UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 8-K

Current Report Pursuant to
Section 13 or 15(d) of the
Securities Exchange Act of 1934

Date of Report (Date of Earliest Event Reported): January 9, 2025

Mural Oncology plc

(Exact name of Registrant as Specified in Its Charter)

Ireland	**001-41837**	**98-1748617**
(State or Other Jurisdiction of Incorporation)	**(Commission File Number)**	**(IRS Employer Identification No.)**
10 Earlsfort Terrace **Dublin 2, D02 T380, Ireland**		**Not Applicable**
(Address of Principal Executive Offices)		**(Zip Code)**

Registrant's Telephone Number, Including Area Code: +353-1-905-8020

Not Applicable
(Former Name or Former Address, if Changed Since Last Report)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions (see General Instructions A.2. below):

☐ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
☐ Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
☐ Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
☐ Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Ordinary Shares, nominal value $0.01	MURA	The Nasdaq Global Market

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (§230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (§240.12b-2 of this chapter).

Emerging growth company ☒

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Item 7.01. Regulation FD Disclosure.

On January 9, 2025, Mural Oncology plc (the "Company") issued a press release titled "Mural Oncology Highlights Pipeline Progress and Anticipated 2025 Catalysts". The Company also made available a copy of an updated corporate presentation, which can be accessed on the Company's website at https://ir.muraloncology.com/events-and-presentations. A copy of the press release is attached hereto as Exhibit 99.1 and a copy of the corporate presentation is attached hereto as Exhibit 99.2, both of which are incorporated by reference herein. The information contained in, or that can be accessed through, the Company's website is not a part of this filing.

The information contained under this Item 7.01 in this Current Report on Form 8-K, including Exhibit 99.1 and Exhibit 99.2, is being furnished herewith and shall not be deemed to be "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), or otherwise subject to the liabilities of that section, nor shall such information be deemed incorporated by reference in any filing under the Securities Act of 1933, as amended, or the Exchange Act, except as expressly set forth by specific reference in such a filing.

Item 9.01 Financial Statements and Exhibits

(d) Exhibits

Exhibit No.	Description
99.1	Press release issued by Mural Oncology plc on January 9, 2025.
99.2	Mural Oncology plc Corporate Presentation, dated January 2025.
104	Cover Page Interactive Data File (embedded within the Inline XBRL document)

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

Mural Oncology plc

Dated: January 10, 2025

By: /s/ Maiken Keson-Brookes
Name: Maiken Keson-Brookes
Title: Chief Legal Officer

Exhibit 99.1

Mural Oncology Highlights Pipeline Progress and Anticipated 2025 Catalysts

Readouts for two late-stage, potentially registrational trials of nemvaleukin alfa expected in late Q1/early Q2 2025 for platinum-resistant ovarian cancer and Q2 2025 for mucosal melanoma

Preliminary data readouts for less-frequent intravenous dosing of nemvaleukin in patients with cutaneous melanoma expected in 1H 2025 for monotherapy, with patient enrollment now complete, and 2H 2025 for combination therapy

Mural nominated two new development candidates, MURA-8518 a novel binding protein-resistant IL-18 with half-life extension, and MURA-7012, targeted split sub-units of IL-12; Mural anticipates an IND submission for MURA-8518 in Q4 2025

Company extends cash runway projection into Q1 2026 through operational efficiencies

WALTHAM, Mass and DUBLIN – January 9, 2025 – Mural Oncology plc (Nasdaq: MURA), a clinical-stage immuno-oncology company developing novel, investigational engineered therapies targeting cytokine pathways designed to address areas of unmet need for patients with a variety of cancers, today announced it has reached the 75% of overall survival (OS) events necessary for the planned interim analysis of ARTISTRY-7, its potentially registrational trial of nemvaleukin in combination with pembrolizumab in platinum resistant ovarian cancer (PROC), and that it has extended its cash runway projection into Q1 2026 beyond key upcoming catalysts.

The company expanded its pipeline in Q4 2024, by nominating two development candidates, one for its interleukin-18 (IL-18) program and one for its IL-12 program. MURA-8518 is designed to be a half-life extended, binding protein-resistant IL-18 in order to overcome the native cytokine's limitations as a therapeutic. Mural expects to submit an Investigational New Drug (IND) Application or Clinical Trial Application (CTA) for a phase 1 trial of MURA-8518 in Q4 2025. MURA-7012 is comprised of targeted split IL-12 sub-units that preferentially self-assemble at the tumor site and are designed to limit systemic exposure.

"In just over a year since becoming an independent company, we have transformed Mural from a biotech with a binary readout in 2025 into a robust organization with multiple expected data catalysts. Not only have we stayed on track with our milestones as planned, we have also extended our cash runway into the first quarter of 2026 through operational efficiency," said Caroline Loew, Ph.D., CEO of Mural Oncology. "With two readouts in our late-stage trials on the horizon, nemvaleukin has the potential to become a new treatment option for patients with high unmet need in platinum-resistant ovarian cancer and mucosal melanoma. 2025 will be a pivotal year for Mural, and we look forward to advancing our clinical programs to bring value to patients and shareholders alike."

Upcoming catalysts:

- **Late Q1/early Q2 2025: Interim data readout of ARTISTRY-7**, Mural's potentially registrational phase 3 trial in PROC. The trial is evaluating nemvaleukin in combination with pembrolizumab versus investigator's choice single agent chemotherapy. Consistent with Mural's prior timing projections, the trial has now reached the 75% of OS events necessary for the planned interim analysis. The data will remain blinded to the company until after the independent data

monitoring committee (IDMC) has reviewed the interim analysis, which is expected to be in late Q1/early Q2 2025. Consistent with interim analyses, there is a higher statistical bar for success at the interim analysis compared to the final analysis. If the hazard ratio meets this pre-specified higher bar for success at the interim analysis (0.727, or a 27.3% reduction in the risk of death assuming exactly 215 OS events), the company plans to submit a Biologics License Application (BLA) for nemvaleukin in combination with pembrolizumab for the treatment of PROC in 2025. If the hazard ratio does not meet the statistical threshold for success at the interim analysis and the company deems the study to have a high probability of success for the final analysis, Mural expects to continue the trial to the protocol-specified final OS analysis, where the maximum hazard ratio for success is 0.788, or a 21.2% reduction in the risk of death, assuming exactly 286 OS events. The company expects to report these final OS results in the second quarter of 2026, subject to event accrual.

- **Q2 2025: Top-line data readout of Cohort 2 of ARTISTRY-6,** Mural's potentially registrational phase 2 trial of nemvaleukin monotherapy in patients with unresectable or metastatic mucosal melanoma previously treated with immune checkpoint blockade. Nemvaleukin has been granted Orphan Drug Designation by the FDA for the treatment of mucosal melanoma. The target response rate in the ARTISTRY-6 trial is 25%. Mural believes that in this rare and highly aggressive tumor, which has historically had poor outcomes even in the first line setting, demonstrating durable responses with a response rate of 20-25% would be meaningful for patients, and would support a discussion with the FDA regarding a BLA submission and potential accelerated approval.

- **1H 2025:** Preliminary data readout of Cohort 3 of ARTISTRY-6, an evaluation of a less-frequent intravenous (LFIV) dose of nemvaleukin monotherapy in patients with cutaneous melanoma. Patient enrollment in this cohort is now complete. If the data are promising, following subsequent clinical evaluation, LFIV dosing could offer a more convenient dosing regimen for patients and providers alike.

- **2H 2025:** Preliminary data readout of Cohort 4 of ARTISTRY-6, an evaluation of a LFIV dose of nemvaleukin in combination with pembrolizumab in patients with cutaneous melanoma.

- **Q4 2025:** Mural expects to submit an IND or CTA for a phase 1 trial of MURA-8518, its IL-18 development candidate.

Mural has also made available a copy of an updated corporate presentation, which can be accessed on its website at https://ir.muraloncology.com/events-and-presentations.

About Mural Oncology

Mural Oncology is leveraging its novel protein engineering platform to develop cytokine-based immunotherapies for the treatment of cancer. By combining our expertise in cytokine biology and immune cell modulation and our protein engineering platform, we are developing medicines to deliver meaningful and clinical benefits to people living with cancer. Our mission is to broaden the potential, and reach, of cytokine-based immunotherapies to improve the lives of patients. Our lead candidate, nemvaleukin, is currently in potentially registrational trials in platinum-resistant ovarian cancer and mucosal melanoma reading out in the first half of 2025. Mural Oncology has its registered office in Dublin, Ireland, and its primary facilities in Waltham, Mass. For more information, visit Mural Oncology's website at www.muraloncology.com and follow us on LinkedIn and X.

About Nemvaleukin

Nemvaleukin alfa (nemvaleukin) is an engineered fusion protein designed to leverage IL-2's antitumor effects while mitigating the hallmark toxicities that limit its use. Nemvaleukin selectively binds to the intermediate-affinity IL-2 receptor (IL-2R) and is sterically occluded from binding to the high-affinity IL-2R. Because of this molecular design, nemvaleukin treatment leads to preferential expansion of antitumor CD8+ T cells and natural killer cells, with minimal expansion of immunosuppressive regulatory T cells. Nemvaleukin is currently being evaluated in two potentially registrational late-stage trials: ARTISTRY-7 in platinum-resistant ovarian cancer, with an interim data readout expected in late Q1/early Q2 2025 and final OS results projected in Q2 2026, and ARTISTRY-6, Cohort 2 in mucosal melanoma, with a topline readout in Q2 2025.

About MURA-8518

IL-18 is a potent immune-stimulating cytokine, but its activity is blunted by IL-18 binding protein (IL-18BP), a high affinity decoy protein that neutralizes IL-18, thereby rendering it ineffective. Native IL-18's potency is also limited by its short half-life. MURA-8518 aims to address the shortcomings of native IL-18 in two ways. First, through the introduction of mutations designed to minimally impact the native structure while eliminating binding to IL-18BP. Secondly, half-life extension via fusion to a protein scaffold increases the cytokine's exposure, allowing for sustained immune stimulation. Together, these have demonstrated more durable immunological effects in preclinical studies. Mural expects to submit an IND or a Clinical Trial Application for a phase 1 trial of MURA-8518 in Q4 2025.

About MURA-7012

Native IL-12 is a highly potent pro-inflammatory cytokine that has a narrow therapeutic index when administered systemically. To mitigate this toxicity, Mural, through its novel approach to protein engineering, split the IL-12p70 heterodimer into two inactive monomers: IL12p35 and IL-12p40. These individual subunits are then separately fused to antibody fragments and sequentially injected, which deliver and concentrate IL-12 preferentially in the tumor microenvironment to limit systemic exposure. In preclinical studies, MURA-7012, Mural's engineered IL-12, achieved the desired reduction in serum while maintaining tumor concentrations providing the potential to reduce systemic toxicities.

Forward-Looking Statements

Statements contained in this press release regarding matters that are not historical facts are “forward-looking statements” within the meaning of the Private Securities Litigation Reform Act of 1995. Because such statements are subject to risks and uncertainties, actual results may differ materially from those expressed or implied by such forward-looking statements. Such statements include, but are not limited to, statements regarding: the company’s pipeline and development programs, including the expected timing of data readouts from the ARTISTRY-6 and ARTISTRY-7 trials, the expected timing of a BLA submission for nemvaleukin in combination with pembrolizumab for the treatment of PROC, the potential regulatory pathways for nemvaleukin, the expected timing of preclinical updates and IND submission, including with respect to MURA-8515 and MURA-7012, the potential of the company’s product candidates and programs to address unmet medical needs, the continued progress of its pipeline and programs, and the sufficiency of Mural’s cash resources for the period anticipated. Any forward-looking statements in this press release are based on management’s current expectations of future events and are subject to a number of risks and uncertainties that could cause actual results to differ materially and adversely from those set forth in or implied by such forward-looking statements. Risks that contribute to the uncertain nature of the forward-looking statements include, among others, the inherent risks and uncertainties associated with competitive developments, preclinical development, clinical trials, recruitment of patients, product development activities and regulatory approval requirements; that preclinical or interim results and data from ongoing clinical studies of the company’s cytokine programs and product candidates may not be predictive of future or final results from such studies, results of future clinical studies or real-world results; future clinical trials or future stages of ongoing clinical trials may not be initiated or completed on time or at all; the company’s product candidates, including nemvaleukin, could be shown to be unsafe or ineffective; changes in the cost, scope and duration of development activities; the U.S. Food and Drug Administration may make adverse decisions regarding the company’s product candidates; and those other risks and uncertainties set forth in the company’s filings with the Securities and Exchange Commission (“SEC”), including its Quarterly Report on Form 10-Q for the quarterly period ended September 30, 2024 and in subsequent filings the company may make with the SEC. All forward-looking statements contained in this press release speak only as of the date of this press release. The company anticipates that subsequent events and developments will cause its views to change. However, the company undertakes no obligation to update such forward-looking statements to reflect events that occur or circumstances that exist after the date of this press release, except as required by law.

Contact:

Katie Sullivan

katie.sullivan@muraloncology.com

Exhibit 99.2

INVESTOR PRESENTATION

January 2025

Forward-Looking Statements

Certain statements set forth in this presentation constitute “forward-looking statements” within the meaning of the Private Securities Litigation Reform Act of 1995, as amended. The words “anticipate,” “believe,” “expect,” “may,” “will” and similar expressions are intended to identify forward-looking statements. Forward-looking statements made in this presentation include, but are not limited to, statements concerning: the protein engineering capabilities of Mural Oncology plc (the “Company”); the potential therapeutic and commercial value, and anticipated safety profile, of the Company’s engineered IL-2, IL-12, and IL-18 cytokine programs and product candidates, including nemvaleukin alfa (“nemvaleukin”) as a cancer immunotherapy when used as monotherapy or in combination, and its broad potential utility across a wide array of tumor types and indications and its potential dosing optionality; the Company’s expectations regarding timelines and plans for the development of its engineeredIL-2, IL-12, and IL-18 cytokines, including, for nemvaleukin, expectations related to ongoing clinical studies in the ARTISTRY development program, the ability of ongoing studies to support potential registration, and potential for expansion of the development program, including to explore novel combinations with other cancer treatments; and the sufficiency of the Company’s existing cash resources for the period anticipated. You are cautioned that forward-looking statements are inherently uncertain. Although the Company believes that such statements are based on reasonable assumptions within the bounds of its knowledge of its business and operations, the forward-looking statements are neither promises nor guarantees and they are necessarily subject to a high degree of uncertainty and risk. Actual results may differ materially from those expressed or implied in the forward-looking statements due to various risks, assumptions and uncertainties. These risks, assumptions and uncertainties include, among others: the inherent risks and uncertainties associated with competitive developments, preclinical development, clinical trials, recruitment of patients, product development activities and regulatory approval requirements; preclinical or interim results and data from ongoing clinical studies of the Company’s cytokine programs and product candidates may not be predictive of future or final results from such studies, results of future clinical studies or real-world results; future clinical trials or future stages of ongoing clinical trials may not be initiated or completed on time or at all; the Company’s product candidates, including nemvaleukin, could be shown to be unsafe or ineffective; changes in the cost, scope and duration of development activities; the U.S. Food and Drug Administration (“FDA”) may make adverse decisions regarding the Company’s product candidates; the separation may adversely impact the Company’s ability to attract or retain key personnel that support the Company’s oncology business; and those risks, assumptions and uncertainties described under the heading “Risk Factors” in the Company’s filings with the Securities and Exchange Commission (“SEC”), including its Quarterly Report on Form 10-Q for the quarterly period ended September 30, 2024, and as may be updated in subsequent filings the Company may make with the SEC, which are available on the SEC’s website at www.sec.gov. Existing and prospective investors are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date hereof. Except as required by law, the Company disclaims any intention or responsibility for updating or revising any forward-looking statements contained in this presentation.

SECTION 1:

EXECUTIVE SUMMARY

Mural Oncology: Building a New Class of Cytokine Therapies

Phase 2 & 3

Late-Stage Trials:
2 potentially registrational trials reading out 1H 2025

Commercial Opportunity:
2 indications with limited available therapies and planned indication expansion

Pipeline Expansion:
IND submission for MURA-8518 (IL-18 candidate) expected in Q4 2025

Cash Projection:
Runway into Q1 2026

Key Anticipated Catalysts

1H 2025

Late Q1/Early Q2: Interim analysis for ARTISTRY-7 (potentially registrational), with final OS projected in Q2 2026[1]
Q2: TLR Cohort 2 of ARTISTRY-6 (potentially registrational)
1H: PDR Cohort 3-mono of ARTISTRY-6 (Phase 2, CM)

2H 2025

2H: PDR Cohort 4-combo of ARTISTRY-6 (Phase 2, CM)[2]
Q4: MURA-8518 (IL-18) IND or CTA submission

1. Subject to event accrual
2. Subject to patient enrollment

Abbrev.: **CM**: cutaneous melanoma; **IL-12:** interleukin-12; **IL-18:** interleukin-18; **MM**: mucosal melanoma; **OS**: overall survival; **PDR**: preliminary data readout; **PROC**: platinum resistant ovarian cancer; **RP2D**: recommended phase 2 dose; **TLR**: topline results; **IND:** investigational new drug; **CTA:** clinical trial application

MURAL ONCOLOGY

Highly Experienced Late-Stage Oncology Team

Executive Team

Caroline Loew, PhD
CEO

glympse bio · Bristol Myers Squibb · MERCK · PhRMA

Adam Cutler
CFO

32 BIO · tem · Arbutus BIOPHARMA · CREDIT SUISSE

Vicki Goodman, MD
CMO

EXELIXIS · Bristol Myers Squibb · MERCK · FDA

Maiken Keson-Brookes
CLO

RubiusTherapeutics · synlogic · uniQure · Biogen

Board of Directors

Francis Cuss
MB, BChir, FRCP

Bristol Myers Squibb · GSK · Schering-Plough

Benjamin Hickey
MBA

RayzeBio · MIRATI THERAPEUTICS · Halozyme · Bristol Myers Squibb

Scott Jackson
MBA – Chairman

Celator Pharmaceuticals · Lilly · SB SmithKline Beecham · ImClone Systems Incorporated

George Golumbeski
PhD

GRAIL · Celgene · NOVARTIS

Sachiyo Minegishi
MBA

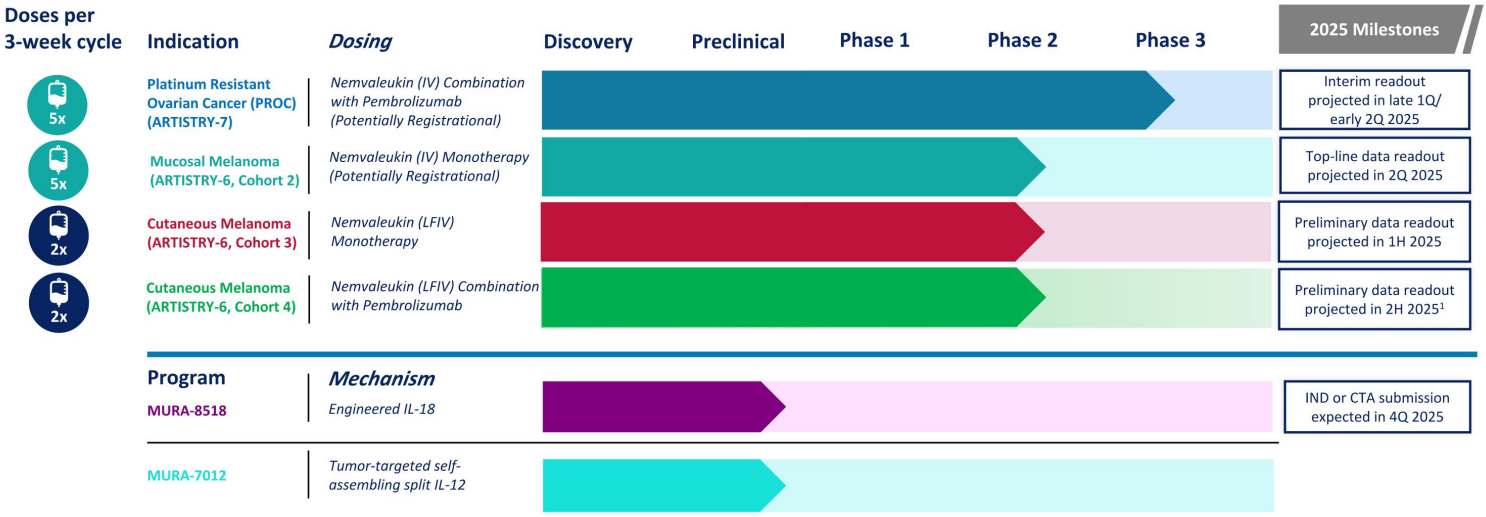
RECTIFY · AKOUOS · bluebirdbio · genzyme

Caroline Loew
PhD

glympse bio · Bristol Myers Squibb · MERCK · PhRMA

MURAL ONCOLOGY

Pipeline Overview: 2024-2025 Milestones



1. Subject to patient enrollment

Abbrev.: **IL**: interleukin; **IV**: intravenous; **LFIV:** less frequent IV dosing; **OS**: overall survival; **IND:** Investigational New Drug; **CTA:** clinical trial application

MURAL ONCOLOGY

SECTION 2:

NEMVALEUKIN ALFA

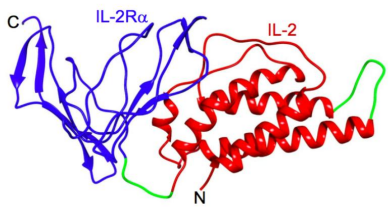
Nemvaleukin: Engineered to Unlock the Efficacy Potential of the IL-2 Pathway for More Patients

Target with Validated Efficacy:	**PROLEUKIN©(aldesleukin): proven curative potential in melanoma and RCC** • Extremely durable complete responses • Toxic AE profile requires administration in an acute care setting, severely limits use to the fittest patients
A New Class of Cytokine Therapy:	**Nemvaleukin: a novel, stable, immediately active fusion protein** • Engineered to selectively expand CD8+ T cells and NK cells while mitigating toxicity • Fusion of alpha sub-unit preferentially binds to beta and gamma receptor complex, hinders binding to trimeric high-affinity receptor
Nemvaleukin's Comprehensive Clinical Dataset:	**Deep and durable responses in Ph1/2 trial (ARTISTRY 1)** • Durable responses seen with monotherapy in post PD-1 cutaneous and mucosal melanoma • Durable responses, including complete responses, seen in combination therapy with pembrolizumab in heavily pre-treated PROC patients[1] • Manageable AE profile for outpatient administration • Currently in two registrational studies – mono and combination therapy

1. Data available on slide 13 of this presentation
2. ARTISTRY-7 (combination therapy), ARTISTRY-6, cohort 2 (monotherapy)

Nemvaleukin's Design Differentiates It from Other IL-2 Pathway Approaches with the Potential to be First-in-Class

Nemvaleukin



Novel Fusion Protein Designed to:

Maintain Known Efficacy
- ✓ Clear expansion and activation of CD8 T cells
- ✓ Immediately active

Mitigate Pathway Toxicity
- ✓ Fusion of alpha sub-unit leads to minimal activation of immune-suppressive T_{regs}
- ✓ Manageable adverse event profile for outpatient administration

Other IL-2 Variant Approaches:
- Shielding
- Masking
- Prodrug
- Pegylation

X Require activation upon dosing
X Degrade to native IL-2
X Include non-native components

Abbrev: **CPI**: checkpoint inhibitor; **IL-2:** interleukin-2

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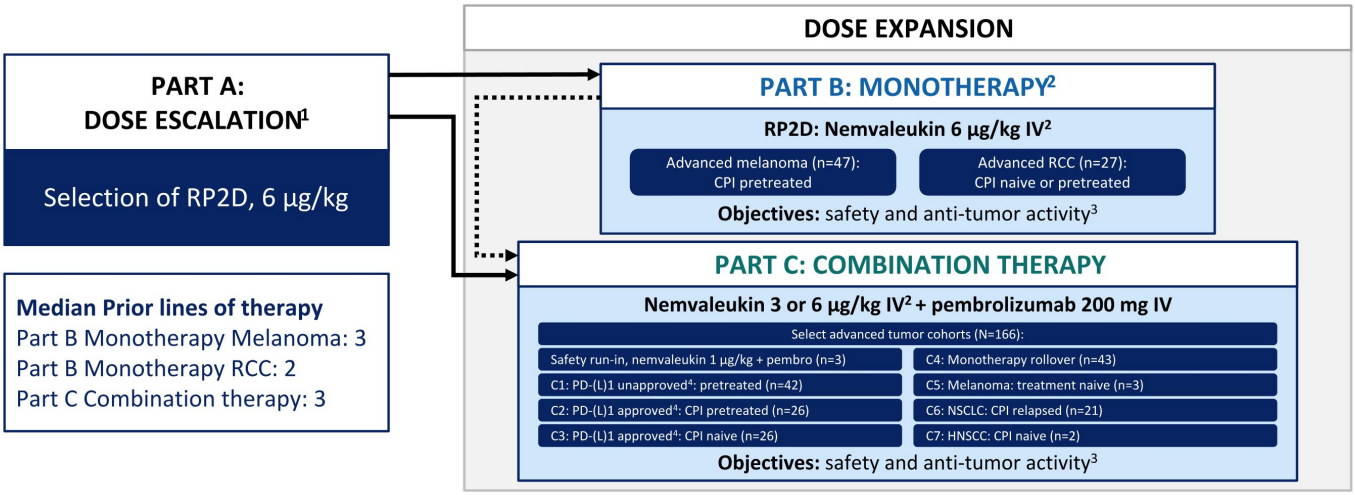
ARTISTRY-1: First-In-Human Trial of IV Nemvaleukin
Global, Multicenter, Open-Label Phase 1/2 Trial

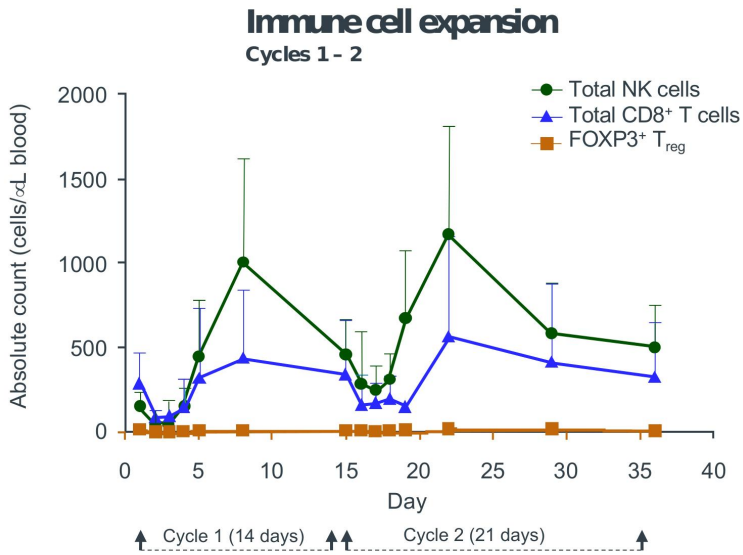


NCTO2799095
1. Patients from Parts A and B could roll over to Part C upon progression or stable disease (after ≥ 4 cycles) on monotherapy
2. Nemvaleukin daily Q5D, then off treatment for 9 days (cycle 1) or 16 days (cycle 2+)
3. ORR assessed by investigator (RECIST v1.1)
4. Nemvaleukin 3 µg/kg/d in C1-C4, 6 µg/kg/d in C5-C7. PD-(L)1 approved/unapproved indication based on FDA prescribing information and may have changed over time

Abbrev.: **C1-7**: Cohorts 1-7; **CPI**: checkpoint inhibitor; **HNSCC**: head & neck squamous cell carcinoma; **IV**: intravenous; **NSCLC**: non-small cell lung cancer; **ORR**: overall response rate; **PD-(L)1**: programmed death (ligand) 1; **RCC**: renal cell carcinoma; **RECIST**: Response Evaluation Criteria In Solid Tumors; **RP2D**: recommended phase 2 dose

MURAL ONCOLOGY

ARTISTRY-1 Proof of Mechanism: Nemvaleukin Preferentially Expands Cytotoxic CD8+ T Cells and NK Cells While Minimally Expanding T_{regs}

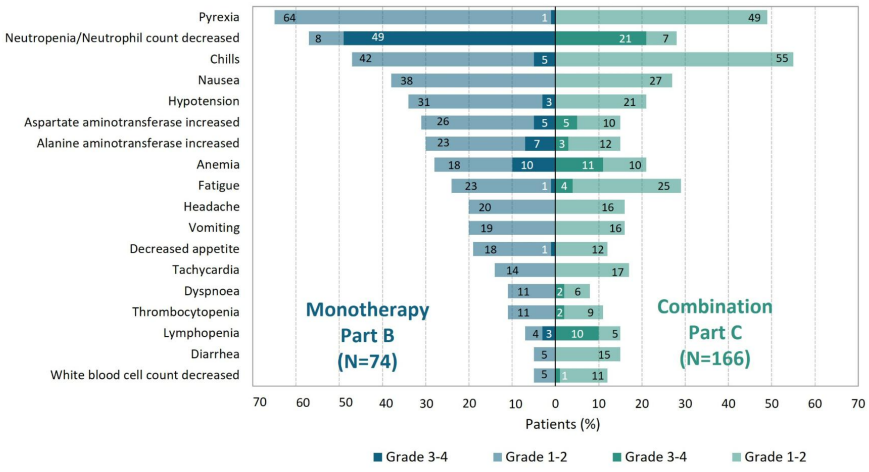


Data are from the 6 µg/kg cohort in Part A of ARTISTRY-1. Data are mean + SD (N=12).
Vaishampayan et al. Oral Abstract 2500 presented at ASCO 2022. Abbrev: **NK**: natural killer; **Tregs**: regulatory T cells

MURAL ONCOLOGY

Nemvaleukin's Adverse Event Profile in ARTISTRY-1 Was Consistent with Our Expectations Based on its Mechanism of Action

Dose expansion: monotherapy (Part B) and combination therapy (Part C)



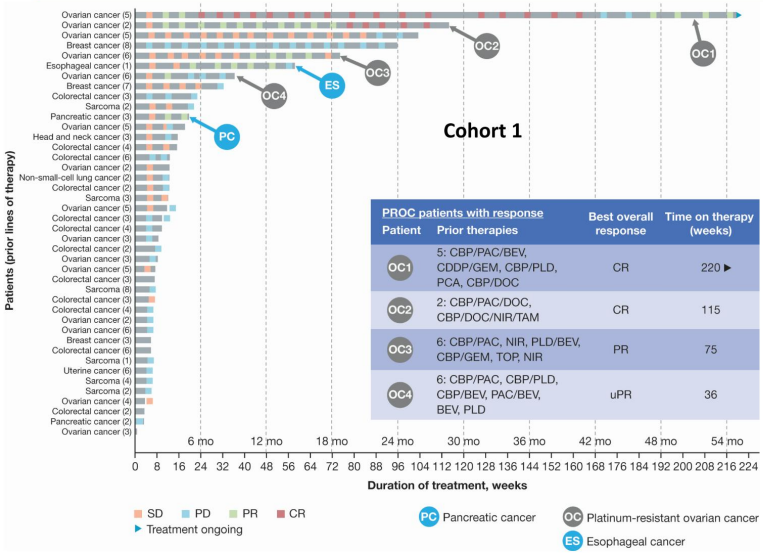
Data as of March 27, 2023

1. Includes neutropenia and neutrophil count decreased
2. TRAEs leading to discontinuation in monotherapy were Gr3 failure to thrive, Gr3 bronchospasm, Gr2 ECG T wave abnormal, and Gr1 cardiac troponin increase
3. TRAEs leading to discontinuation in combination were Gr5 starvation, Gr3 arthralgia, Gr3 fatigue, Gr3 pneumonia, and Gr2 cytokine release syndrome

Part C includes patients who received nemvaleukin at 1, 3, or 6 µg/kg IV in combination with pembrolizumab 200 mg IV. Data as of Mar 27, 2023 . Data on file.

- Administered on outpatient basis; most frequent AEs were manageable with supportive care
- AE profile consistent with nemvaleukin mechanism of action
- Monotherapy safety profile was similar to combination, with no additive toxicity
- Most frequently observed grade 3-4 TRAE: neutropenia[1]
  - Not associated with risk of serious infections or febrile neutropenia
- No capillary leak events reported in ART-1
- TRAEs leading to discontinuation: 4% (monotherapy)[2], 4% (combination)[3]

ARTISTRY-1: Nemvaleukin Combination Treatment with Pembrolizumab Demonstrated Durable Responses



Best overall response n (%)	PROC (n=14)
CR	2 (14.3%)
PR	2 (14.3)*
ORR, n (%)	4 (28.6)*
DOR in weeks	27.6-130.4[1]

* Includes 1 confirmed PR, 1 unconfirmed PR

Of the 14 evaluable, investigator reported PROC patients, the median prior lines of ovarian cancer therapy was 5

Data cut off Mar 27, 2023
1. DOR data cut off Sept 27, 2023

Abbrev.: **BEV**: bevacizumab; **CBP**: carboplatin; **CDDP**: cisplatin; **CR**: complete response; **DOC**: docetaxel; **FDA**: Food and Drug Administration; **GEM**: gemcitabine; **mo**: month; **NIR**: niraparib; **PAC**: paclitaxel; **PCA**: paclitaxel albumin; **PD**: progressive disease; **PD-(L)1**: programmed death (ligand) 1; **PLD**: pegylated liposomal doxorubicin hydrochloride; **PR**: partial response; **PROC**: platinum-resistant ovarian cancer; **SD**: stable disease; **TAM**: tamoxifen; **TOP**: topotecan; **uPR**: unconfirmed PR. Data on file.

MURAL ONCOLOGY

Rationale Underpinning Use of Nemvaleukin in PROC

Journal of Clinical Oncology
An American Society of Clinical Oncology Journal

Abstract | November 01, 1997

Comparison of toxicity and survival following intraperitoneal recombinant interleukin-2 for persistent ovarian cancer after platinum: twenty-four-hour versus 7-day infusion.

Authors: R P Edwards, W Gooding, B C Lembersky, K Colonello, R Hammond, C Paradise, C D Kowal, A J Kunschner, M Baldisseri, J M Kirkwood, and R B Herberman | AUTHORS INFO & AFFILIATIONS

Publication: Journal of Clinical Oncology • Volume 15, Number 11 • https://doi.org/10.1200/JCO.1997.15.11.3399

Cancer Immunol Immunother (2010) 59:293–301
DOI 10.1007/s00262-009-0750-3

ORIGINAL ARTICLE

A phase II trial of intraperitoneal interleukin-2 in patients with platinum-resistant or platinum-refractory ovarian cancer

Anda M. Vlad · Raluca A. Budiu · Diana E. Lenzner · Yun Wang · Julia A. Thaller · Kelly Colonello · Peggy A. Crowley-Nowick · Joseph L. Kelley · Fredric V. Price · Robert P. Edwards

In two peer-reviewed, intraperitoneal trials of recombinant IL-2 in ovarian cancer:

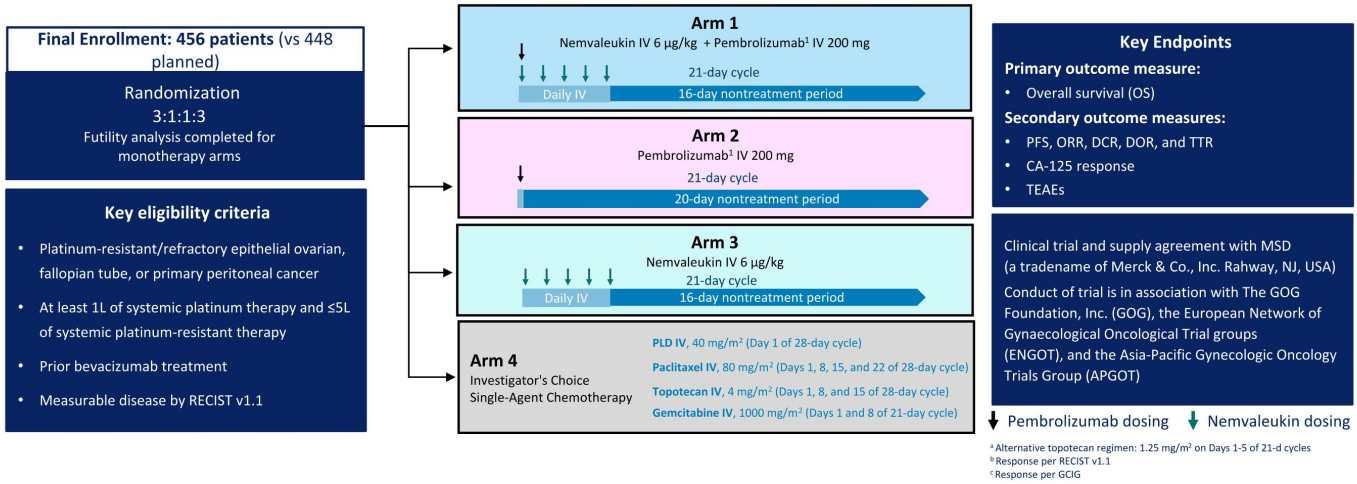
- 1997 JCO paper
  - 26% ORR (6 CRs, 3 PRs in 35 evaluable patients)
  - Median survival time of responders was not reached at time of publication (range, 27 to 90+ mos)
- 2010 CII paper
  - 25% ORR (4 CRs, 2 PRs in 24 evaluable patients)
  - OS of 2.1 years with one responder surviving for 10 years

Abbrev.: **CII**: *Cancer Immunology, Immunotherapy*; **CR**: complete response; **IL-2**: interleukin-2; **JCO**: *Journal of Clinical Oncology*; **ORR**: overall response rate; **OS**: overall survival; **PR**: partial response; **PROC**: platinum resistant ovarian cancer

MURAL ONCOLOGY

ARTISTRY-7: Phase 3 / Potentially Registrational Study for Platinum-Resistant Ovarian Cancer

Investigational Nemvaleukin IV + Pembrolizumab versus Chemotherapy



[a] Alternative topotecan regimen: 1.25 mg/m² on Days 1-5 of 21-d cycles
[b] Response per RECIST v1.1
[c] Response per GCIG

1. Pembrolizumab may be administered up to 35 cycles.

Abbrev.: **CA-125**: cancer antigen-125; **DCR**: disease control rate; **DOR**: duration of response; **GCIG**: Gynecologic Cancer InterGroup; **IV**: intravenous; **ORR**: objective response rate; **PFS**: progression-free survival; **PLD**: pegylated liposomal doxorubicin; **RECIST**: Response Evaluation Criteria in Solid Tumors; **TEAE**: treatment-emergent adverse event; **TTR**: time to response

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ARTISTRY-7 Interim Analysis Readout Expected Late Q1 or Early Q2 2025

EVENTS AND STATISTICS

# of Events: Protocol specified interim analysis (IA) for overall survival (OS) will occur at 75% of events (~215 of 286 total events)

Alpha Spend: Cumulative alpha spend at IA is 1-sided, 0.0096

Protocol assumptions: median OS of 10 months for chemotherapy arm and median OS of 14.3 months for Arm 1 (nemvaleukin + pembrolizumab)

Hazard Ratio: Maximum hazard ratio for success is 0.727 (a 27.3% reduction in the risk of death)

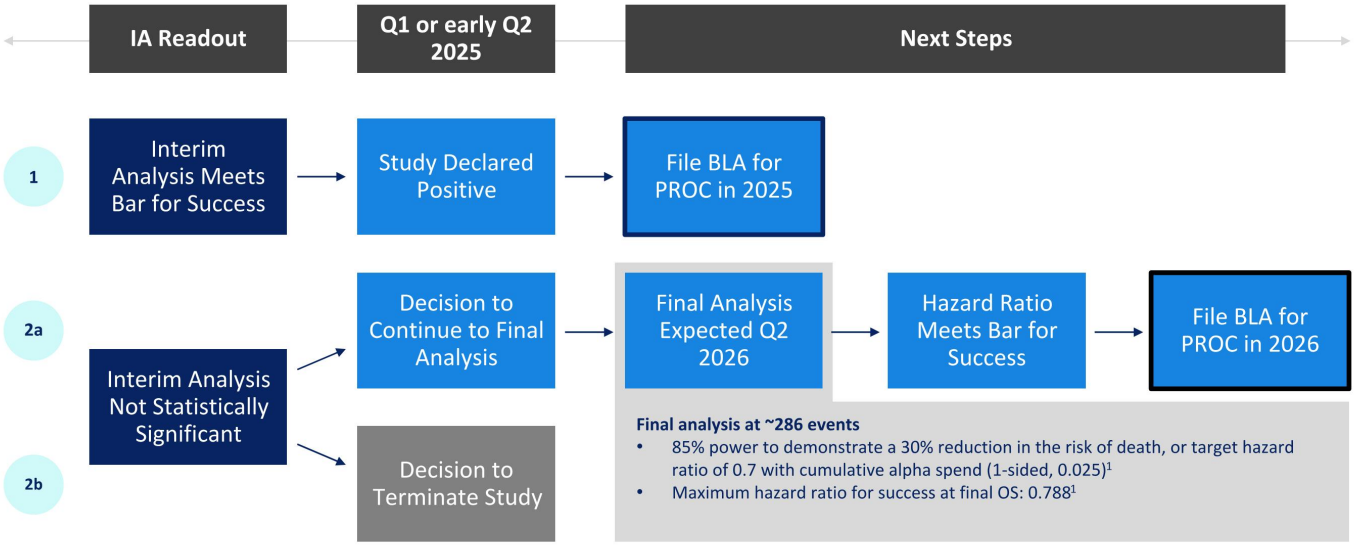
TIMING

Events: ~215 events for planned interim analysis occurred in early Q1 2025

Data Readout: OS IA readout in late Q1 or early Q2 2025

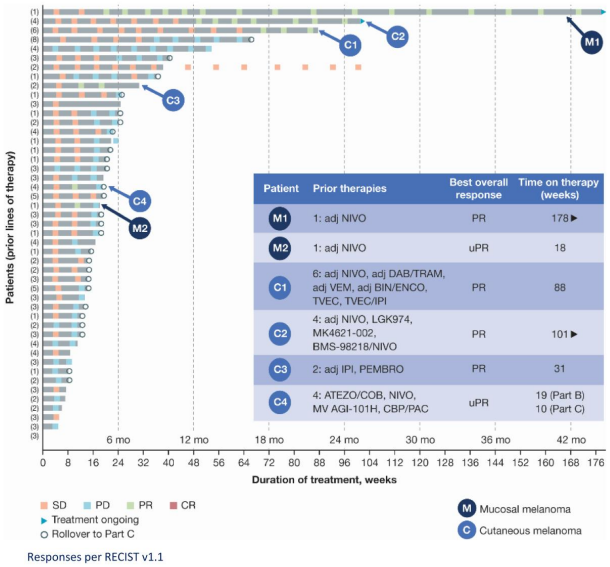
1. Assuming exactly 215 events

ARTISTRY-7 Interim Analysis (IA): Potential Outcomes



1. Assuming exactly 286 events

ARTISTRY-1: Nemvaleukin Demonstrated Durable Monotherapy Responses in Melanoma (Part B)



Responses per RECIST v1.1

	All[a,b] (n=46)	Mucosal (n=6)
Best overall response, n (%)		
CR	0	0
PR	6 (13.0)[c]	2 (33.3)[d]
ORR, n (%) [95% CI]	6 (13.0) [4.9-26.3][c]	2 (33.3) [4.3-77.8][d]
DOR in weeks[d], Mean (SD) Median (range)	40.77 (55.6) [e] 16.75 (6.1-150.3)	78.2 (101.9)[d] 78.2 (6.1-150.3)

[a] Excludes 1 patient who did not meet tumor-evaluable criteria. [b] Patients with mucosal, cutaneous, uveal, acral included in 'All'. [c] Includes 4 confirmed PRs, 2 unconfirmed PRs, [d] 1 confirmed PR. [e] DOR for Part B only and does not include patients who rolled over to Part C; some patients may still be on treatment

- All responders had been on prior CPI therapy and progressed
- FDA Orphan Drug and Fast Track designations, as well as MHRA's ILAP Innovation Passport, granted in mucosal melanoma
- Data supported design of ARTISTRY-6 study

Data cut off Mar 27, 2023

Abbrev.: **adj**: adjuvant; **ATEZO**: atezolizumab; **BIN**: binimetinib; **CBP**: carboplatin; **CI**: confidence interval; **COB**: cobimetinib; **CPI**: checkpoint inhibitor; **CR**: complete response; **DAB**: dabrafenib; **DCR**: disease control rate (CR+PR+SD); **DOR**: duration of response; **ENCO**: encorafenib; **FDA**: US Food and Drug Administration; **IPI**: ipilimumab; **MHRA**: Medicines and Healthcare products Regulatory Agency; **MV**: melanoma vaccine; **NA**: not applicable; **NIVO**: nivolumab; **ORR**: overall response rate; **PAC**: paclitaxel; **PD**: progressive disease; **PEMBRO**: pembrolizumab; **PR**: partial response; **SD**: stable disease; **TRAM**: trametinib; **TVEC**: talimogene laherparepvec; **VEM**: vemurafenib. Data on file.

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Cohort 2 of ARTISTRY-6: Phase 2 - Potentially Registrational Trial of Nemvaleukin in Mucosal Melanoma

Final Enrollment: 92 patients

Key eligibility criteria [1]

- Unresectable and/or metastatic mucosal melanoma
- Patient has received anti–PD(L)-1 ± anti–CTLA-4 therapy
- No more than 1 prior systemic therapy
- Measurable disease per RECIST v1.1
- ECOG PS 0-1

Cohort 2
Mucosal melanoma (N=90)
Nemvaleukin IV 6 µg/kg QDx5 Monotherapy

Key endpoints

- **Primary:** ORR per RECIST v1.1 (by independent central review)
- **Key secondary:** DOR, PFS, DCR, TTR per RECIST v1.1 (by independent central review)

[a] With the exception of Cycle 1, which is 14 days (daily IV for 5 days + 9 days nontreatment), all cycles are 21 days[3]

↓ Nemvaleukin dosing

- ARTISTRY-6 also includes Cohorts 1, 3, and 4 which are designed to explore alternative dosing regimens of nemvaleukin, both as a monotherapy and in combination with pembrolizumab, in cutaneous melanoma

1. https://clinicaltrials.gov, NCT04830124

Abbrev.: **CTLA-4:** cytotoxic T-lymphocyte–associated antigen 4; **DCR**: disease control rate; **DOR**: duration of response; **ECOG PS**: Eastern Cooperative Oncology Group performance status; **IV**: intravenous; **ORR**: objective response rate; **PD-(L)1**: programmed death (ligand) 1; **PFS**: progression-free survival; **RECIST**: Response Evaluation Criteria in Solid Tumors; **TTR**: time to response

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ARTISTRY-6 Cohort 2: Data Readout Expected in Q2 2025

- Cohort 2 of ARTISTRY-6 study expected to provide the most robust clinical dataset in advanced mucosal melanoma to date
- Primary analysis will occur when all patients have a minimum follow up of at least 6 months
- **Target response rate: 25%**
  - We believe a response rate of 20-25% would be meaningful for patients and would support discussion with FDA around Biologics License Application (BLA) submission
- Trial designed so that at 25% response rate, lower bound of 95% confidence interval will exceed a 15% response rate
- Intend to discuss data with FDA in advance of BLA submission
  - Potential accelerated approval with confirmatory evidence to be later submitted for conversion to regular approval
  - Regulatory filing may be deferred if ARTISTRY-7 study continues to final analysis, pending the final outcome

Abbrev.: BLA: Biologics License Application

Exploration of Alternative Dose Administration and Schedule Underway to Further Optimize Nemvaleukin Profile

Abbrev.: **PROC**: platinum-resistant ovarian cancer; **RP2D**: recommended phase 2 dose

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Cohorts 3 and 4 of ARTISTRY-6: Phase 2 Trial in Melanoma

Key eligibility criteria[1]

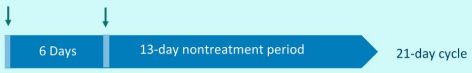
- Unresectable and/or metastatic cutaneous melanoma
- ECOG PS 0-1
- Measurable disease per RECIST v1.1

- Cohort 3 only
  - Patient has received anti–PD(L)-1 ± anti–CTLA-4 or anti-LAG-3 therapy
  - No more than 1 other prior systemic therapy

- Cohort 4 only
  - Prior adjuvant/neo-adjuvant therapy with anti–PD(L)-1 therapy if ≥ 6 mos have elapsed between date of last dose and date of recurrence
  - No prior systemic therapy for unresectable or metastatic disease

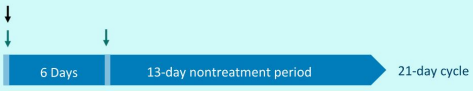
Cohort 3
Cutaneous Melanoma – Monotherapy (N=30)

Nemvaleukin LFIV 30 µg/kg d1, 8 Q3W



Cohort 4
Cutaneous Melanoma – Combination with Pembro (N=20)

Nemvaleukin LFIV 30 µg/kg d1, 8 Q3W[2] + Pembrolizumab IV 200 mg



Key endpoints

- **Primary:** ORR per RECIST v1.1
- **Key secondary:** DOR, PFS, DCR, TTR per RECIST v1.1

Pembrolizumab dosing Nemvaleukin dosing

1. https://clinicaltrials.gov, NCT04830124
2. Nemvaleukin starting dose will be 30 µg/kg but will allow for de-escalation as necessary per safety data review

Abbrev.: **CTLA-4:** cytotoxic T-lymphocyte–associated antigen 4; D1/4: days 1 and 4; **DCR**: disease control rate; **DOR**: duration of response; **ECOG PS**: Eastern Cooperative Oncology Group performance status; **IV**: intravenous; **LFIV**: less frequent IV; **ORR**: objective response rate; **PD-(L)1**: programmed death (ligand) 1; **PFS**: progression-free survival; **Q3W**: 3-week cycle; **QDX2**: two doses, one each day ; **RECIST**: Response Evaluation Criteria in Solid Tumors; **TTR**: time to response.

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Focused on Near Term Expansion With Vision Towards Next-Generation IO Opportunity

Clinical Validation
Initial indications with high unmet need

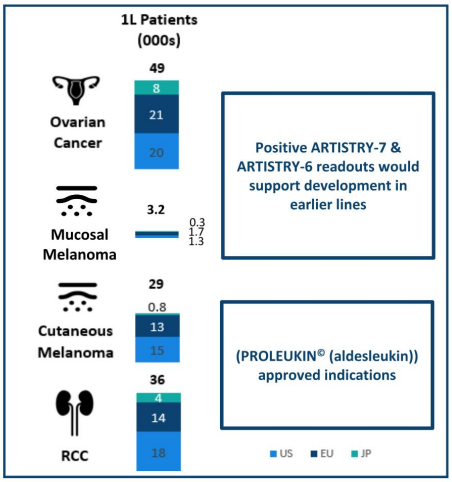
Platinum-Resistant Ovarian Cancer
13K Patients[1]

- FDA Fast Track Designation
- Potential to be the first immunotherapy option for ovarian patients

Mucosal Melanoma
2K Patients[1]

- FDA Fast Track and Orphan Drug Designation
- Potential to be first and only approved therapy specific to mucosal melanoma

Expansion
Larger populations with established clinical rationale

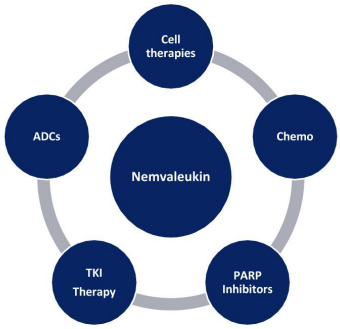


Positive ARTISTRY-7 & ARTISTRY-6 readouts would support development in earlier lines

(PROLEUKIN© (aldesleukin)) approved indications

Next-Gen IO Backbone
Elevating outcomes / broadening IO patient population

Biologic rationale for augmenting existing treatment options



Source: Clarivate Epidemiology; 1) US and EU Patient Populations.

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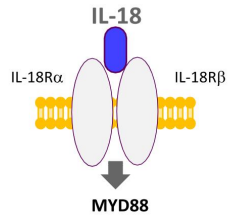
SECTION 3:

PIPELINE EXPANSION

IL-18 is a Potent Stimulator of Innate and Adaptive Immunity, but with Key Limitations

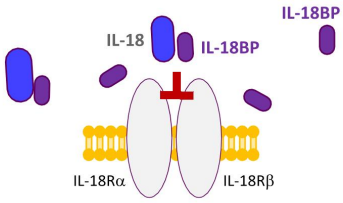
IL-18 Attractive Biology



- Activates NK cells and antigen-experienced CD8+ T cells
- Restores activity in dysfunctional T cells
- Matures dendritic cells (DCs)

Limited Application

IL-18 Challenges



- IL-18BP overexpressed in the TME
- IL-18BP binds strongly to IL-18 minimizing signaling
- IL-18 rapidly cleared from circulation

Suppressed activity

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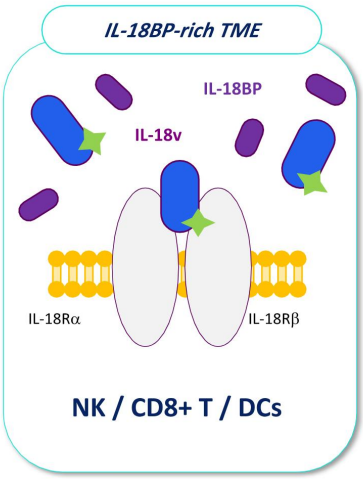
MURA-8518: Engineered to Deliver a More Sustained Immune Response

Mural Solution: Engineer an IL-18 with Optimized Characteristics

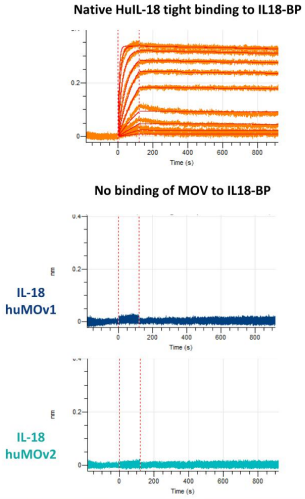


- **Engineer an active IL-18 molecule unaffected by IL-18BP presence**
- **Engineer an IL-18 with an extended half-life**
- **Optimize the IL-18 potency to fit its newly engineered profile**

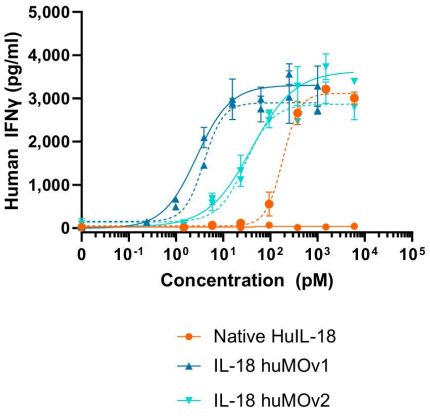
Enhanced Anti-Tumor Activity

Preclinical Studies Demonstrated Enhanced Pharmacokinetics with an Optimized Potency and Maximal Resistance to IL-18BP Inhibition

No Binding of Mural Oncology Variants to IL-18BP

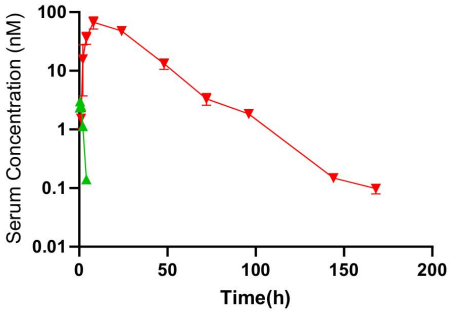


Broad Range of Potency



huMOv1/2/3- human Mural Oncology variants
IL18BP-resistant, half-life enhanced

Enhanced Pharmacokinetics



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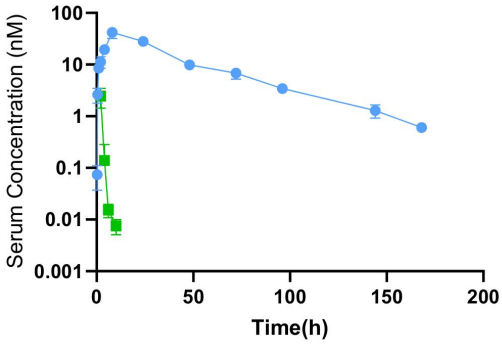
Mural's Approach Achieves Intended Half-Life and Associated Pharmacodynamics Effects

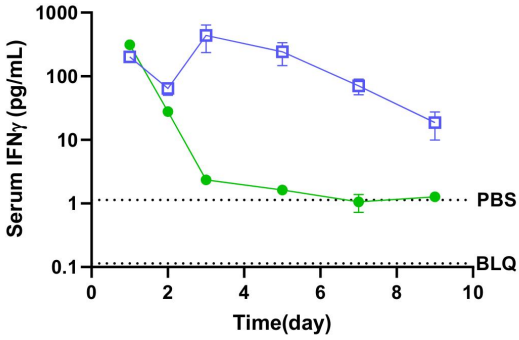
Enhanced Pharmacokinetic



Naked mouse tool variant

muMOv1

Extended Pharmacodynamic



Naked mouse tool variant

muMOv1

muMOv1-mouse Mural Oncology variant
IL18BP-resistant, half-life enhanced

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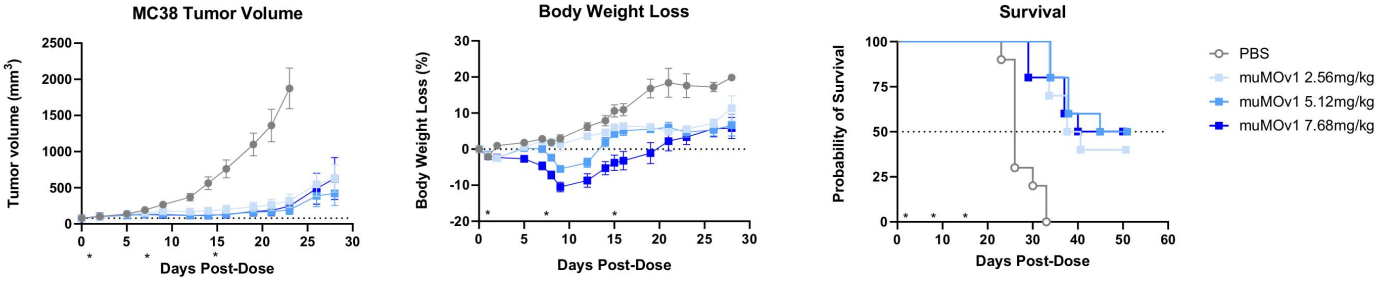
Complete Responses and Survival Improvement Seen in Mural's IL-18 Mouse Ortholog Variant



Agent	Dose (mg/kg)	% TGI* Day 21	Complete Response Day 50	Probability of Survival Day 50
muMOv1	2.56	86%	2/10	40%
muMOv1	5.12	93%	4/10	50%
muMOv1	7.68	92%	5/10	50%

muMOv1- IL18BP-resistant, half-life enhanced mouse ortholog of Mural human variant

***%TGI = % tumor growth inhibition, calculated before 1st animal in vehicle reached endpoint**

The combination of IL-18BP resistance and half-life enhancement achieved desired effect

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Mural Oncology: Building a New Class of Cytokine Therapies

Phase 2 & 3

Late-Stage Trials:
2 potentially registrational trials reading out 1H 2025

Commercial Opportunity:
2 indications with limited available therapies and planned indication expansion

Pipeline Expansion:
IND submission for MURA-8518 (IL-18 candidate) expected in Q4 2025

Cash Projection:
Runway into Q1 2026

Key Anticipated Catalysts

1H 2025

Late Q1/Early Q2: Interim analysis for ARTISTRY-7 (potentially registrational), with final OS projected in Q2 2026[1]
Q2: TLR Cohort 2 of ARTISTRY-6 (potentially registrational)
1H: PDR Cohort 3-mono of ARTISTRY-6 (Phase 2, CM)

2H 2025

2H: PDR Cohort 4-combo of ARTISTRY-6 (Phase 2, CM)[2]
Q4: MURA-8518 (IL-18) IND or CTA submission

1. Subject to event accrual
2. Subject to patient enrollment

Abbrev.: **CM**: cutaneous melanoma; **IL-12:** interleukin-12; **IL-18:** interleukin-18; **MM**: mucosal melanoma; **OS**: overall survival; **PDR**: preliminary data readout; **PROC**: platinum resistant ovarian cancer; **RP2D**: recommended phase 2 dose; **TLR**: topline results; **IND:** investigational new drug; **CTA:** clinical trial application

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THANK YOU!

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APPENDIX

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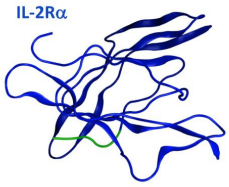
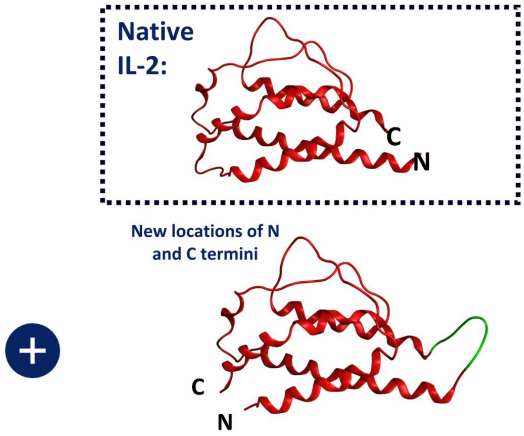
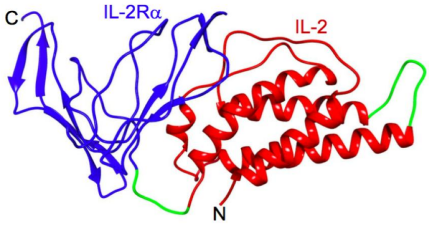
Nemvaleukin Design Details: A New Class of Engineered Fusion Protein Targeting IL-2 Pathway





Nemvaleukin:



- Native component of IL-2 receptor complex directly blocks α component of high affinity IL-2R
- Minimal alteration to IL-2 sequence maintains IL-2's structure and allows for appropriate placement of α subunit

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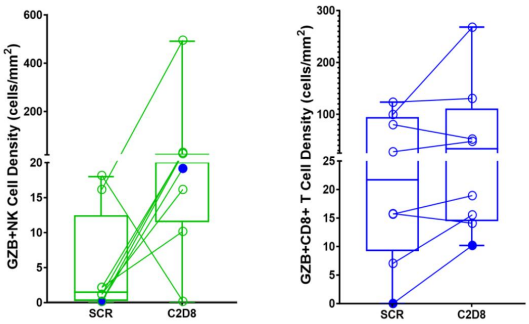
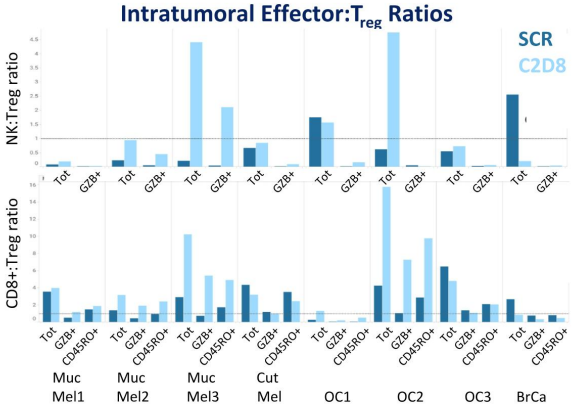
ARTISTRY-3 Cohort 2: Nemvaleukin Increased Immune Activation in Patient Tumors

Intratumoral Immune Cell Densities



Intratumoral Effector:T_{reg} Ratios



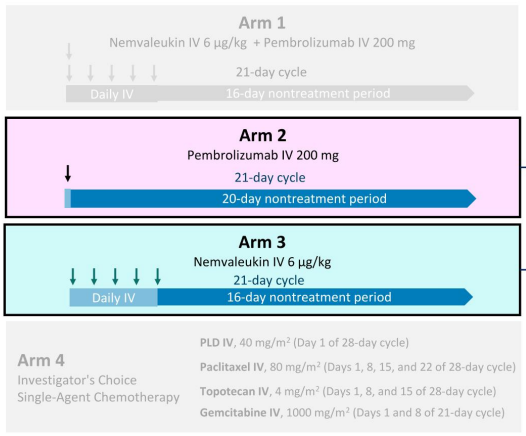
Key Takeaways:

- Nemvaleukin led to increased intratumoral effector NK and CD8+ T-cells
- Accompanied by favorable increase in effector:T_{reg} ratio across tumor types

Paired biopsy data shown (n=8, all dose schedules combined)

ARTISTRY-7: Futility Criteria for Monotherapy Arms

Smaller Single Agent Arms to Assess Contribution of Components



Futility criteria for Arm 2:

- Based on Keynote-100 trial, where single agent pembro was evaluated in 376 patients with PROC with a response rate of 8%
- Futility in ARTISTRY-7 trial defined as <2 confirmed complete or partial responses in the first 12 patients enrolled
- **This arm was closed to further enrollment for futility in August 2023 after enrolling 27 patients**

Futility criteria for Arm 3:

- Based on two phase 2 trials using different doses and schedules of aldesleukin with consistent response rates of approx. 25%, including some patients with durable CRs[1]
- At least 1 patient among first 24 enrolled to achieve ORR or SD for at least 3 months needed to continue enrollment
- **Nemvaleukin single agent arm met the threshold to continue and enrolled a total of 55 patients**

1. Edwards et al. "Comparison of toxicity and survival following intraperitoneal recombinant interleukin-2 for persistent ovarian cancer after platinum: twenty-four-hour versus 7-day infusion." *Journal of Clinical Oncology*, November 1, 1997; Vlad et al. "A phase II trial of intraperitoneal interleukin-2 in patients with platinum-resistant or platinum-refractory ovarian cancer." *Cancer Immunology and Immunotherapy*. February 2010.

Abbrev.: **CA-125**: cancer antigen-125; **DCR**: disease control rate; **DOR**: duration of response; **GCIG**: Gynecologic Cancer InterGroup; **IV**: intravenous; **ORR**: objective response rate; **PFS**: progression-free survival; **PLD**: pegylated liposomal doxorubicin; **RECIST**: Response Evaluation Criteria in Solid Tumors; **TEAE**: treatment-emergent adverse event; **TTR**: time to response

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