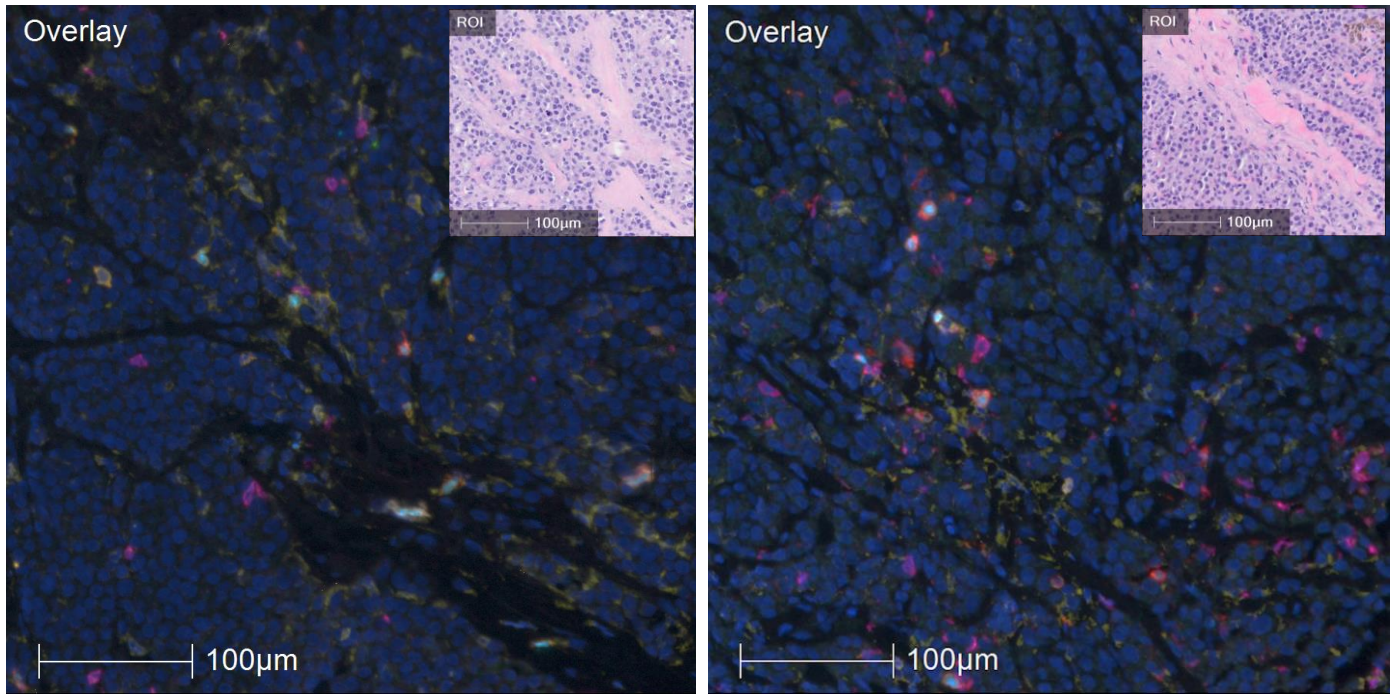
Increased Tumor Infiltrating CD8⁺ T and NK Cells

Cutaneous melanoma at 10 µg/kg MDNA11, Q2W

Disease Progression at week 12

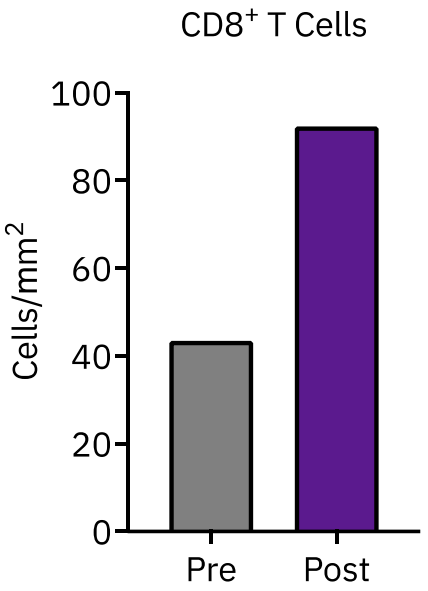
Pre-treatment

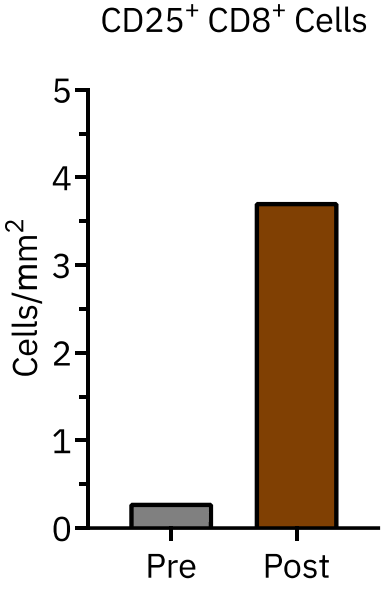
Post-treatment (Week 7)

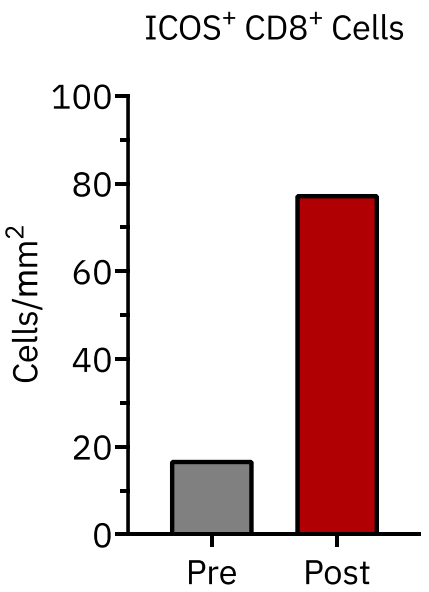


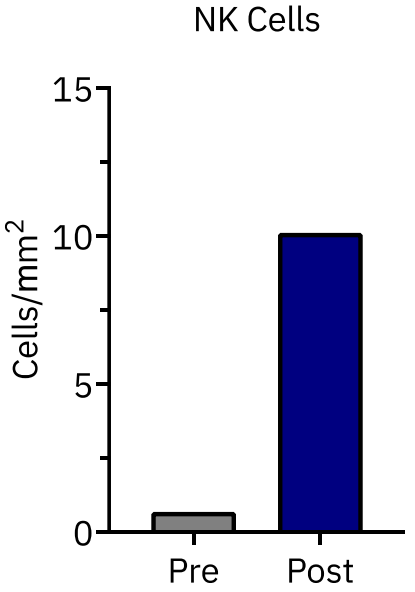
CD8 CD56 CD25 ICOS DAPI

multiplex immunofluorescence (mIF)









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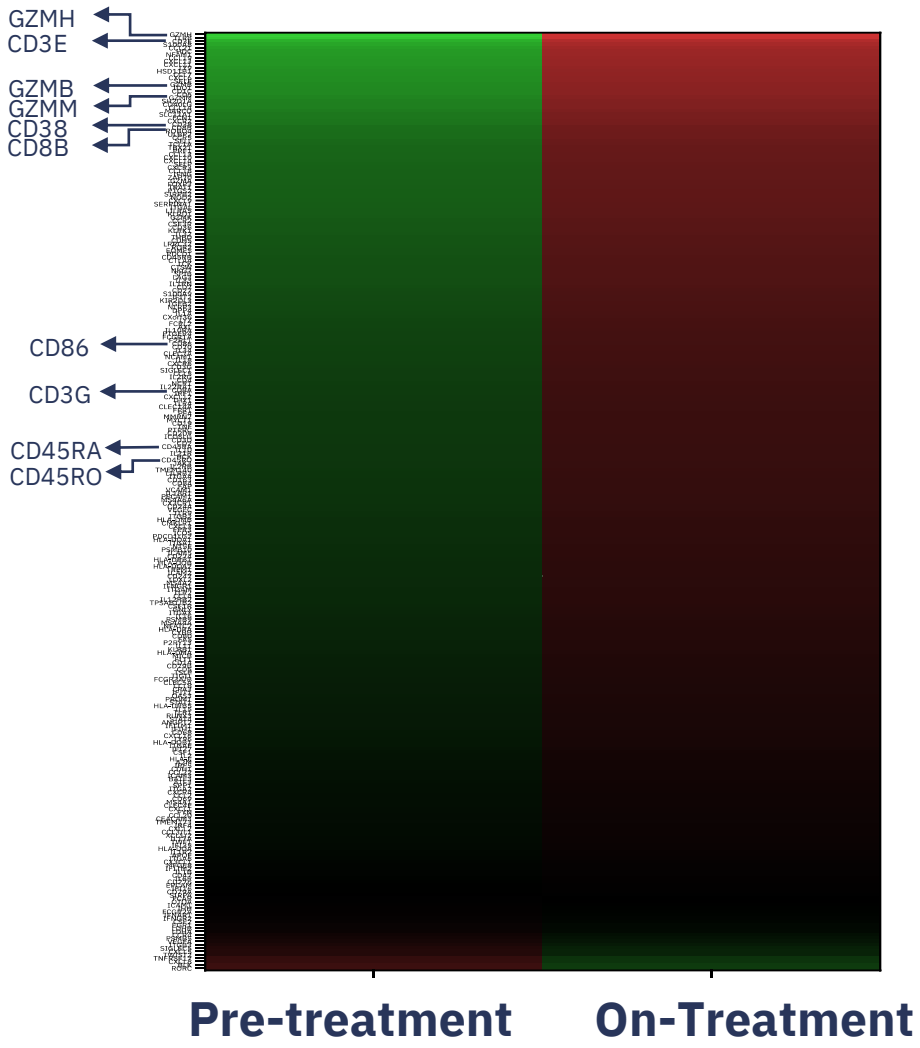
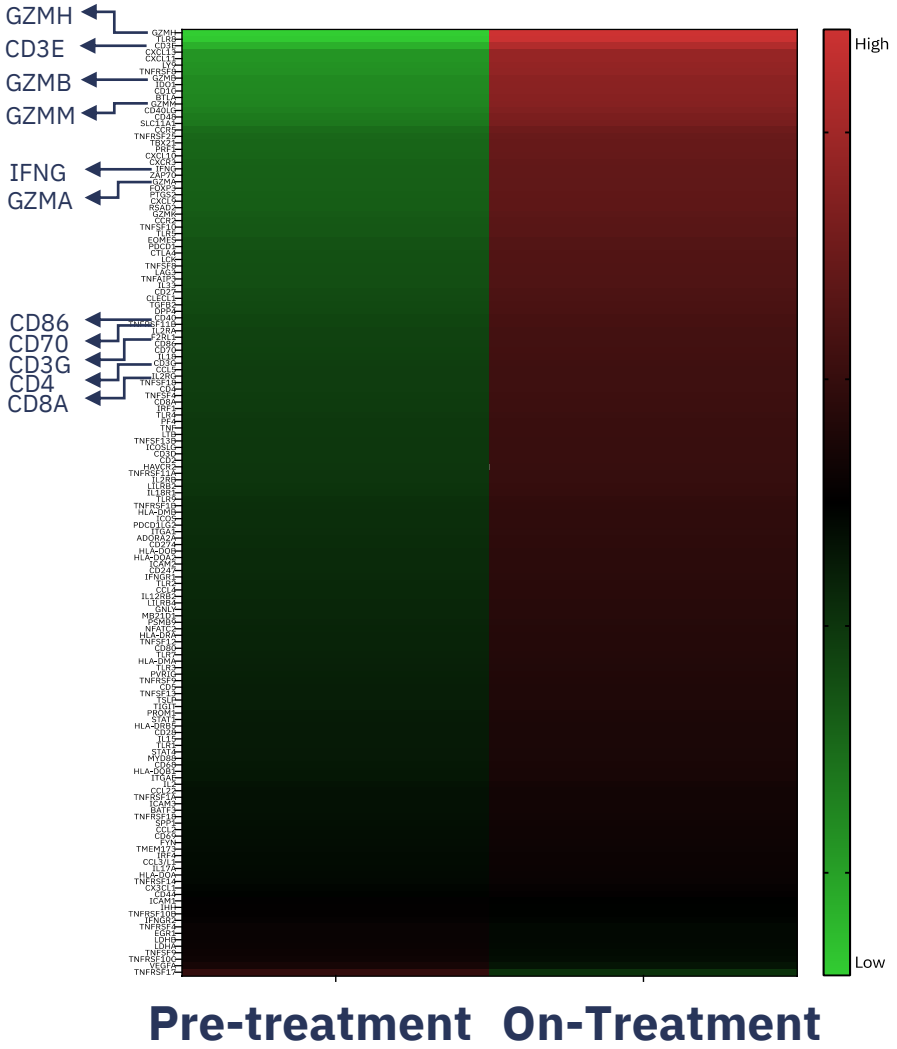
Gene Signature: Increased Infiltration and Activation of Immune Effector Cells in Treated Tumors

Increased Infiltration of Effector Cells



Increased CD8⁺ T Cell Priming & Activation



Gene expression analysis Nanostring PanCancer IO360, N=2

Paired Biopsy Samples: MDNA11 Promotes Active Immune Response Pathways and Degrades Pro-Tumor Activities

MDNA11 Promotes:

Pathways Associated with Active Immune Response

Top Pathways Promoted in On-Treatment Tumor Biopsies	Adjusted P-value	Odds Ratio
Positive Regulation of Antigen Processing And Presentation	<0.0001	307.701
Positive Regulation of Dendritic Cell Antigen Processing And Presentation	<0.0001	307.701
Immunological Synapse Formation	<0.0001	153.835
Regulation of T Cell Chemotaxis	<0.0001	130.868
Positive Regulation of T Cell Chemotaxis	<0.0001	103.604

MDNA11 Degrades:

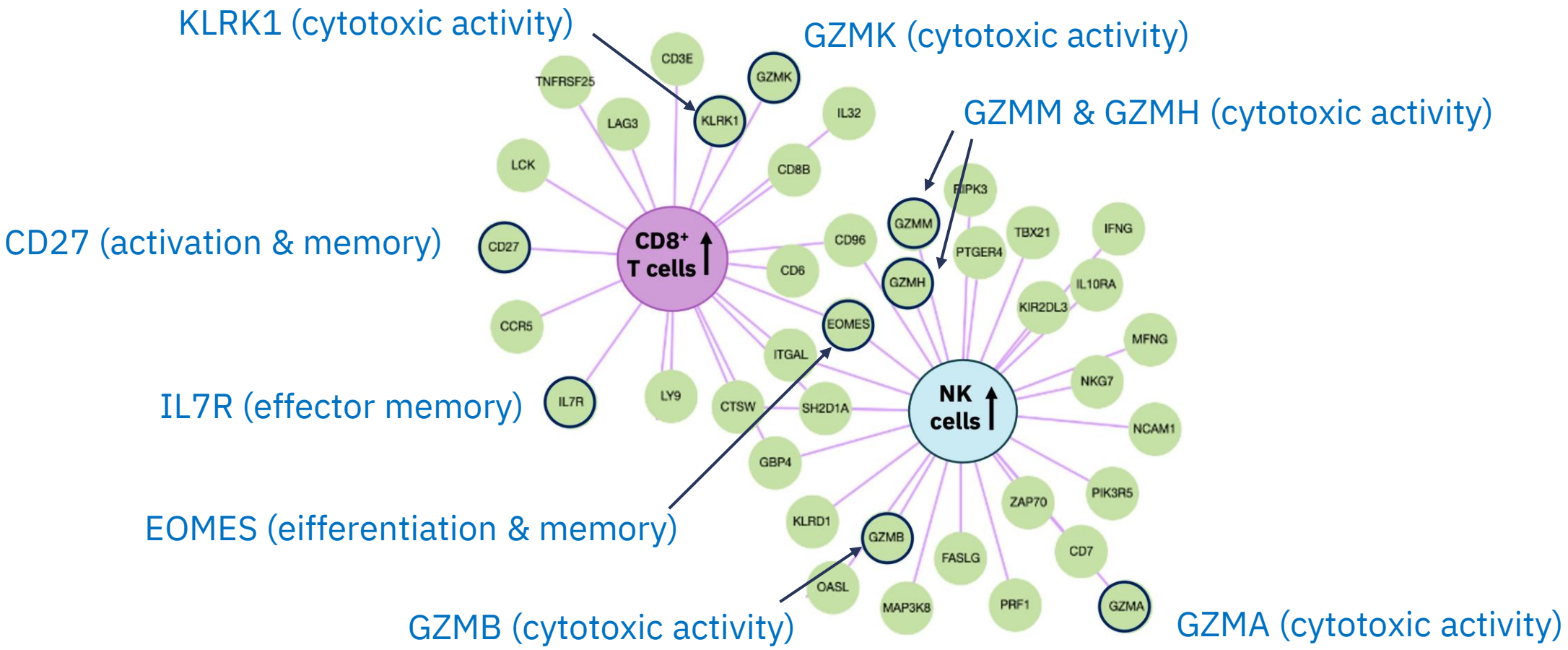
Pathways Associated with Pro-Tumor Activities

Top Pathways Degraded in On-Treatment Tumor Biopsies	Adjusted P-value	Odds Ratio
Maintenance of DNA Repeat Elements	0.008	135.354
Positive Regulation of Helicase Activity	0.010	101.510
Regulation of Cell Cycle Checkpoint	0.001	76.902
Angiogenesis Involved In Wound Healing	0.018	50.745
Regulation of Histone Deacetylase Activity	0.108	50.242

Stimulation of Anti-tumor Response in Treated Tumor Biopsies

MDNA11 Enhances Infiltration of Immune Cells and Tumor Inhibitory Gene Signature in Paired-Biopsy Tissues

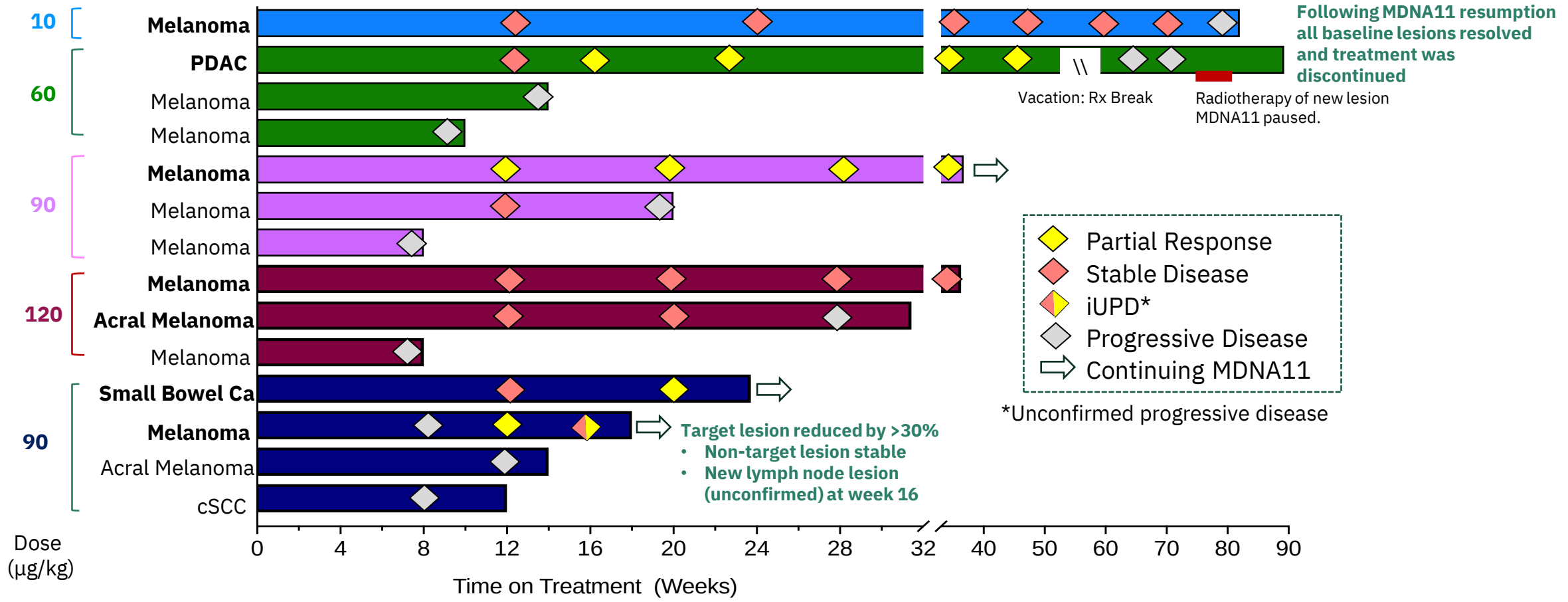
Network view of cell type specific genes upregulated by MDNA11 treatment



Nanostring analysis was performed on screening and on-treatment tumor biopsy samples (N=2)

Monotherapy: Shows Durable Tumor Response in High-Dose Phase-2 Eligible Patients Resistant to Checkpoint Inhibitors

Response Rate (4PR): 28.6% | Clinical Benefit Rate (4PR + 3SD >24 weeks): 50%

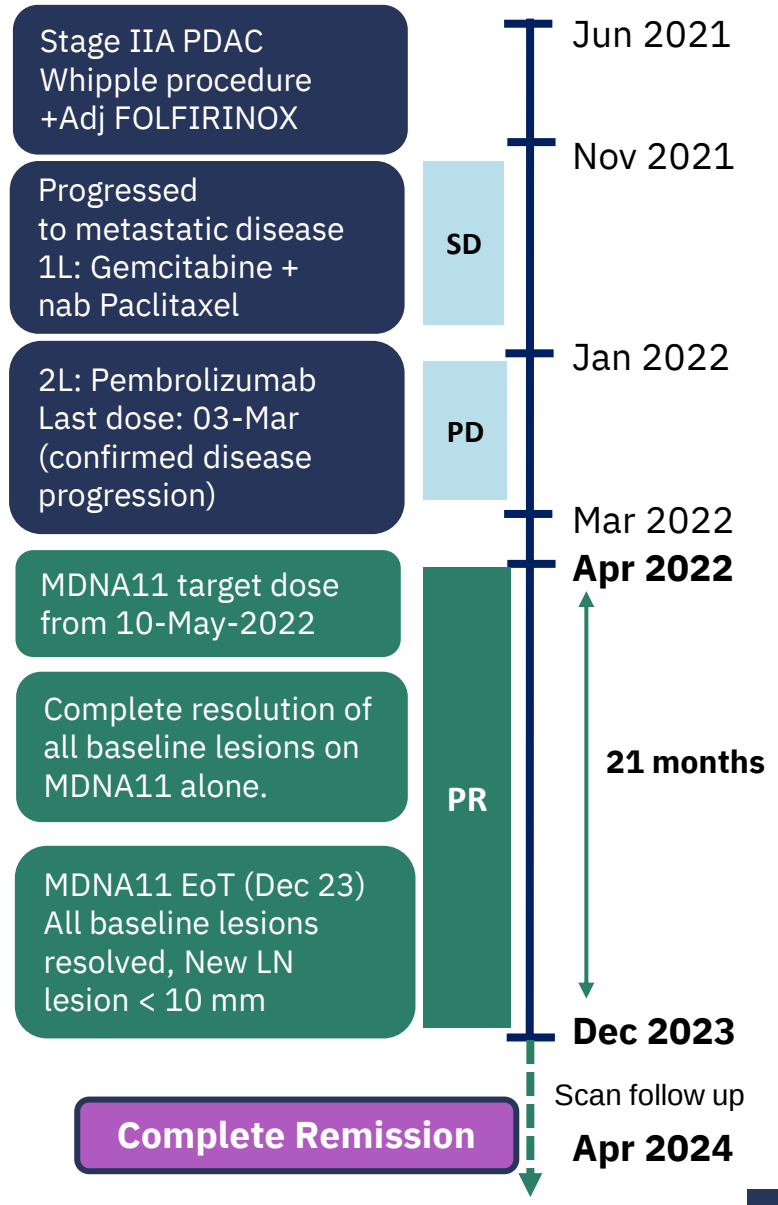


Efficacy evaluable patients
Cut-off date: 22-Mar-2024

Complete Remission in Patient with Pancreatic Cancer (MSI-H)

Complete Remission Sustained ~4 months After Stopping Treatment

Timepoint	Target Lesions Response (% change from baseline)	Non-Target lesions Response	New lesions	Overall response (RECIST1.1)
Screening	TL-1- Hepatic lesion TL-2-Hepatic lesion	Hepatic lesion	N/A	N/A
Week 12	-25.5%; SD	Non-CR/Non-PD	No	SD
Week 16	-34.8%; PR	Non-CR/Non-PD	No	PR
Week 35	**-55.1%; PR**	**CR**	**No**	**PR**
Treatment break for vacation (week 55-62); New LN Lesion Appeared on Vacation; MDNA11 resumed from week 63				
Week 62	-79%; PR	CR	+ (LN lesion) 17 mm	PD
Week 66	**-100%; CR**	**CR**	**+ (LN lesion) 19 mm**	**PD**
Treatment break; single cycle of radiotherapy for new LN lesion (Week 67-73); MDNA11 resumed from week 73				
Week 76	-100%; CR	CR	NE; 12 mm	NE
Week 88	**-100%; CR**	**CR**	**NE; <10 mm**	**NE**
End of MDNA11 treatment at week 90				
Week 104 (~ 4 months from EoT)	**-100%; CR**	**CR**	**<10 mm**	**Remains in Complete Remission**



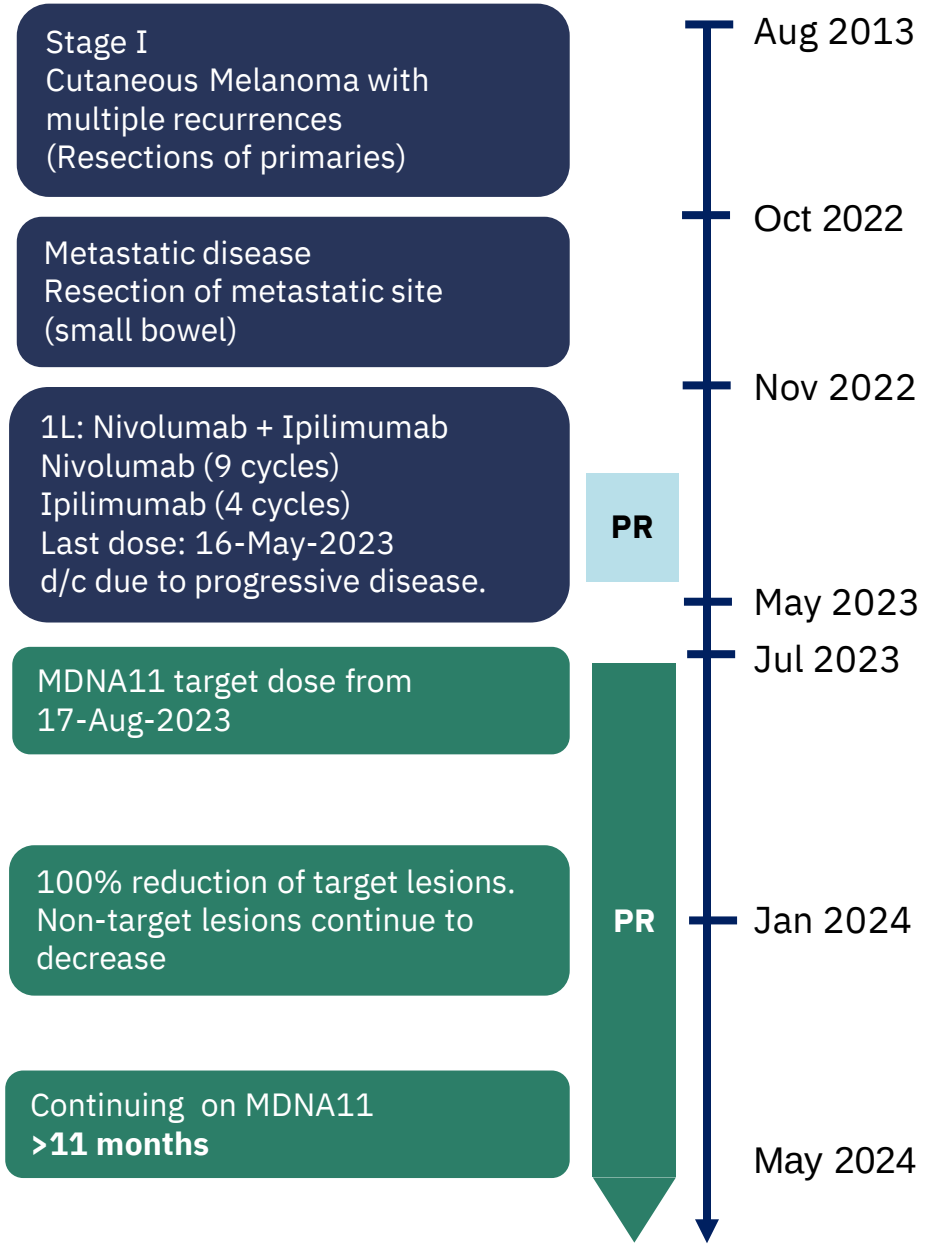
TL, target lesion | LN, lymph node | EoT, end of treatment
SD, stable disease | PR, partial response | CR, complete response

Sustained Partial Response with 100% Reduction of Target Lesions

Sustained Response in Melanoma Patient on MDNA11 (90 µg/kg)

Timepoint	Target Lesions Response (% change from baseline)	Non-Target Lesions Response	New Lesions	Overall Response (RECIST1.1)
Screening	Peritoneal Nodule	Multiple Peritoneal Nodules	N/A	N/A
Week 12	-70%; PR	Non-CR/ Non-PD	No	PR
Week 20	-80%; PR	Non-CR/ Non-PD	No	PR
Week 28	**-100%; CR**	Non-CR/ Non-PD*	No	PR
Week 36	**-100%; CR**	Non-CR/ Non-PD*	No	PR
Week 44	**-100%; CR**	Non-CR/ Non-PD*	No	PR

*Non-Target Lesions continue to decrease



PR, partial response | CR, complete response

No DLTs in Dose Cohort 1 of Combination Escalation with Pembrolizumab

Dose Cohort 2 is Enrolling at the Next Higher Dose of 90 µg/kg Following Absence of Any DLTs at 60 µg/kg

Cohort	MDNA11 Target Dose (Q2W)	Pembrolizumab Dose (Q6W)	Status
Cohort 1	60 µg/kg (Priming 2 x 30 µg/kg)	400 mg	3 Patients : No DLT
Cohort 2	90 µg/kg (Priming 30, 60 µg/kg)	400 mg	**Enrolling**

DLT period: First priming dose to 21 days from target dose (49 days from first priming dose)

Cohort 1: MDNA11 60 µg/kg (Q2W) + Pembrolizumab 400 mg (Q6W)		
Patient ID	**Age/ Sex**	**Primary tumor**
Patient 1	59/F	Ovarian SCC
Patient 2	59/F	NSCLC
Patient 3	52/F	MSS Colorectal Cancer

- No DLTs
- No grade 4/5 TRAEs
- No treatment related SAEs
- Only one grade 3 TRAE (Transient WBC count decrease on day 2 of priming dose; No associated clinical sequalae)

MDNA11: A Potential Best-In-Class IL-2

High Dose Phase-2 Eligible Patients

4/14 **Partial Responses**

29% **Overall Response Rate**

50% **Clinical Benefit Rate**

- ✓ Desirable Monotherapy Safety Profile
- ✓ Dosing Every 2 Weeks
- ✓ Preferential Expansion of Circulating $CD8^+$ T and NK cells

Best-in-Class Potential

- ✓ Durable Responses
- ✓ *Complete Remission Continues in PDAC Patient ~4 Months After Treatment*
- ✓ *Sustained 100% Target Lesion Reduction in Melanoma Patient*
- ✓ 2/2 PRs in MSI-High Patients

Key Features

- ✓ Increased Immune 'Stemness'
- ✓ Enhanced Central and Effector Memory Compartments
- ✓ Boost tumor infiltration of functionally active $CD8^+$T and NK cells

Catalysts and Financials

Expected Milestones and Upcoming Events

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2024 Anticipated Milestones & Upcoming Events

2024 Timeline

2024 H1

2024 H2

MDNA11

- Expanded Clinical Sites and Combo
- Complete Monotherapy Escalation Data
- Initial Monotherapy Expansion Data
- Initial Combination Escalation Data
- Topline Monotherapy Expansion Data
- Additional Combination Escalation Data
- Preliminary Combination Expansion Data

Bizaxofusp (MDNA55)

- Breakthrough Therapy Designation
- EMA Alignment for Phase 3 Design
- Secure Partnership and Commence Phase 3

Potential Upcoming Events

Confirmed	Confirmed	Planned	Planned	Planned
April 5-10	May 31, June 1	Sep 4 - 7	Nov 6 - 10	Dec 4 - 5
AACR American Association for Cancer Research	SACHS ASSOCIATES 10TH ANNUAL ONCOLOGY INNOVATION FORUM 31st of May 2024; 2024 ASCO ANNUAL MEETING	The Promise of Interleukin-2 Therapy. For autoimmune and inflammatory diseases, allergy, transplantation and cancer	Society for Immunotherapy of Cancer SITC 2024 NOV. 6-10 | HOUSTON	IMMUNOTHERAPY 10 YEARS 2024 BRIDGE

Evolutionary Cytokines Revolutionary Medicines

Superkine Platform

Medicenna's Drug Discovery Engine

- ✓ 2 First-in-Class Clinical Stage Assets
  MDNA11 | Bizaxofusp (MDNA55)
- ✓ Robust Oncology & Autoimmune Pipeline
  BiSKITs | MDNA113 | MDNA 209 | MDNA413 | MDNA134

Financial Highlights

TSX | OTCQB	MDNA | MDNAF
Headquarters	Toronto, CA
Market Capitalization	$180M CAD
Cash	$41.8M CAD[1,2]
Debt	$0
Basic SO	~80 Million[1,2]
Fully Diluted SO	~103 Million[1,2]
Insider Ownership	~22%[1,2]

[1] As of 12/31/2023
[2] Adjusted for recent $20M private placement by RA Capital, which included ~5M common shares and ~5M pre-funded warrants

Thank you

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