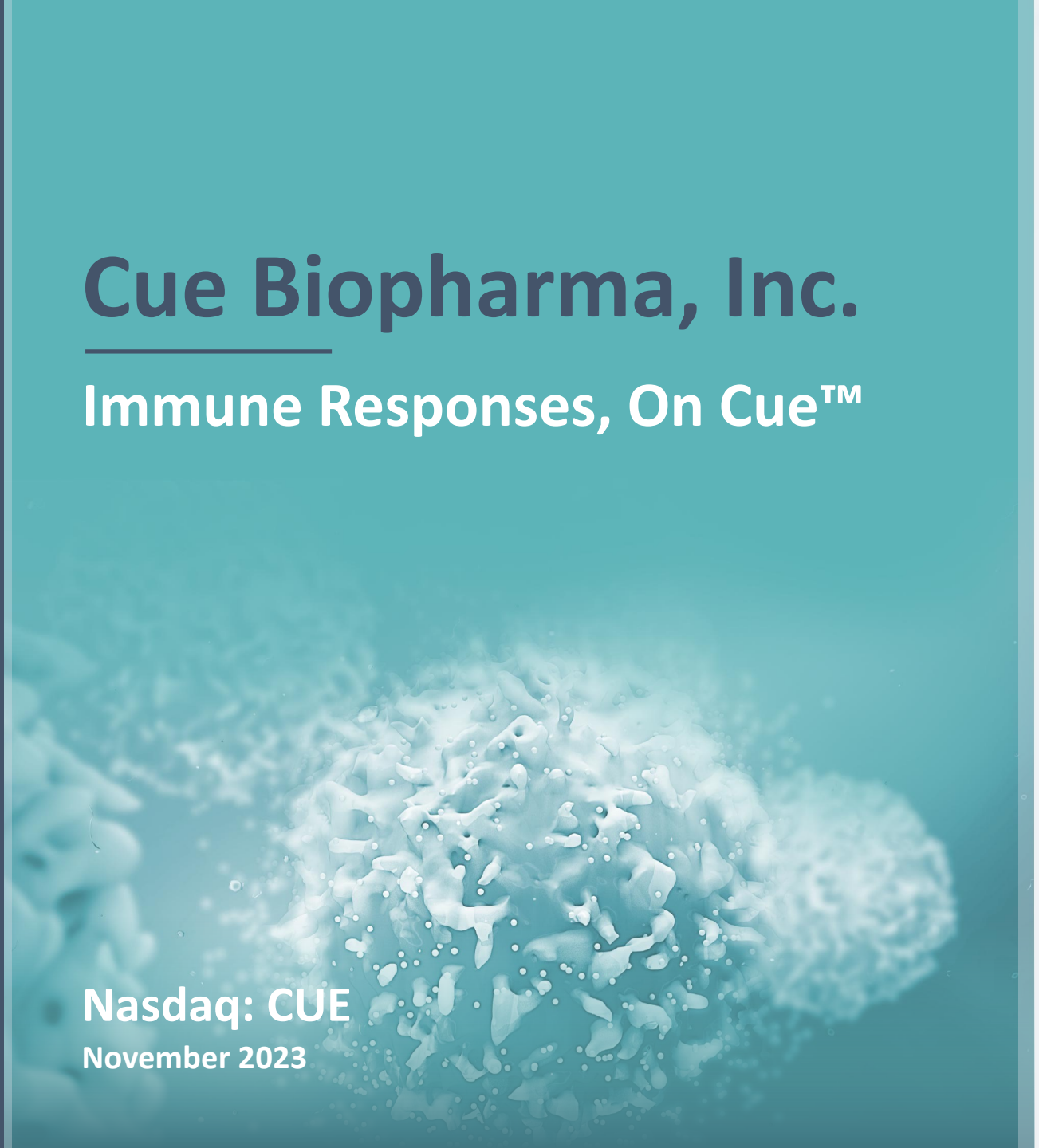
Cue Biopharma, Inc.

Immune Responses, On Cue™



Nasdaq: CUE

November 2023

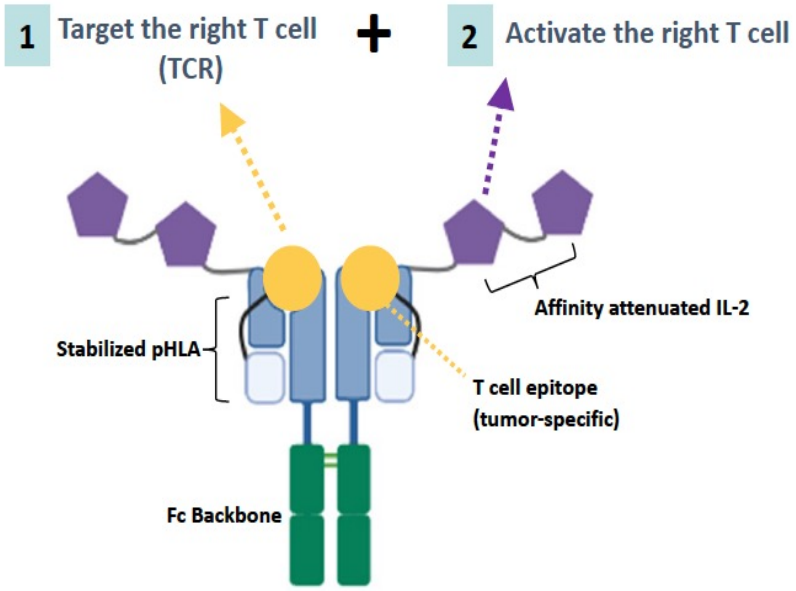
CUE™
BIOPHARMA

Disclaimers

This presentation has been prepared by Cue Biopharma, Inc. (“we,” “us,” “our,” “Cue” or the “Company”) and is made for informational purposes only and does not constitute an offer to sell or a solicitation of an offer to buy securities, nor shall there be any sale of any securities in any state or jurisdiction in which such offer, solicitation or sale would be unlawful prior to registration or qualification under the securities laws of any such state or jurisdiction. The information set forth herein does not purport to be complete or to contain all of the information you may desire. Statements contained herein are made as of the date of this presentation unless stated otherwise, and neither this presentation, nor any sale of securities, shall under any circumstances create an implication that the information contained herein is correct as of any time after such date or that information will be updated or revised to reflect information that subsequently becomes available or changes occurring after the date hereof.

This presentation contains “forward-looking statements” within the meaning of the Private Securities Litigation Reform Act of 1995 that are intended to be covered by the “safe harbor” created by those sections. Forward-looking statements, which are based on certain assumptions and describe our future plans, strategies and expectations, can generally be identified by the use of forward-looking terms such as “believe,” “expect,” “may,” “will,” “should,” “would,” “could,” “seek,” “intend,” “plan,” “goal,” “project,” “estimate,” “anticipate,” “strategy,” “future, “vision”, “likely” or other comparable terms. All statements other than statements of historical facts included in this presentation regarding our strategies, prospects, financial condition, operations, costs, plans and objectives are forward-looking statements. Examples of forward-looking statements include, among others, statements we make regarding our development plans for CUE-101, CUE-102 and the continued buildout of our pipeline, the sufficiency of our cash, cash equivalents and marketable securities to support the clinical development of CUE-101 and CUE-102, anticipated results of our drug development efforts, including study results, our expectations regarding the timing of milestone events, regulatory developments and expected future operating results. Forward-looking statements are neither historical facts nor assurances of future performance. Instead, they are based only on our current beliefs, expectations and assumptions regarding the future of our business, future plans and strategies, projections, anticipated events and trends, the economy and other future conditions. Because forward-looking statements relate to the future, they are subject to inherent uncertainties, risks and changes in circumstances that are difficult to predict and many of which are outside of our control. Our actual results and financial condition may differ materially from those indicated in the forward-looking statements. Therefore, you should not rely on any of these forward-looking statements. Important factors that could cause our actual results and financial condition to differ materially from those indicated in the forward-looking statements include, among others, our limited operating history, limited cash and a history of losses; our ability to achieve profitability; potential setbacks in our research and development efforts including negative or inconclusive results from our preclinical studies, our ability to secure required U.S. Food and Drug Administration (“FDA”) or other governmental approvals for our product candidates and the breadth of any approved indication; adverse effects caused by public health pandemics, including COVID-19, including possible effects on our operations and clinical trials; negative or inconclusive results from our clinical studies or serious and unexpected drug-related side effects or other safety issues experienced by participants in our clinical trials; delays and changes in regulatory requirements, policy and guidelines including potential delays in submitting required regulatory applications to the FDA; our reliance on licensors, collaborators, contract research organizations, suppliers and other business partners; our ability to obtain adequate financing to fund our business operations in the future; our ability to maintain and enforce necessary patent and other intellectual property protection, competitive factors, general economic and market conditions; and the other risks and uncertainties described in the Risk Factors and in Management's Discussion and Analysis of Financial Condition and Results of Operations sections of our most recently filed Annual Report on Form 10-K and any subsequently filed Quarterly Report(s) on Form 10-Q. Any forward-looking statement made by us in this presentation is based only on information currently available to us and speaks only as of the date on which it is made. We undertake no obligation to publicly update any forward-looking statement, whether written or oral, that may be made from time to time, whether as a result of new information, future developments or otherwise.

Immuno-STATs: A Breakthrough Platform for Immunotherapy



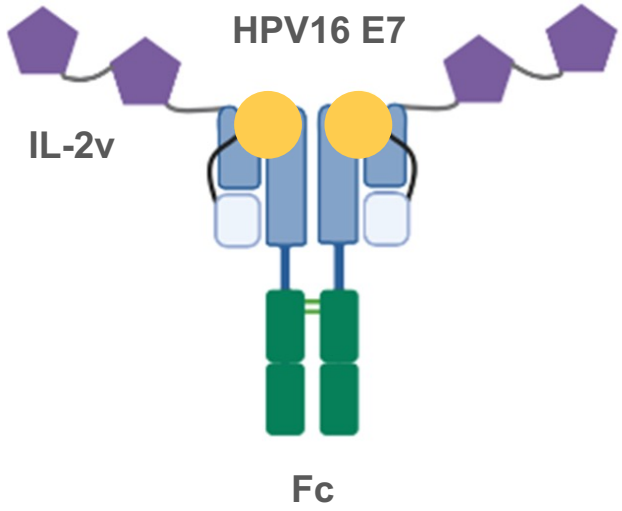
Note: CPI = Checkpoint Inhibitor
ORR = Overall Response Rate
OS = Overall Survival
PFS = Progression Free Survival

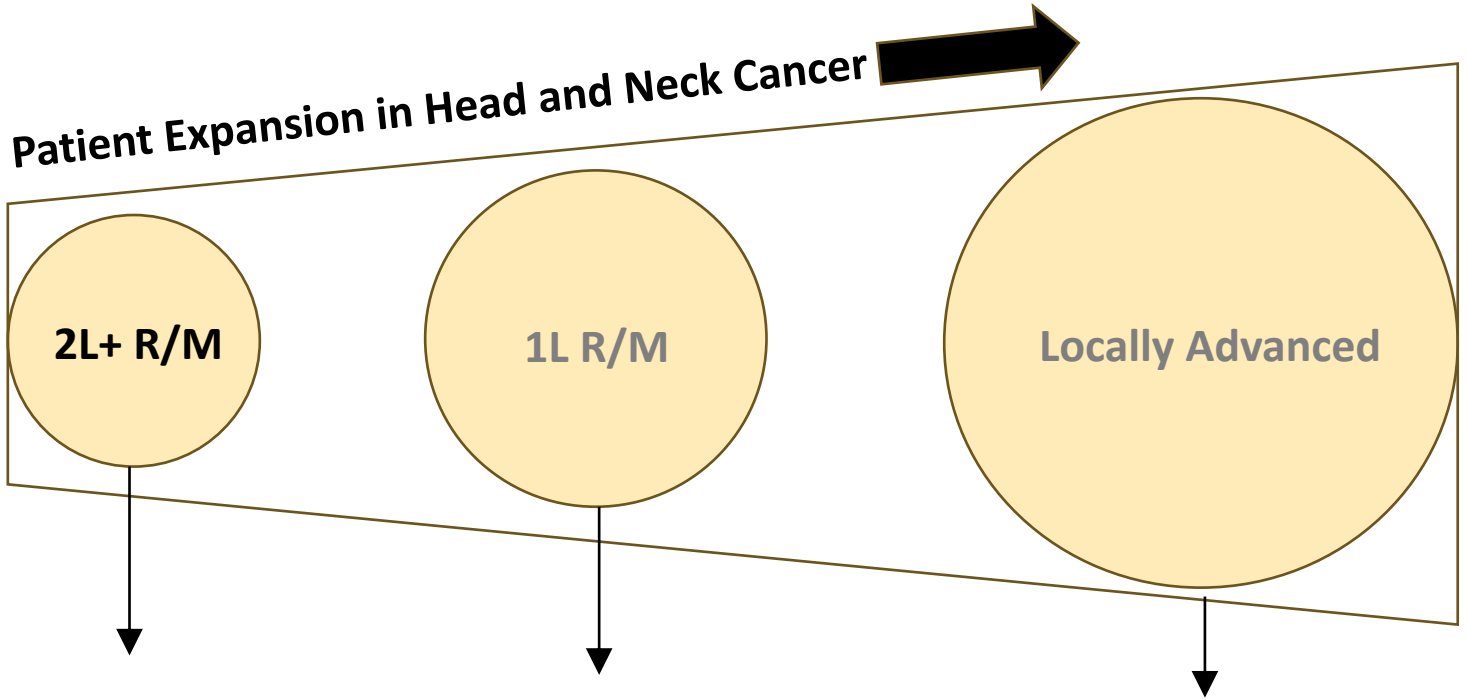
- **CUE-100 series:** Generation of a therapeutic index for IL-2
  - *Tolerability and lack of serious IL-2 toxicities*
- **Clinical efficacy in advanced/metastatic cancers**
  - *Mono Tx (3L+): prolonged survival*
  - *CPI Combo Tx (1L): significant increase in ORR (maturing OS/PFS)*
- **Multiple potential paths to approval**
  - *Requested meeting with FDA*
- **Well positioned for pipeline expansion**
  - *Platform modularity to target many cancers*
  - *Significant regulatory and development advantages*

CUE BIOPHARMA

CUE-101

CUE-101: Lead Clinical Program for HPV Associated Cancers



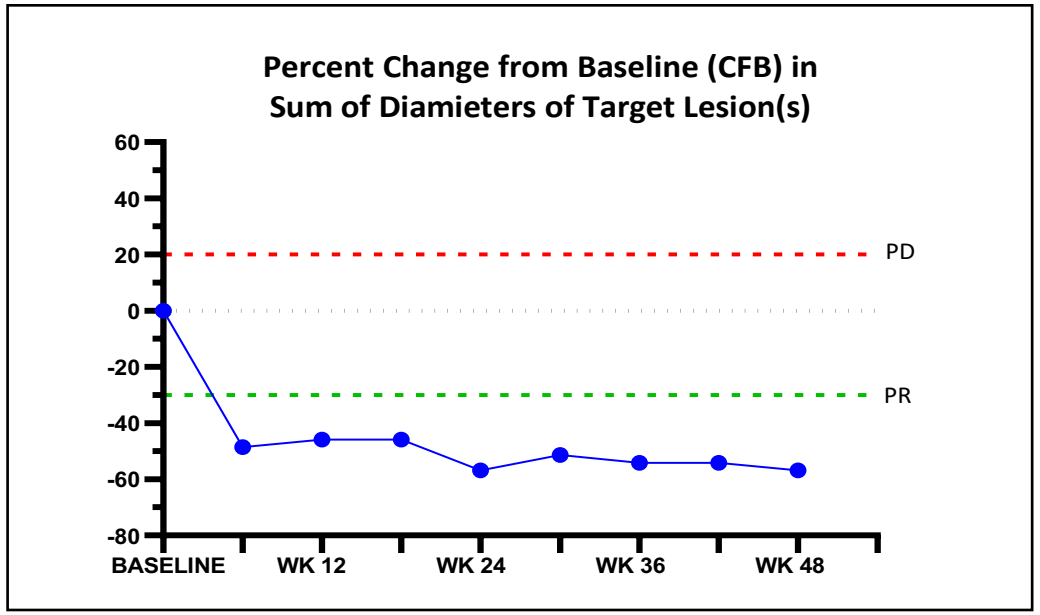


REGIMEN	**CUE-101**	**CUE-101 + KEYTRUDA**	**Neoadjuvant**	**Adjuvant**
STATUS	**Phase IA/IB** Fully Enrolled Doubled mOS vs. SOC	**Phase IA/IB** Fully enrolled Doubled ORR vs. SOC mOS maturing	**IST** Ongoing	**IST** Planned

Note: mOS = Median Overall Survival
SOC = Standard of Care
ORR = Overall Response Rate
IST = Investigator Sponsored Trial

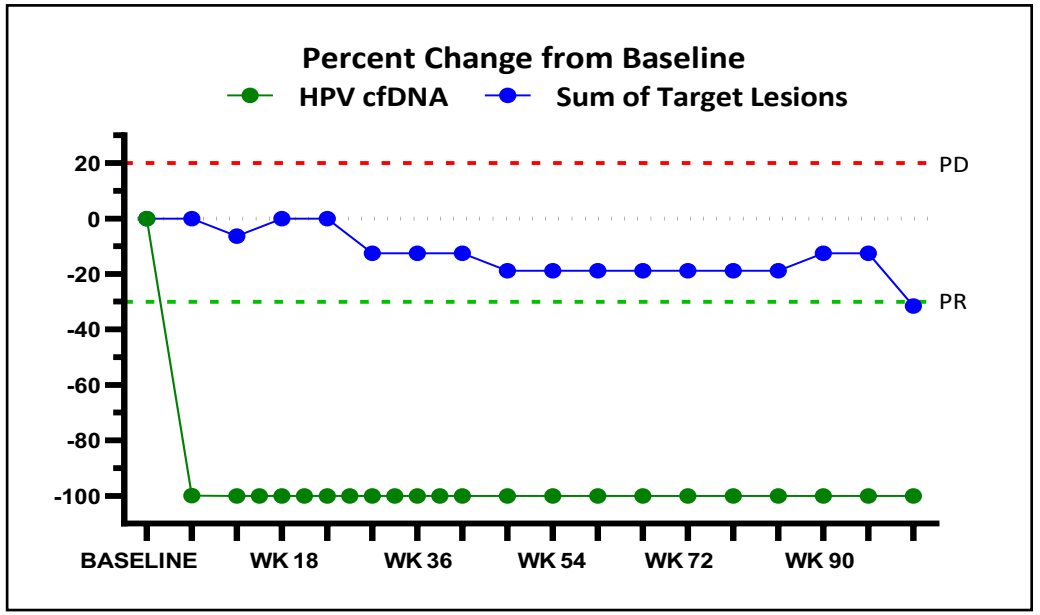
CUE-101 Monotherapy: Patterns of Clinical Efficacy in 2L+ R/M HNSCC Patients

Patient A



- **Rapid tumor reduction and durable Partial Response (PR)**
- **Remained on treatment for ~1 year**

Patient B

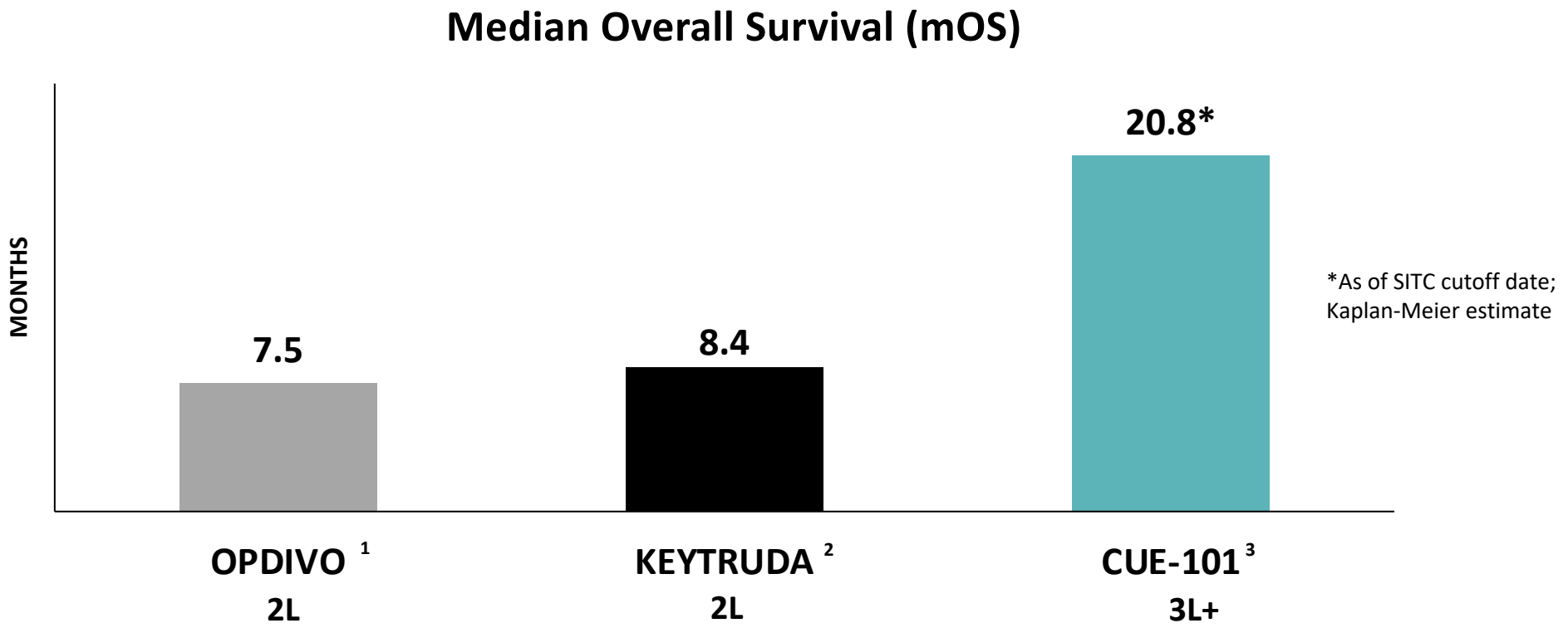


- **Durable Stable Disease (SD) with sustained non-detectable levels of HPV cfDNA**
- **Completed treatment (24 months)**
- **Unconfirmed PR on last scan (10/23)**

All monotherapy enrolled patients have failed prior therapies including CPIs.

Source: CUE-101 SITC Poster Nov 2023, Note: 2L+ R/M HNSCC= Second line and beyond recurrent/metastatic head and neck squamous cell carcinoma, HPV cfDNA = human papilloma virus circulating cell-free DNA

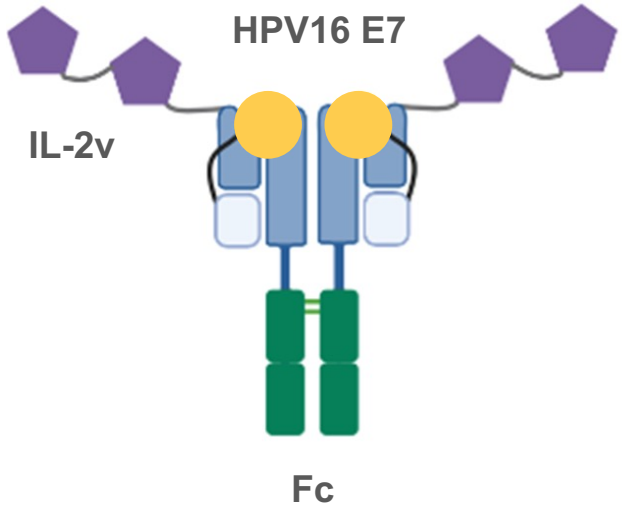
CUE-101 Monotherapy: Potential Best-in-Class 2L+ Regimen for Patients with HPV+ R/M Head and Neck Cancer

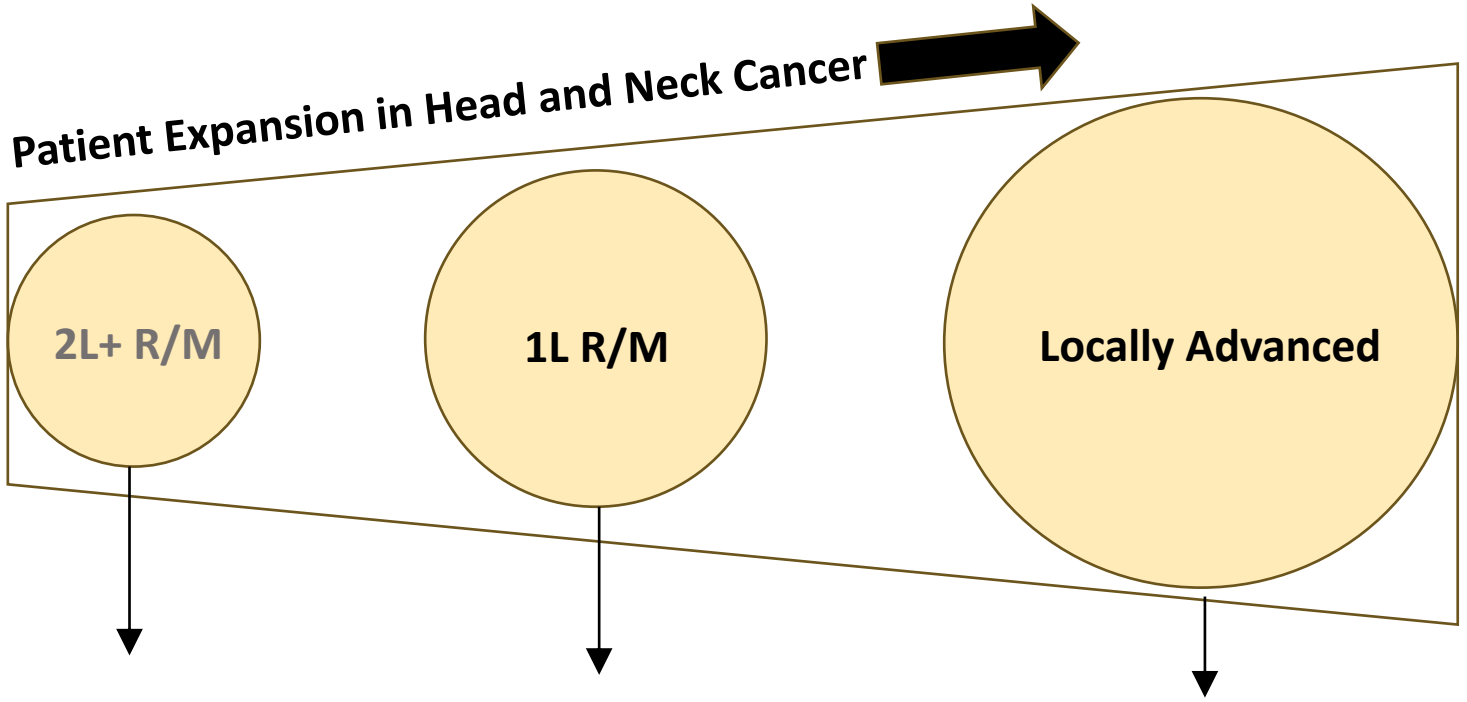


Prolonged survival observed with CUE-101 monotherapy compared to historical OPDIVO/KEYTRUDA monotherapy benchmarks in 2L R/M head and neck cancer

Sources; 1. Ferris et al Checkmate 141 NEJM 375;19, 2016 2. Cohen et al KEYNOTE-040 Lancet, 2018 3) CUE-101 SITC Poster Nov 2023

CUE-101: Lead Clinical Program for HPV Associated Cancers

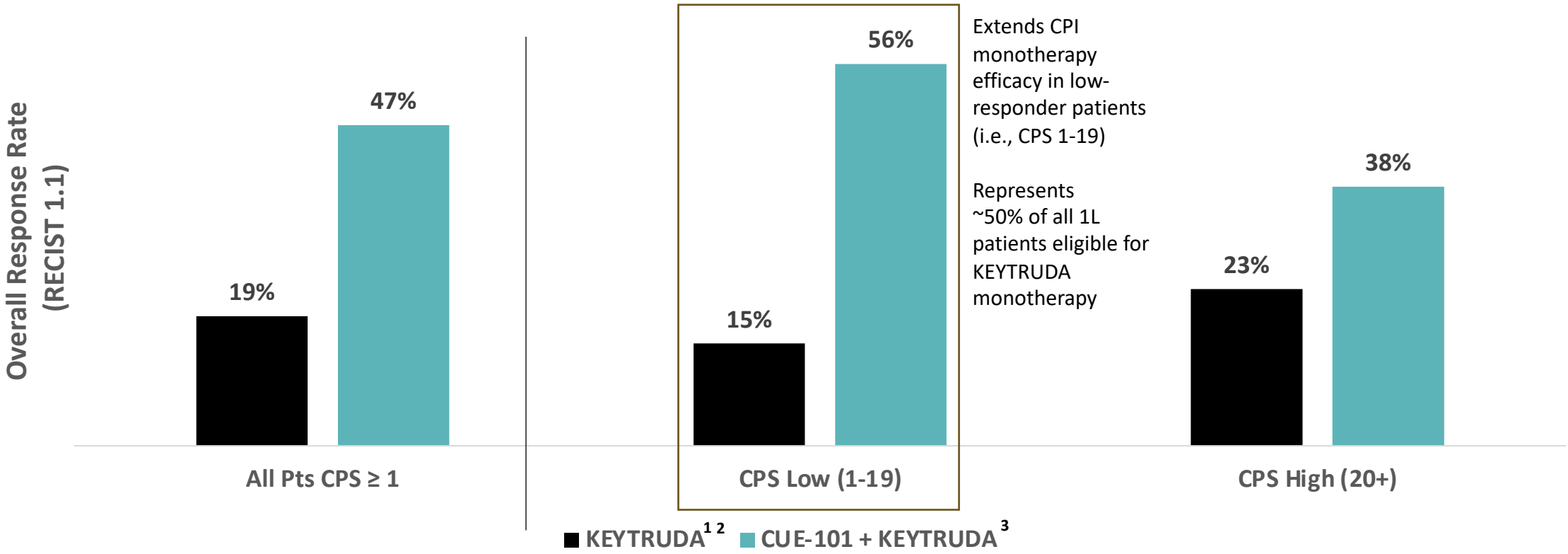




REGIMEN	**CUE-101**	**CUE-101 + KEYTRUDA**	**Neoadjuvant**	**Adjuvant**
STATUS	**Phase IA/IB** Fully Enrolled Doubled mOS vs. SOC	**Phase IA/IB** Fully enrolled **Doubled ORR vs. SOC** mOS maturing	IST **Ongoing**	IST **Planned**

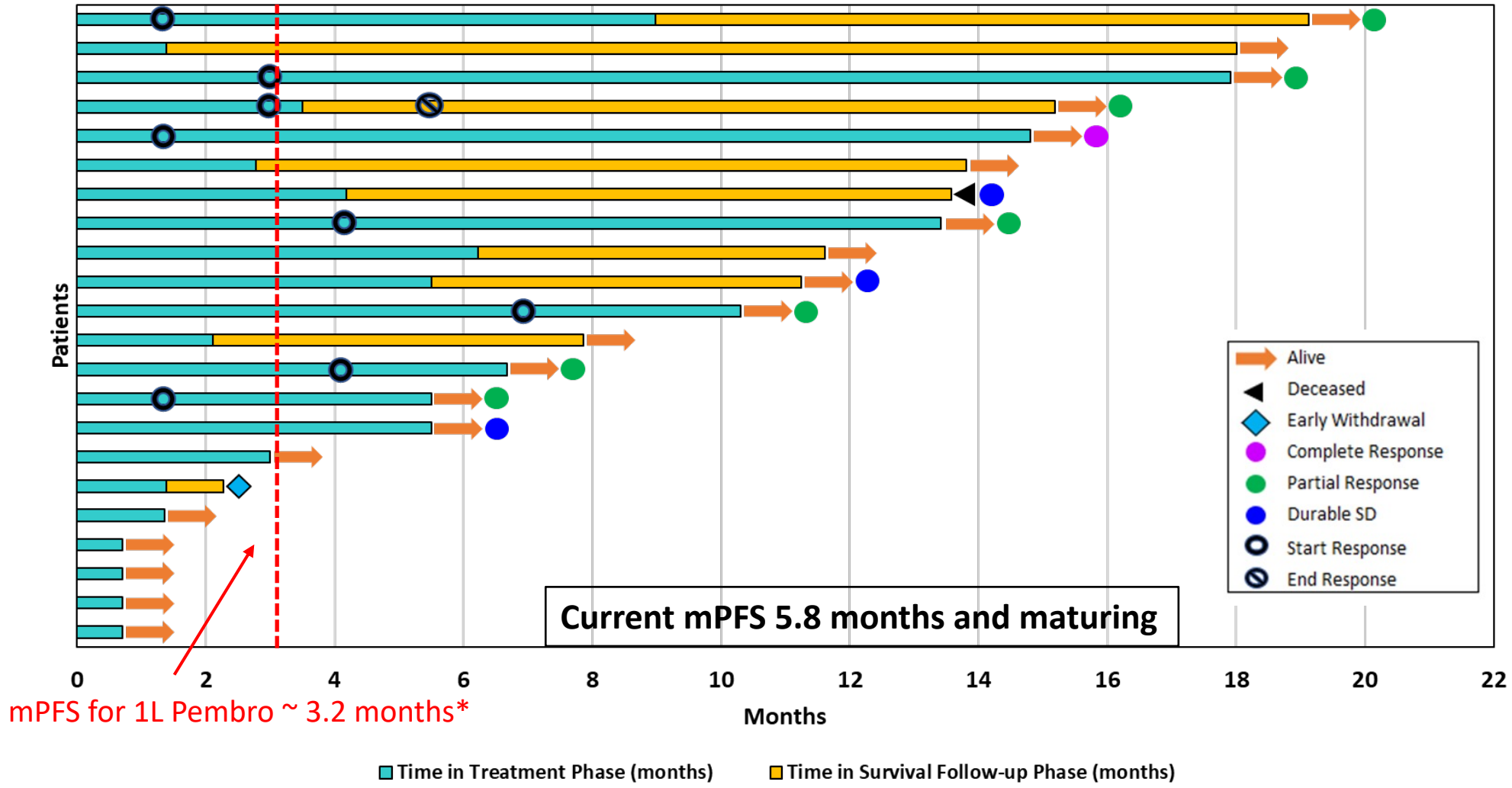
Note: mOS = Median Overall Survival
SOC = Standard of Care
ORR = Overall Response Rate
IST = Investigator Sponsored Trial

CUE-101 + KEYTRUDA: Potential Best-in-Class 1L Regimen for Patients with HPV+ R/M Head and Neck Cancer



Source: 1) KEYNOTE-048 Study Burtness B et al, Lancet 2019. 2) Harrington et al J Clin Oncol 41:790-802, 2022. 3) CUE-101 SITC Poster Nov 2023
Note: 1L Regimen = First-line regimen, CPS = Combined positive score

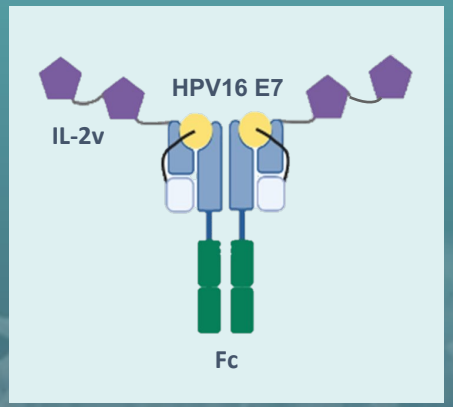
Survival in Combination Patients at the RP2D



Overall survival (months from 1st dose) in patients treated with 4 mg/kg CUE-101 and pembrolizumab (N=22) at 27-Sep-2023. Durable stable disease (SD) requires RECIST 1.1 SD on ≥ 2 consecutive scans. Response duration is indicated on the plot. Kaplan-Meier estimate of median PFS (mPFS) 5.8 months [95% CI; 2.6, NA]. Note: RP2D = Recommended Phase 2 Dose

CUE-101: Market Opportunities in HPV Associated Cancers

CUE-101



Clinical Development and Market Opportunities

- **Head and Neck**
  - Up to $750M CUE-101 US & EU R/M Opportunity[1]
  - **Recurrent/ Metastatic**
    - 2L+ Mono
    - 1L CPI Combo
  - **Locally Advanced**
    - >$1B CUE-101 US & EU LA Opportunity[1]
    - Neoadjuvant
    - Adjuvant
- **Cervical, Genitoanal**
  - Up to $500M CUE-101 US & EU R/M Opportunity[1]

Potential Registration Pathway, Fast Track Designation
Indication Expansion Opportunities
Ongoing/Planned Investigator Initiated Studies

Source: 1) Qral Group Analysis, 2022

CUE-101: Clinical Validation and Platform De-risking

- ✓ **Demonstrated single-agent anti-tumor activity**
  - *RECIST-based PR and durable stable disease (DSD) in 3L+ R/M HNSCC patients*
  - *Prolonged survival observed (Kaplan-Meier estimate of mOS >20 months)*
- ✓ **Enhancement of clinical efficacy in combination with CPI in 1L R/M HNSCC**
  - ***47% ORR** in combo w/pembro vs ~19% ORR pembro alone*
  - *Confirmed Complete Response*
  - *Objective responses observed in tumors with low PD-L1 expression*
    - ***56% ORR** in CPS 1-19 (compared to 14.5% with pembrolizumab monotherapy)*
  - *PFS of 5.8 months and mOS maturing*
- ✓ **Tolerable at clinically active doses**
  - *No vascular leak syndrome (VLS)*
  - *No severe cytokine release syndrome (CRS)*
  - *No synergistic toxicity with CPI observed*
- ✓ **Fast Track Designation granted for both monotherapy and combination therapy (Oct. 2022)**
- ✓ **FDA Type B meeting request submitted to align on registrational paths**

CUE BIOPHARMA

CUE-102

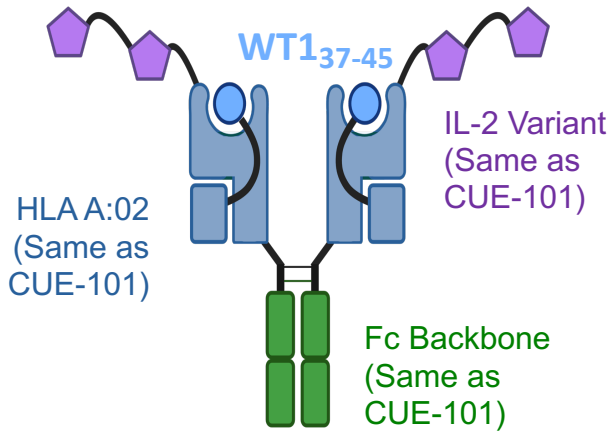
Wilms' Tumor 1: Well Characterized Cancer Target with Broad Applicability

Wilms Tumor 1 (WT1)[1]

- Ranked as #1 cancer antigen by National Cancer Institute [1]
- Intracellular oncofetal antigen, favorable clinical track record with low potential for off-target toxicity
- Validation of clinical efficacy via TCR-T approaches
- Broadly expressed in 20+ hematological malignancies and solid tumors, including colorectal, gastric, ovarian, and pancreatic cancers

Source: Prioritization of Cancer Antigens: NCI Pilot Project for the Acceleration of Translational Research' Cheever et al; Clin Cancer Res., 2009
Note: IND = Investigational New Drug

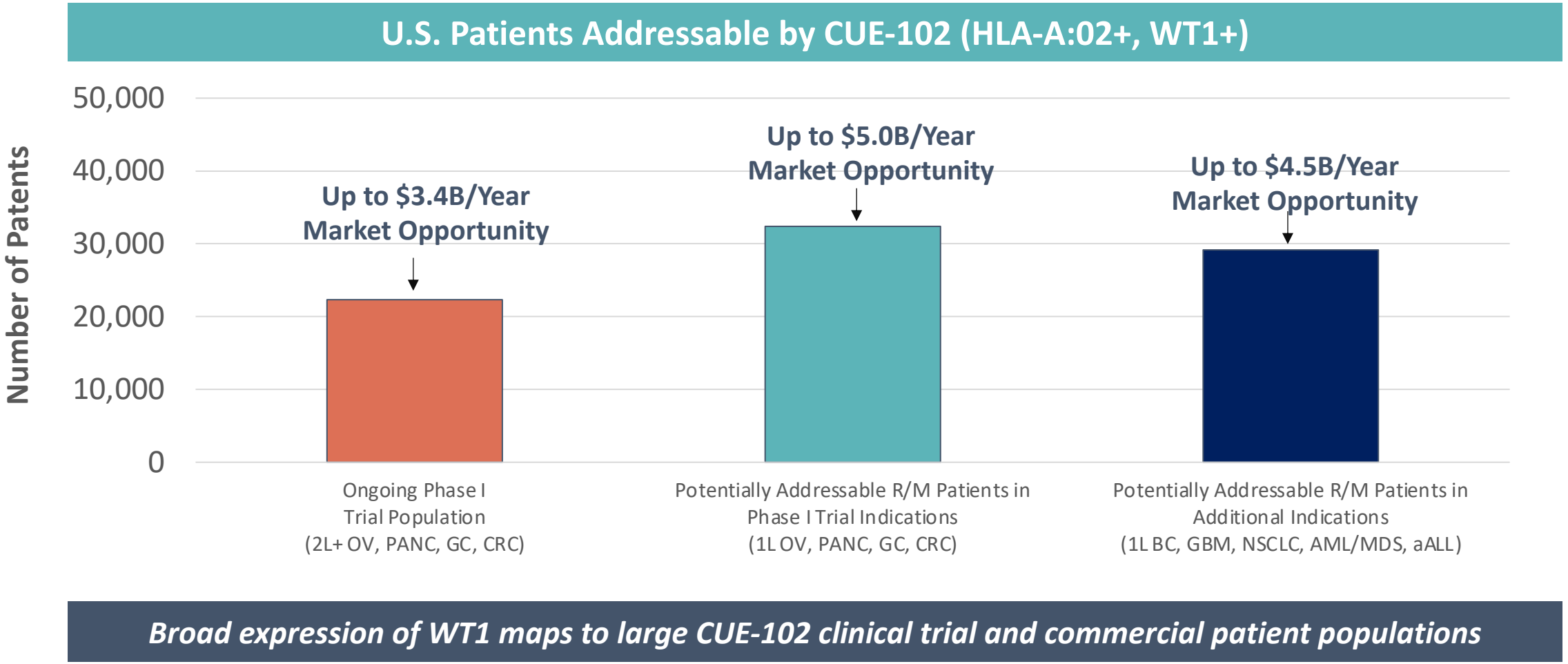
CUE-102 Molecular Design



99% sequence identical to CUE-101

- FDA approved CUE-102 IND with no additional IND tox studies
- FDA approved CUE-102 dose-escalation to start at the clinically active dose of 1 mg/kg, expediting clinical development

CUE-102: Phase 1 U.S. Trial Population and Market Opportunities

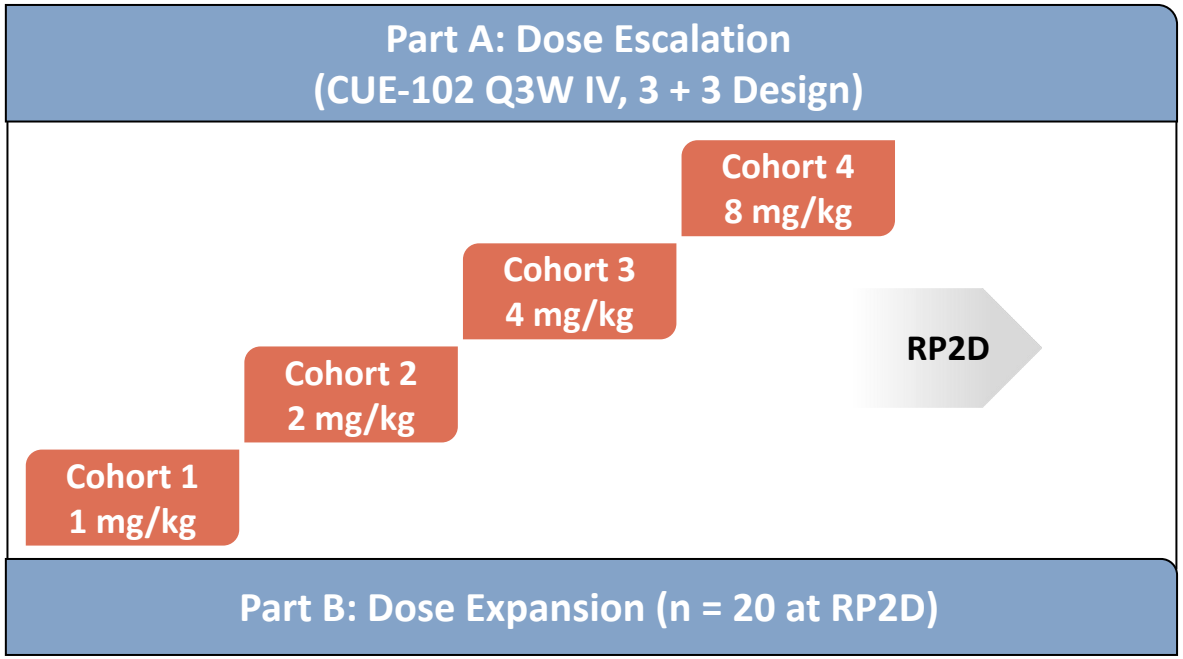


Broad expression of WT1 maps to large CUE-102 clinical trial and commercial patient populations

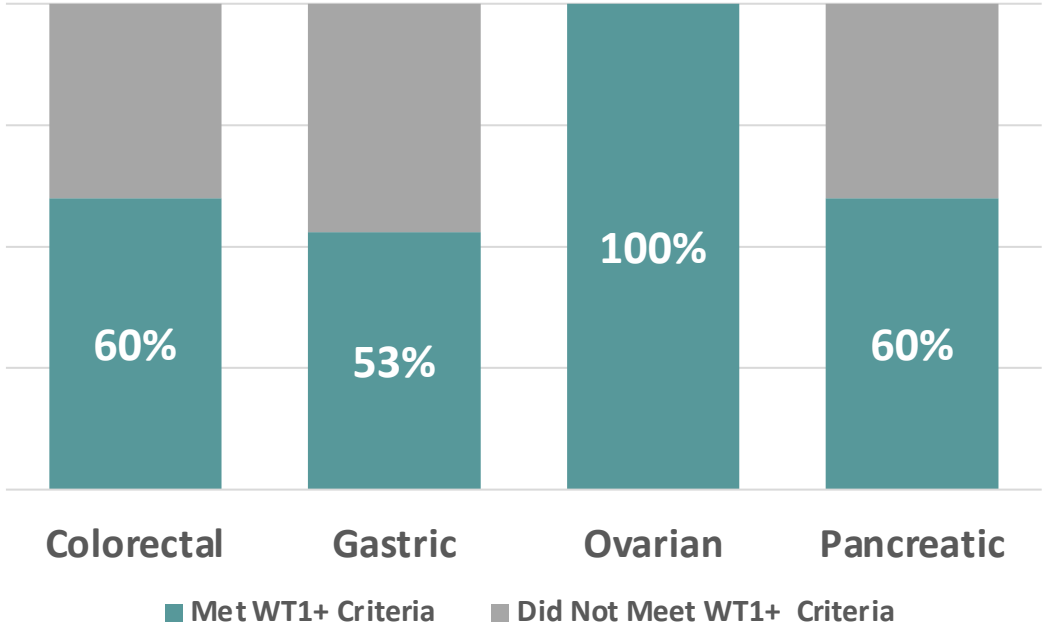
*Source: Qral Group Analysis: Note: adjusted for HLA A*02 and WT1 antigen expression*

CUE-102: Ongoing Phase 1 Study

CUE-102 Monotherapy Trial Design[1]



CUE-102 Patient Screening Indicates Substantial WT1 Expression Across Target Indications[2]



Objectives

- ***Primary:*** Safety and tolerability
- ***Secondary:*** PK/PD, Anti-tumor activity (RECIST 1.1)

Key Eligibility

- WT1+ colon, gastric, pancreatic and ovarian cancers
- HLA-A*02:01 genotype

Source: 1) Clinicaltrails.gov NCT05360680, 2) CUE-102 SITC Poster Nov 2023 (represents 113 patients as of the SITC data cut-off date)
Note: Q3W = Every three weeks, IV = Intravenous

CUE-102: Dose Escalation Patient Status by Cohort

Cohort	Treated	Evaluable	SD	DCR	Status
C1 (1 mg/kg)	3	3	1	33%	0/3 on treatment
C2 (2 mg/kg)	6	5	4	**80%**	3/6 on treatment
C3 (4 mg/kg)	5	4	3	**75%**	4/5 on treatment
C4 (8 mg/kg)	4	2	1	50%	2/4 on treatment

Fourteen of 18 patients had at least 1 post-dose scan as of Oct-01-2023 and were available for disease response assessment.

SD = Stable Disease by RECEIST 1.1 criteria on a scan 6 weeks after 1st dose, duration of SD ranges from 6 – 24 weeks. DCR = Disease Control Rate (OR + PR + SD). Nine remain on treatment.

Sources: CUE-102 SITC Poster Nov 2023

CUE BIOPHARMA

CUE-102: Tumor Reduction Observed in Heavily Pre-treated Gastric Cancer Patient (2mg/kg dose)

64 yo male

Gastric Cancer T4N2Mx

Diagnosed July 2021

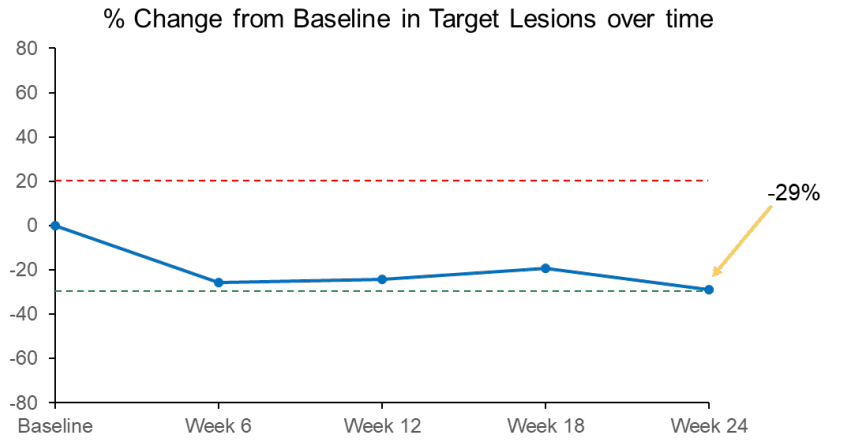
Prior Therapy:

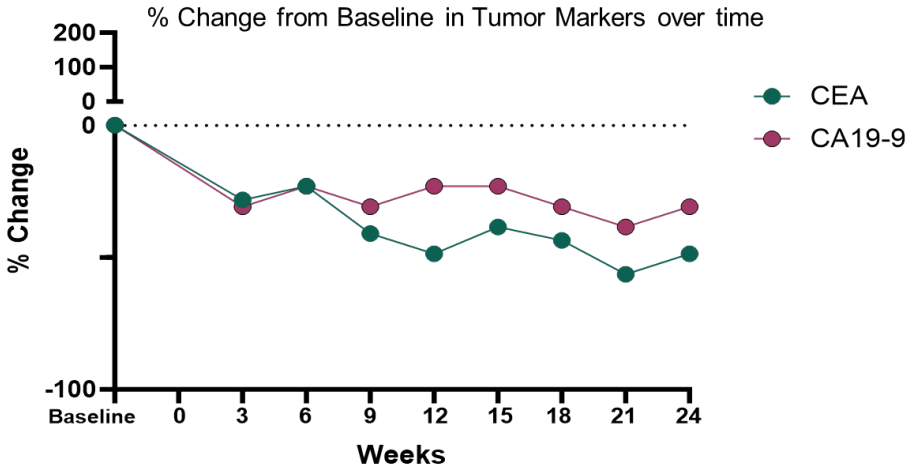
1. Neo-adjuvant FLOT x 4 cycles
   Total Gastrectomy with LN dissection
2. Adjuvant FLOT x 4 cycles
   PET/CT Nodal recurrence 8 months off-therapy
3. FOLFOX + Nivolumab x 2 cycles.
   Progressive disease on CT scan

Enrolled on Cohort 2 (2 mg/kg)

WT1 staining

Intensity	Nuclear	Cytoplasmic
1+	0%	40%
2+	0%	5%
3+	0%	0%
H-Score	0	50





Sources: CUE-102 SITC Poster Nov 2023

CUE-102: Tumor Reduction Observed in Heavily Pre-treated Ovarian Cancer Patient (2mg/kg dose)

52 yo female
Ovarian Cancer FIGO stage IVA (T3N0M1)
Right Ovary & Fallopian Tube with peritoneal carcinomatosis
Diagnosed August 2021

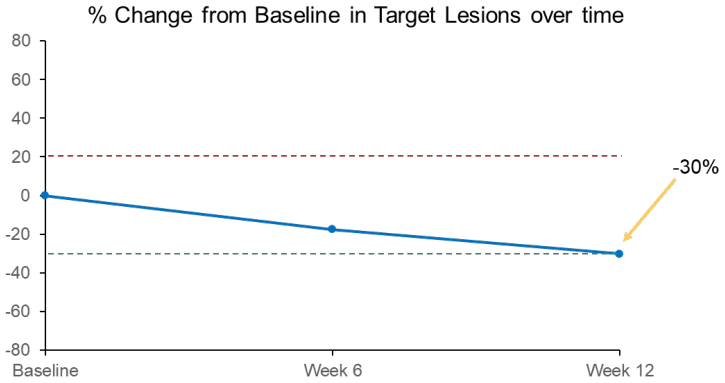
Prior Therapy:

1. Neoadjuvant Carboplatin + Paclitaxel
   Debulking surgery :
   Laparoscopic hysterectomy, bilateral salpingo-oophorectomy and omentectomy
2. Adjuvant Carboplatin + Paclitaxel
   New lesion Left Hemipelvis 8 months off-therapy
3. Carboplatin + Doxorubicin x 6 cycles
   Progressive disease on CT scan
4. Cytoxan + Avastin palliation x 3 months
   Progressive disease on CT scan

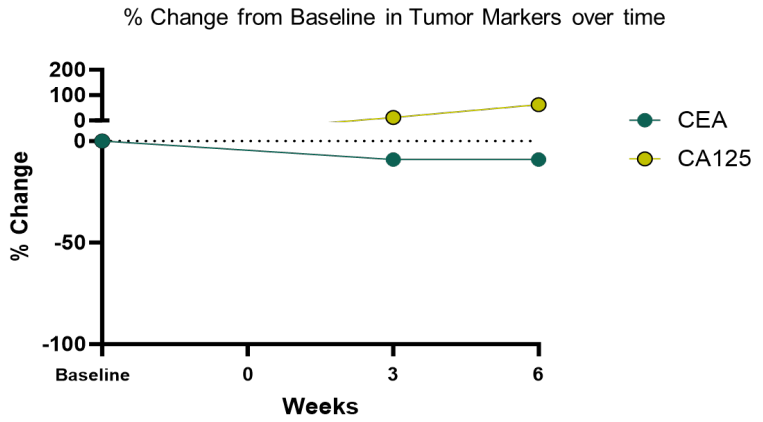
Enrolled in Cohort 2 (2 mg/kg)

WT1 staining

Intensity	Nuclear	Cytoplasmic
1+	0%	2%
2+	5%	0%
3+	95%	0%
H-Score	295	2



Reductions in Target Lesions in two early cohort patients

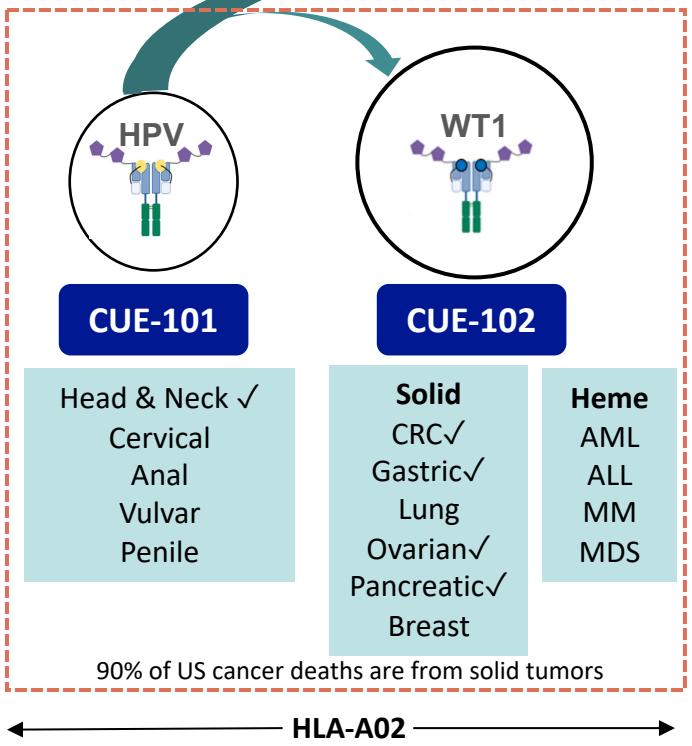


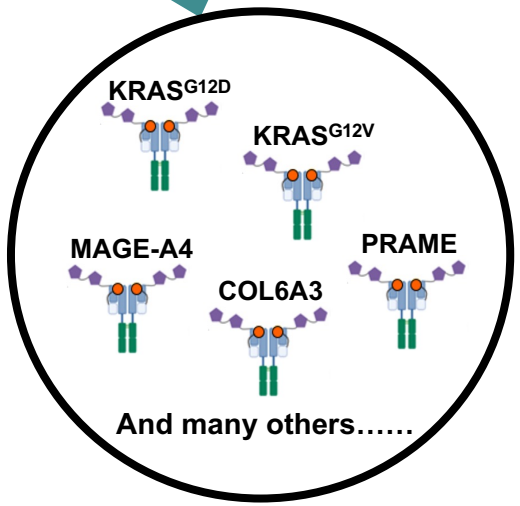
Sources: CUE-102 SITC Poster Nov 2023

BROAD Opportunities for CUE-100 Series in Cancer Immunotherapy

Clinical Proof of Concept (PoC) with CUE-101 Provides a Springboard for Platform Expansion into Broad Indications

Clinical-stage Assets

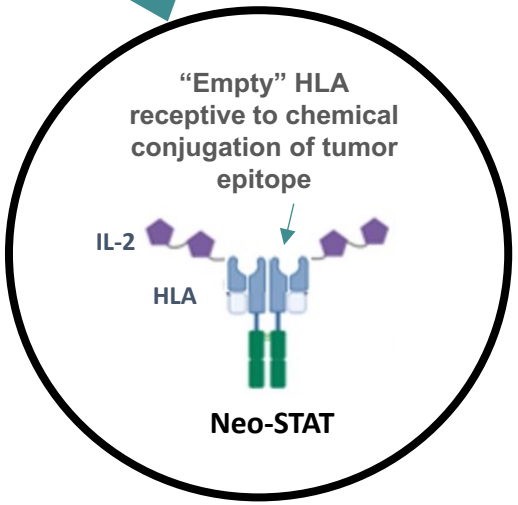




TBD: CUE-103, CUE-104, 105 etc.

Multiple Cancers and Multiple HLA Alleles

HLAs: A01, A02, A03, A11, A24, and others
85% of global population can be addressed with 5 alleles



Mixtures of tumor Ags / Neo-Ags

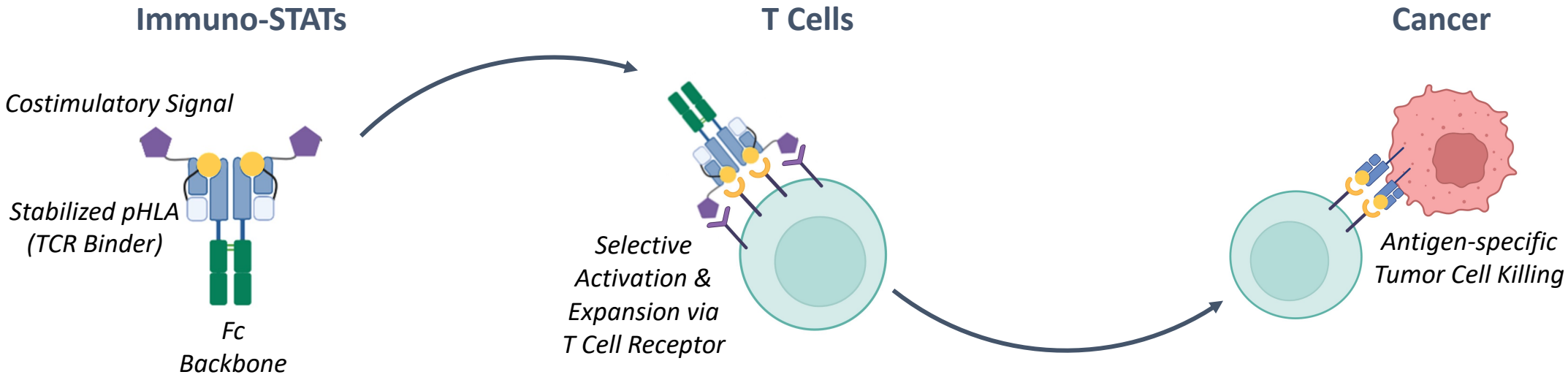
"Off-the-shelf" Approach for Tumor Heterogeneity

Increases R&D efficiency and enables targeting of multiple tumor antigens
(including post-translationally modified peptides)

Structural similarity creates potential regulatory and development efficiencies

Competitive Positioning & Upcoming Milestones

Immuno-STATs: Best-in-class T cell Engagers

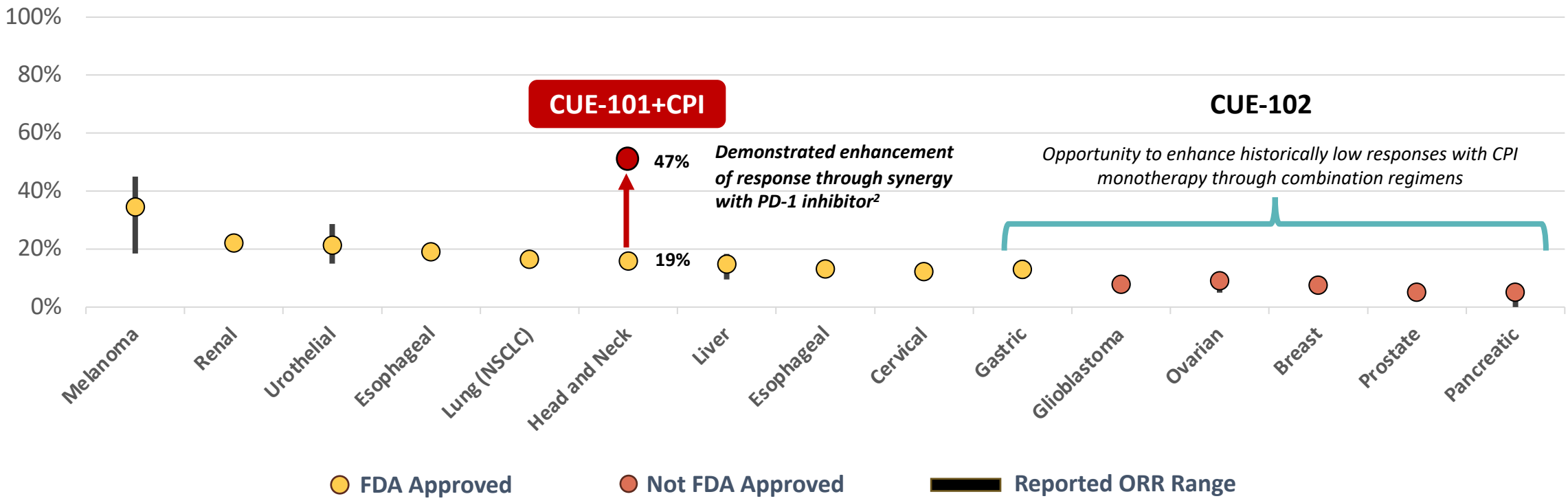


Key Points of Differentiation as demonstrated with first clinical candidate: CUE-101

- Antibody-like **manufacturing** process with 36+ months drug product stability
- Off-the-shelf IV administration Q3W
- Clinical anti-tumor activity as monotherapy and in combination with checkpoint inhibition
- Well tolerated, able to be combined with standard of care modalities, e.g., KEYTRUDA
- TCR-selective engagement creates therapeutic index for cytokines, e.g., IL-2
- Modular design de-risks therapeutic framework and presents significant regulatory/clinical advantages

Current State of Immunotherapy: Significant Unmet Need Remains Despite Recent Breakthroughs with Checkpoint Inhibitors

Reported Overall Response Rate with PD-1/PD-L1 Monotherapy[1]

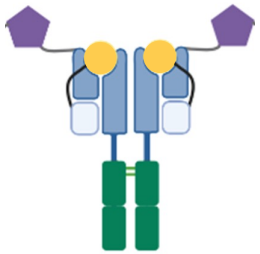


Meaningful enhancement of response to checkpoint inhibitor therapy, requires engagement and activation of T cells

Source: 1) Mao et al. Cancer Immunol Immunotherapy. 2023 Jul;72(7):2483-2498. Doi: 10.1007/s00262-023-03441-3. Epub 2023 Apr 6, 2) CUE-101 SITC Poster Nov 2023

Immuno-STAT Platform: Positioned for Near-term Value Inflection

Immuno-STATs



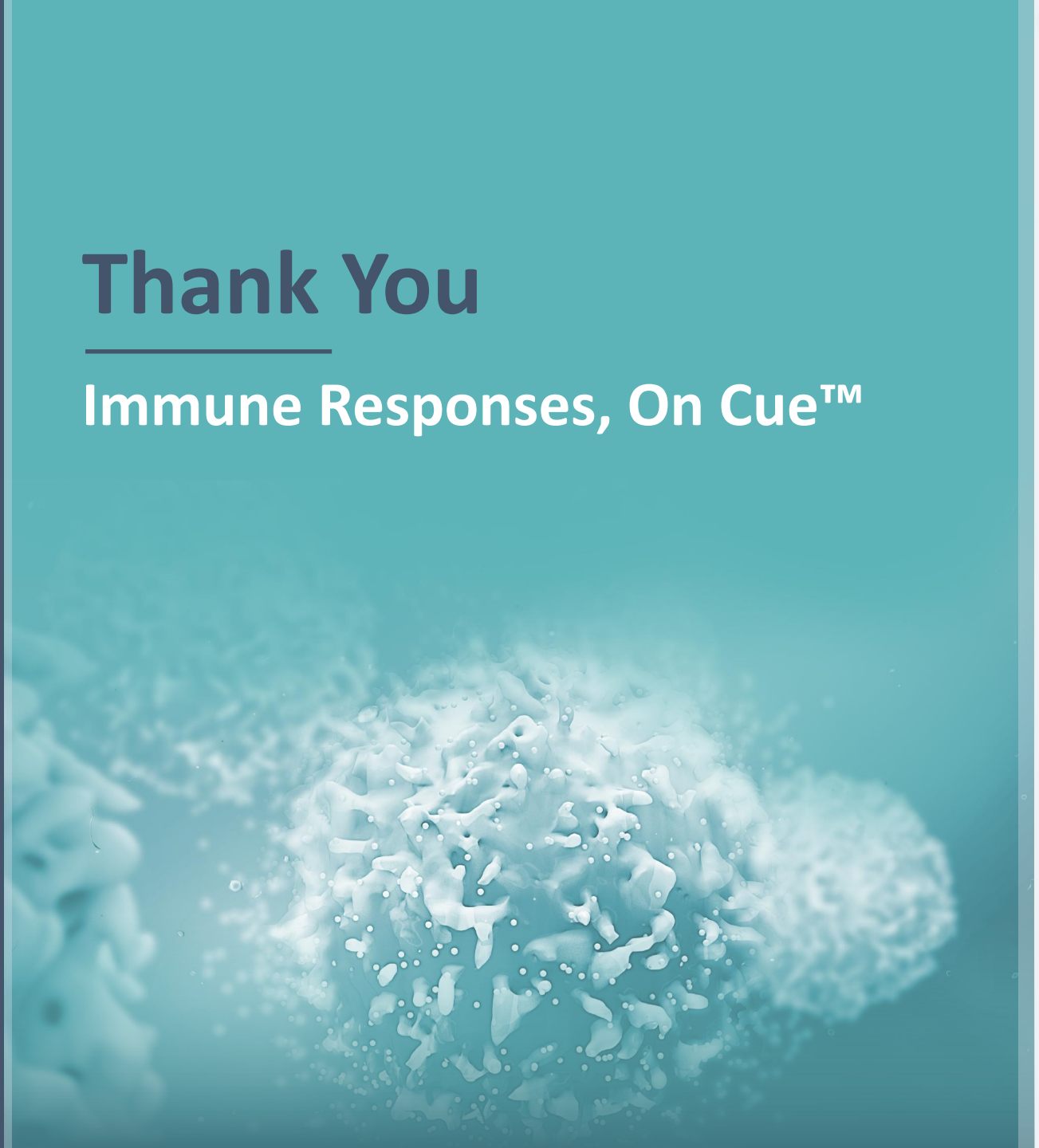
Clinically validated class of novel T cell engagers with potential to significantly improve efficacy over current standard of care in a broad range of diseases

Milestones	
CUE-101 Monotherapy	**1Q 2024:** Define Registration Path
CUE-101 + Pembrolizumab	**1H 2024:** Provide Topline Readout **2H 2024:** Define Registration Path
CUE-101 Neoadjuvant (IST)	**1H 2024:** Complete Enrollment for Neoadjuvant IST
CUE-102 Monotherapy	**2H 2023:** Complete dose escalation **1Q 2024**: Initiate Dose Expansion
CUE-401	**1H 2024:** Select Clinical Candidate **2H 2024:** Ono Option Decision
Immuno-STAT Program(s)	**1H 2024:** Execute Strategic Partnership

CUE BIOPHARMA

Thank You

Immune Responses, On Cue™



CUE™
BIOPHARMA