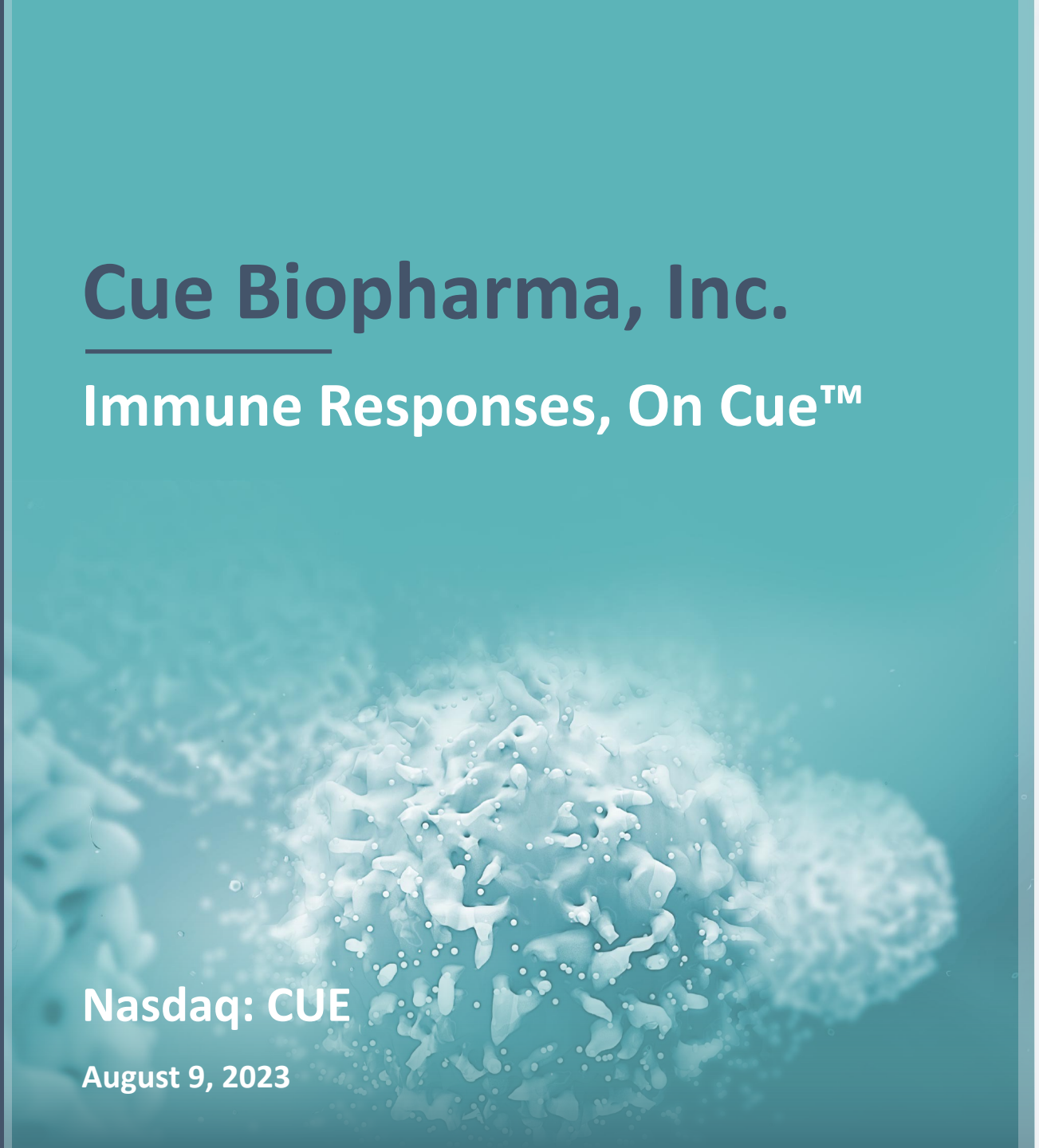
Cue Biopharma, Inc.

Immune Responses, On Cue™



Nasdaq: CUE

August 9, 2023

CUE™
BIOPHARMA

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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.

Agenda

• **Opening Remarks**	Dan Passeri, CEO
• **Immuno-STATs** – a novel platform for immunotherapy	Dr. Anish Suri, President and CSO
• **Clinical Update** – CUE-101 – CUE-102	Dr. Matteo Levisetti, CMO
• **Pipeline: Oncology and Autoimmunity**	Dr. Anish Suri, President and CSO
• **2Q-FY23 Financial Results**	Kerri-Ann Millar, CFO
• **Concluding Remarks**	Dan Passeri, CEO
• **Q&A**	All

Vision

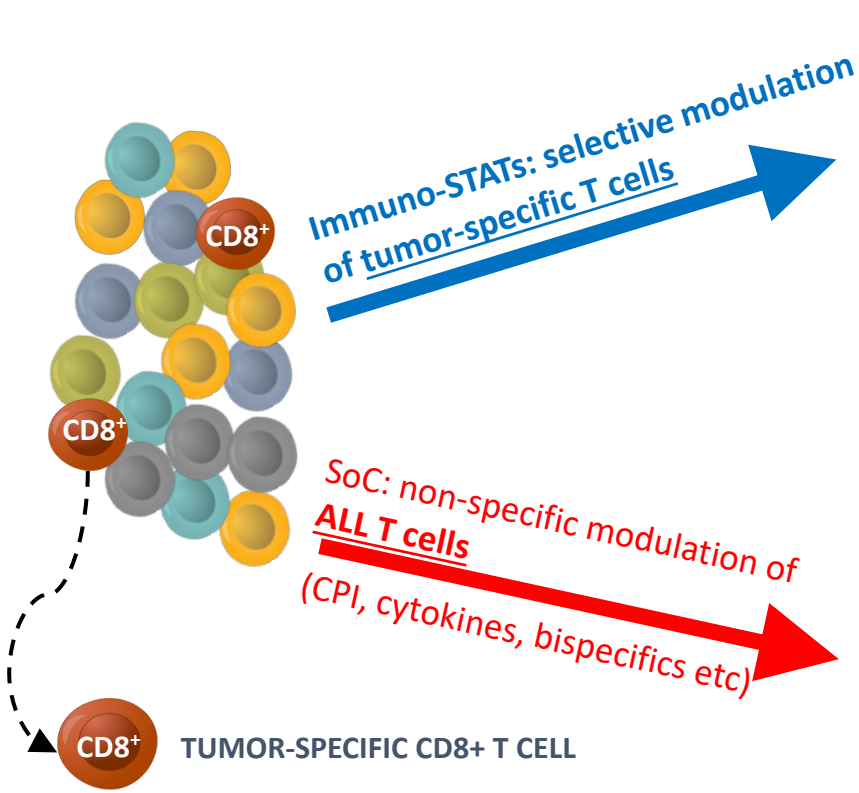
Translating “Nature’s Cues” into protein therapeutics

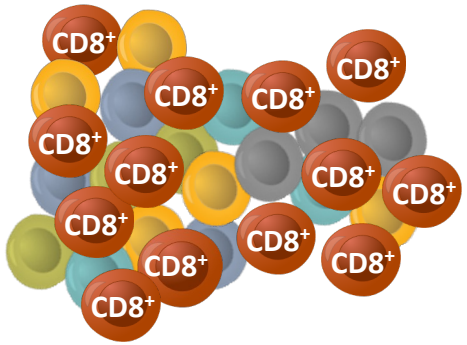
Approach

- Generate a new class of bispecific T-cell engagers, termed Immuno-STATs, for selective modulation of disease specific T cells
  - Approach in oncology: Immuno-STATs for TCR-selective targeting of co-stimulatory signals, or activation signals, e.g., IL-2, to tumor specific T cells
- Clinically validate Immuno-STATs by demonstrating significant improvement in efficacy over current standard of care cancer immunotherapies
- Leverage platform modularity to efficiently address unmet patient needs across a broad range of diseases

Immuno-STAT (IST) Selectivity = Enhanced Tolerability and Efficacy

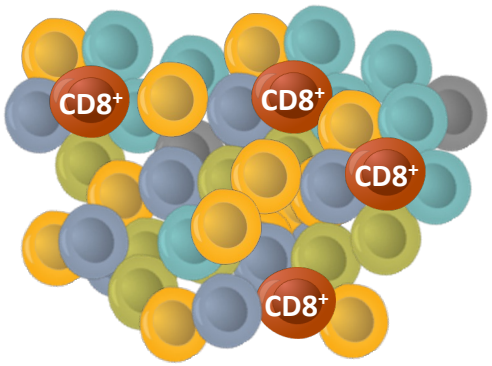
"A Conceptual Framework for Successful Cancer Immunotherapy"



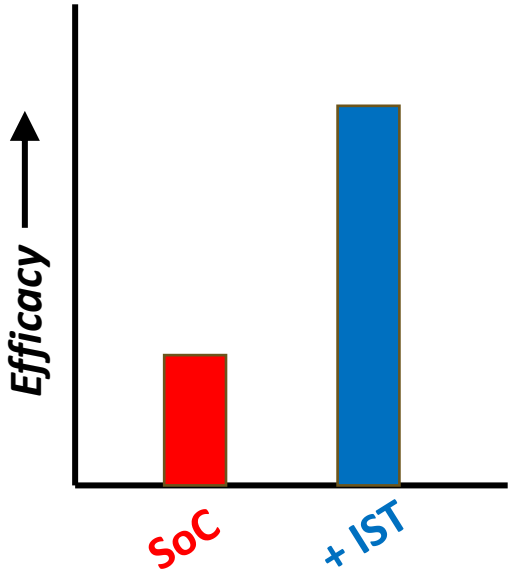


- ✓ Potential for greater efficacy
- ✓ Specific and selective
- ✓ Improved tolerability
- ✓ **Superior Patient Outcomes**

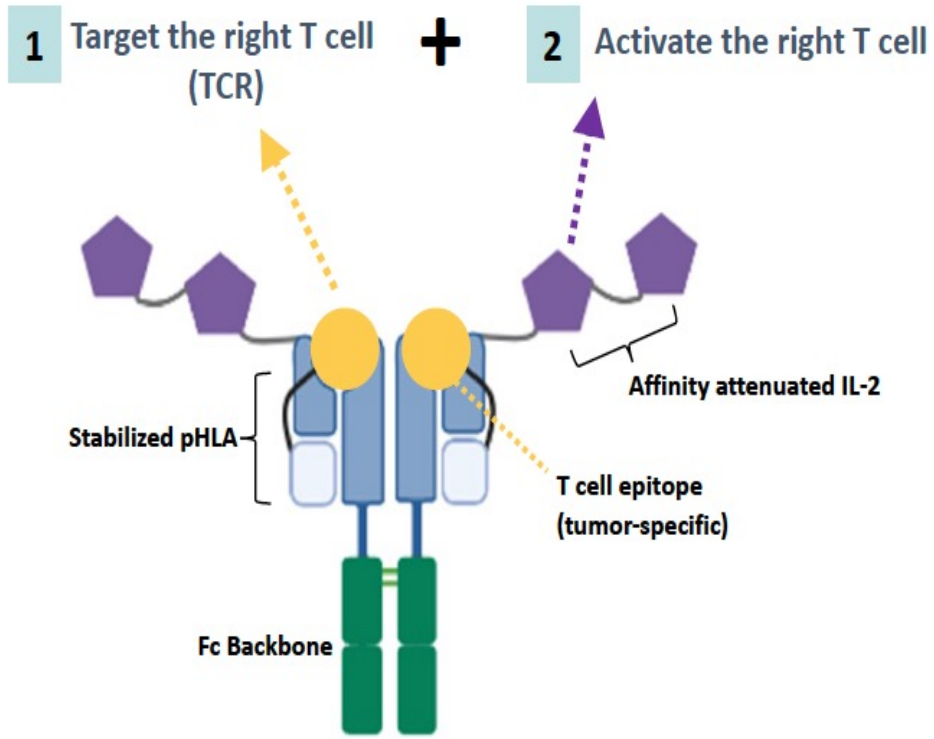
Vs.



- ✗ Limited Efficacy
- ✗ Lack of selectivity
- ✗ Poor tolerability
- ✗ **Inferior Patient Outcomes**

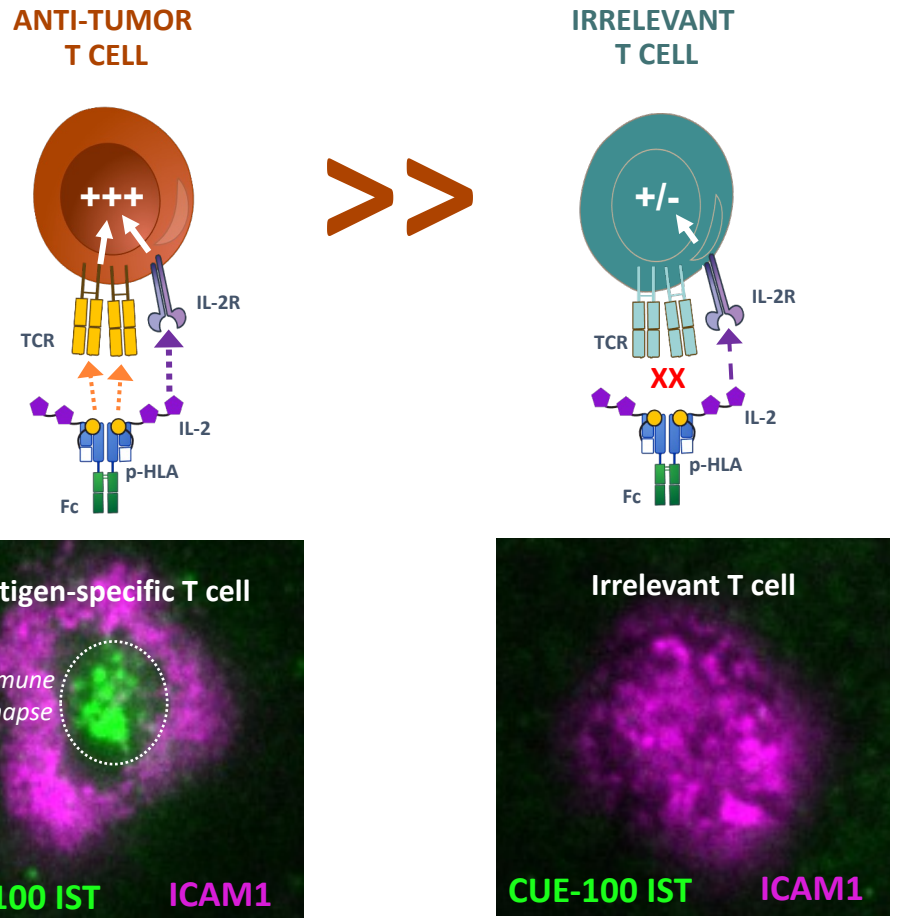


CUE-100 Series Immuno-STATs (ISTs): *TCR-selective Engagers* that Target Functional IL-2 to Tumor-specific T cells



CUE-100 Series Design

- Single biologic molecule
- Ab-like manufacturability and CMC
- Stable, off-the-shelf
- IV (or SC) administration



COLLABORATION WITH DR. MICHAEL DUSTIN

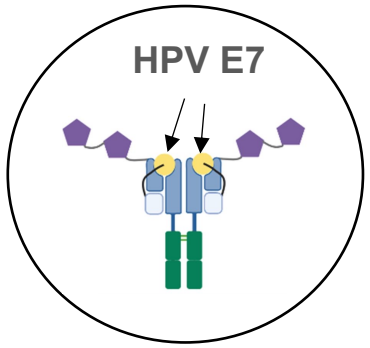
UNIVERSITY OF OXFORD

Key Highlights and Accomplishments

Clinical Validation	✓ Anti-tumor efficacy and tolerability (>80 patients treated)
Monotherapy Efficacy (3L+ patients)	✓ RECIST PR and DSDs accompanied by enhancement of mOS
CPI Combination Efficacy (1L patients)	✓ More than doubled ORR; mPFS and mOS maturing ✓ Notable activity in patients with low CPS (PD-L) scores
Platform De-risking	✓ Regulatory advantages and expedited clinical development
Platform Modularity	✓ Addressing many cancers with large market opportunities
Attractive Commercial COGs	✓ Favorable manufacturability and stability (similar to mAbs)

A highly differentiated therapeutic platform with potential for significant superior patient efficacy

CUE-101 Provides Clinical PoC and Platform De-risking



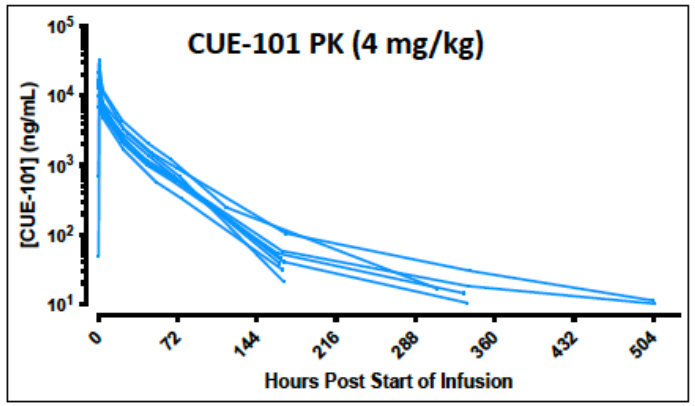
CUE-101

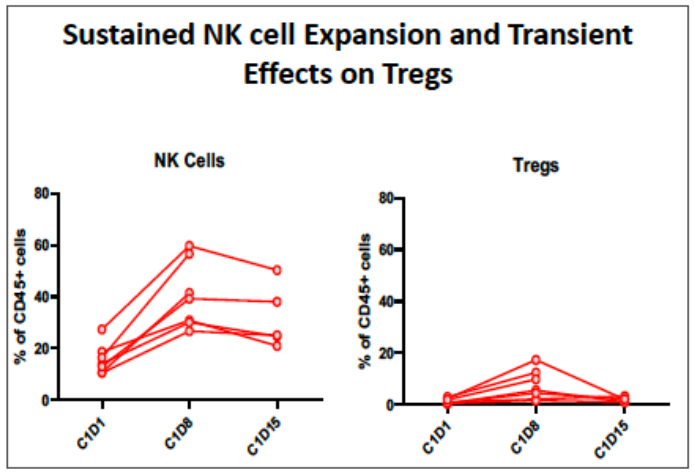
Head & Neck*
Anal
Cervical
Penile
Vulvar

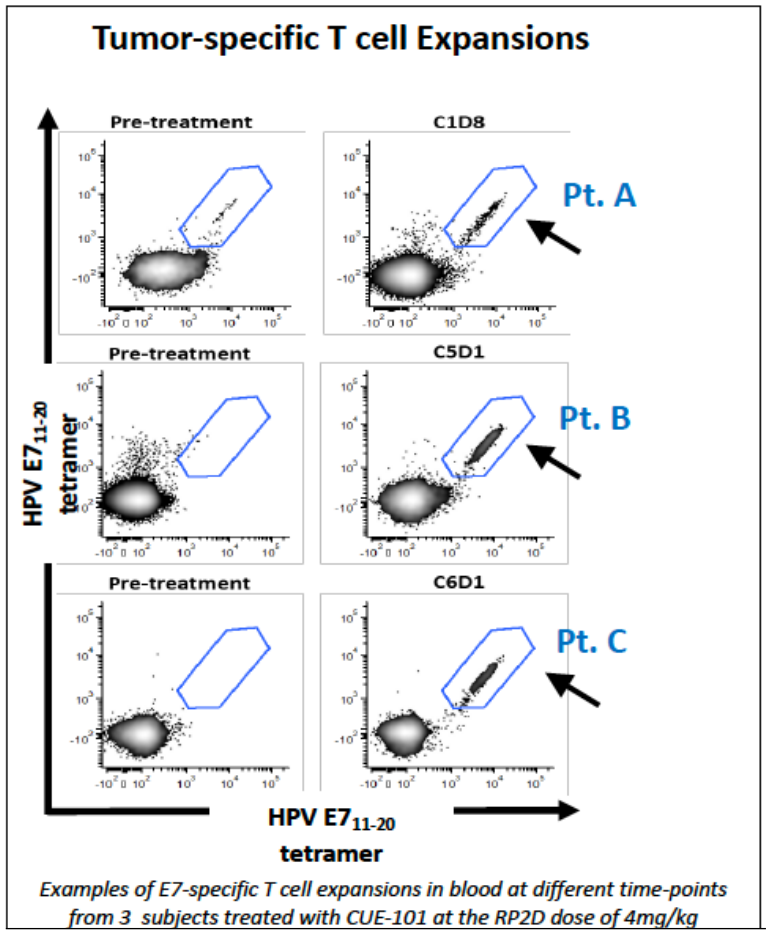
** Ongoing clinical trial*

- **CUE-101 Monotherapy in 3L+ R/M HNSCC**
- CUE-101 + Pembrolizumab Combination in 1L R/M HNSCC
- CUE-101 Neo-adjuvant Trial in locally/advanced HNSCC
  - Trial ongoing at Washington University in St. Louis

CUE-101 Monotherapy Patient Data: PK, PD and Tumor Infiltration

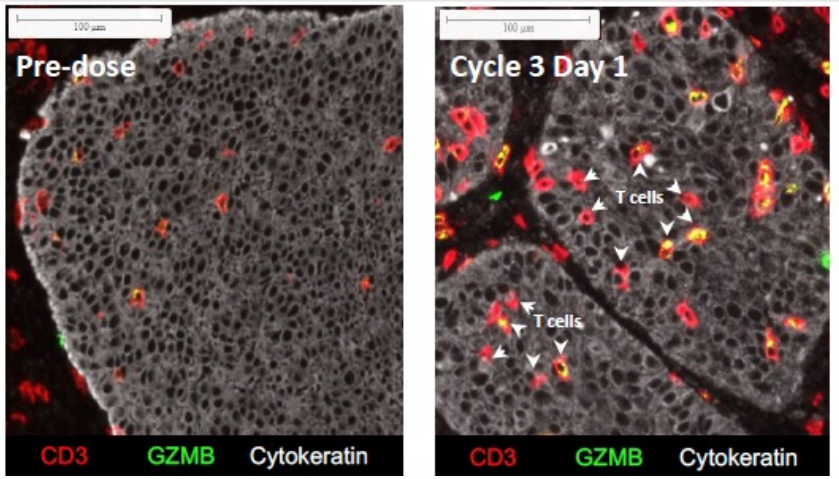




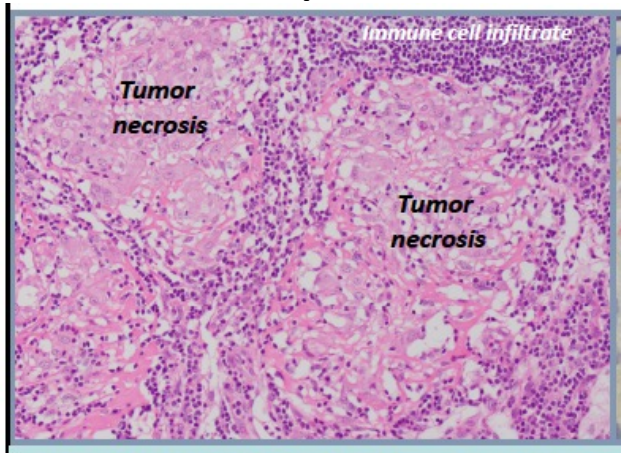


Examples of E7-specific T cell expansions in blood at different time-points from 3 subjects treated with CUE-101 at the RP2D dose of 4mg/kg

T cell infiltration into tumors post-CUE-101 Tx

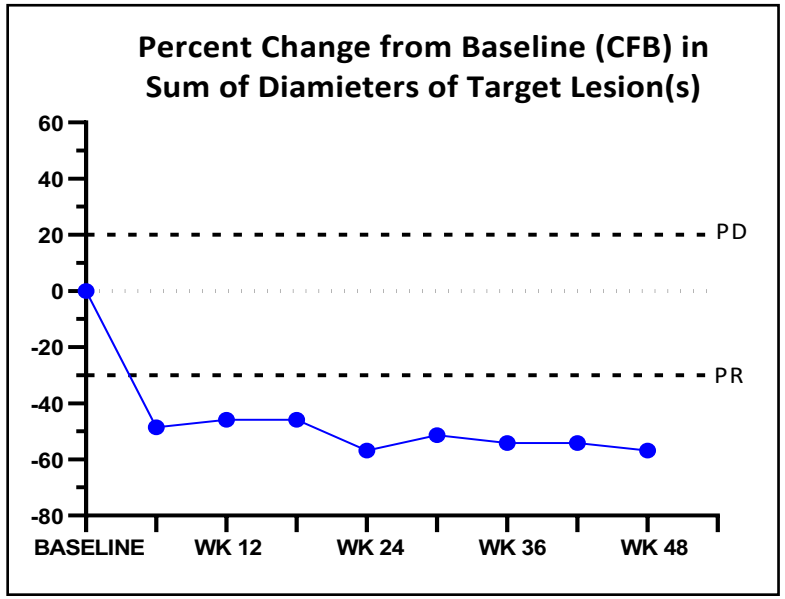


Tumor necrosis post-CUE-101 Tx



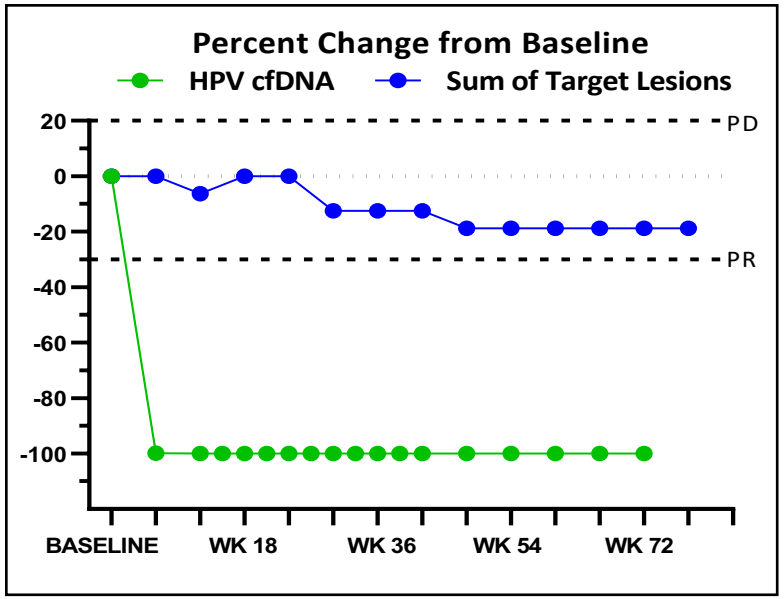
CUE-101 Monotherapy: Patterns of Clinical Efficacy in 3L+ R/M HNSCC Patients

Patient A



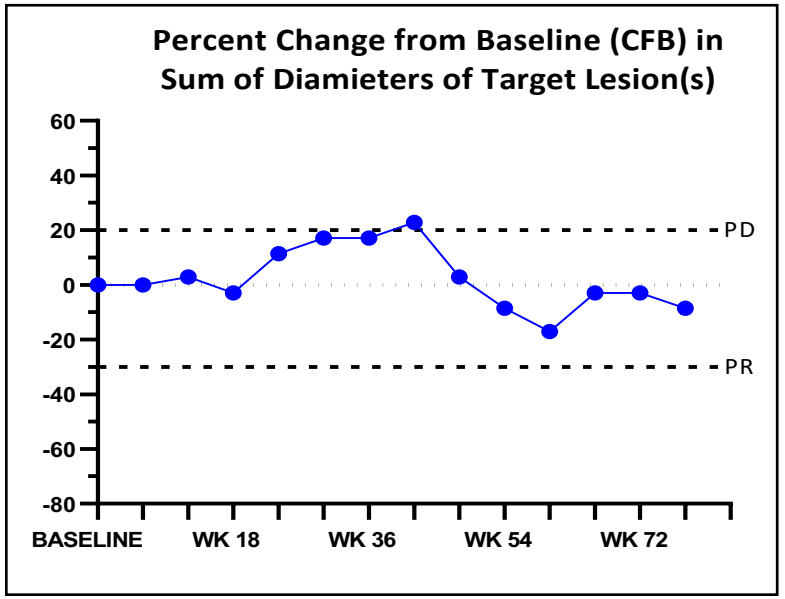
- Rapid tumor reduction and durable PR
- Remained on treatment for ~1 year

Patient B



- Durable SD (pathologic CR ?) with sustained non-detectable levels of HPV cfDNA
- Completed 24 months of treatment

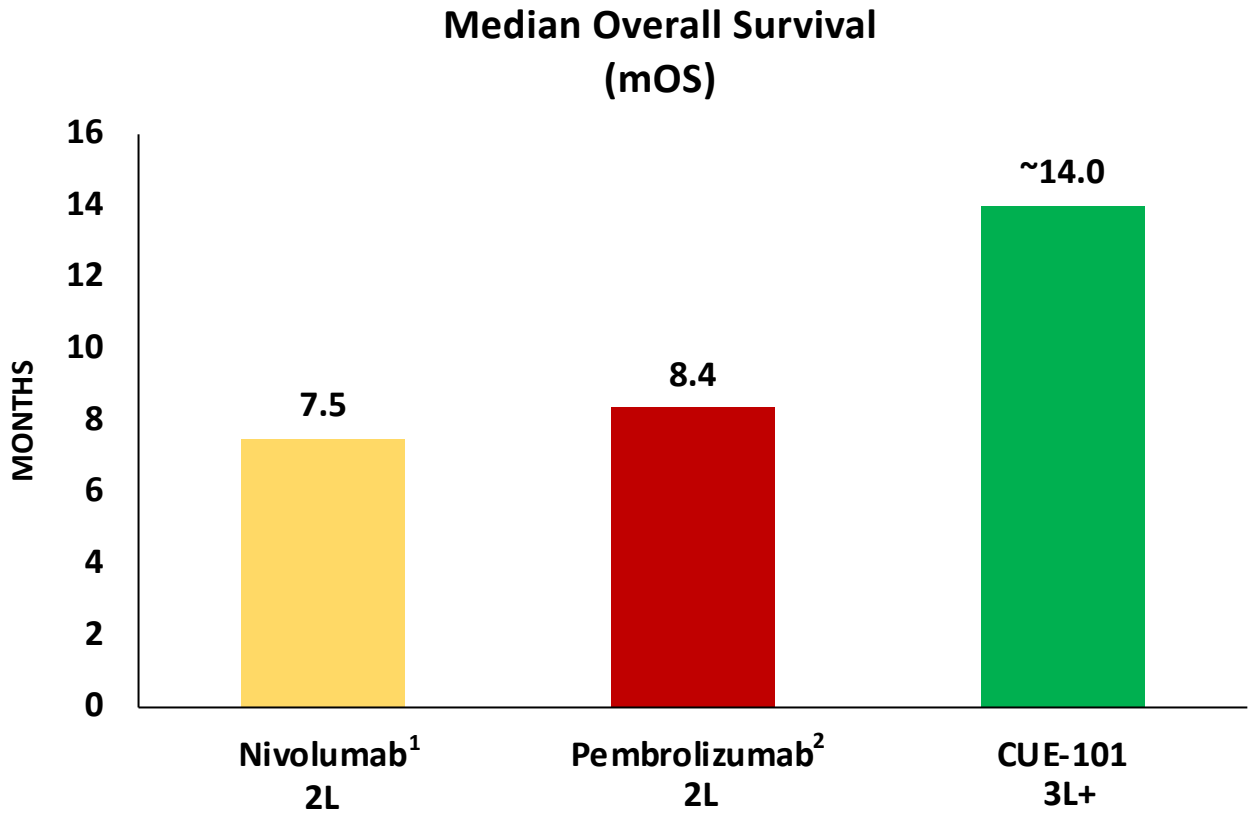
Patient C



- Durable SD
- Remained on treatment for >18 months

All patients have failed prior therapies including CPIs

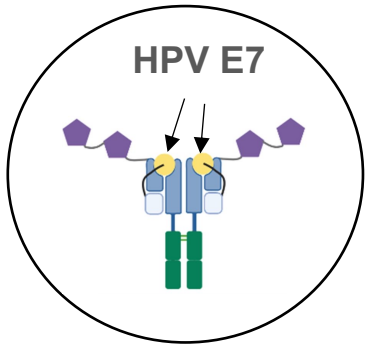
CUE-101 Monotherapy in 3L+ R/M HNSCC: mOS of ~14 Months



1. Ferris et al Checkmate 141 NEJM 375;19, 2016 2. Cohen et al KEYNOTE-040 Lancet, 2018

Data Extract: 26-Jul-2023.

CUE-101 Provides Clinical PoC and Platform De-risking



CUE-101

Head & Neck*
Anal
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Vulvar

** Ongoing clinical trial*

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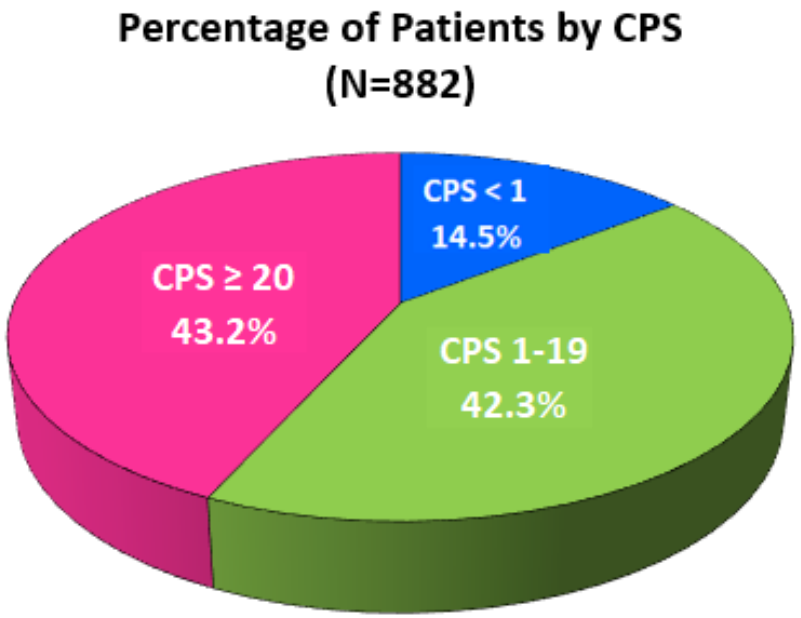
- **CUE-101 + Pembrolizumab Combination in 1L R/M HNSCC**
- CUE-101 Neo-adjuvant Trial in locally/advanced HNSCC
  - Trial ongoing at Washington University in St. Louis

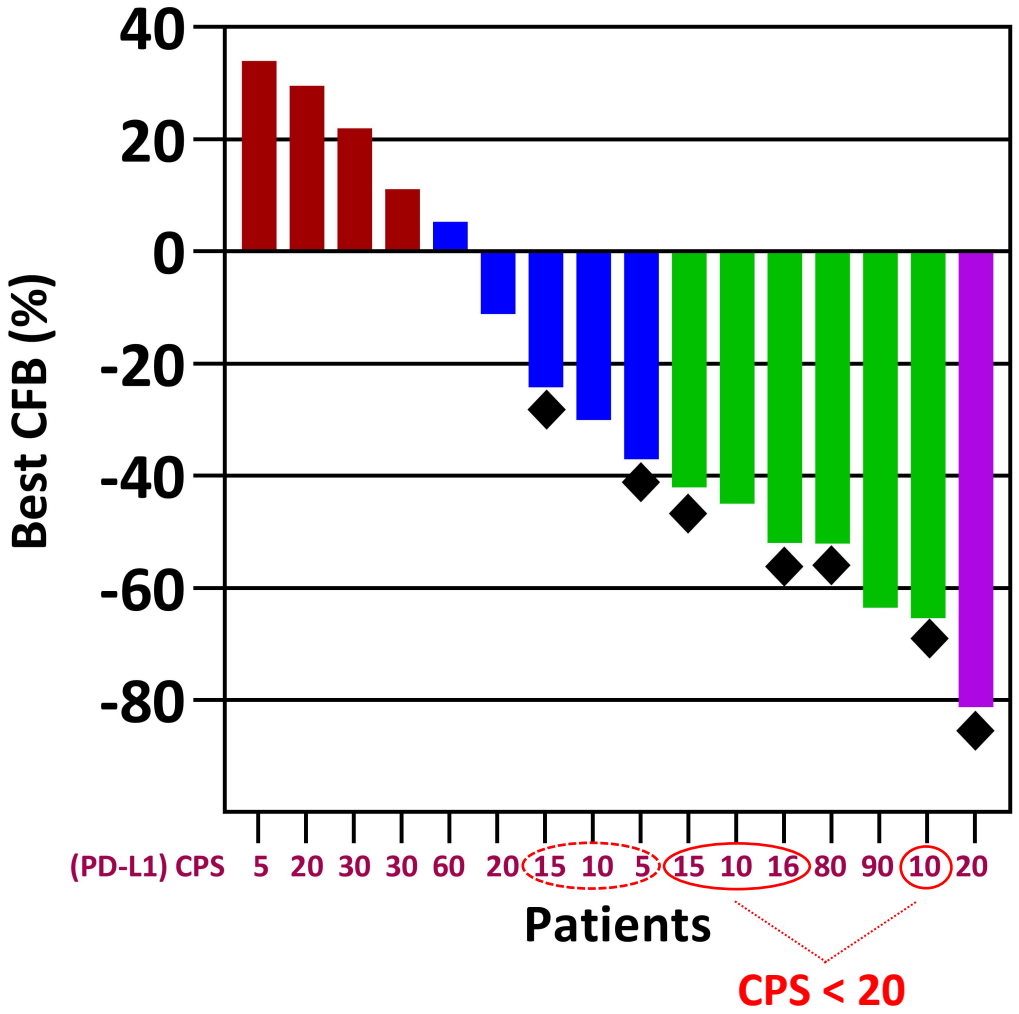
Combined Positive Score (CPS) a Measure of PD-L Expression in the Tumor: CPS Levels in 1L R/M HNSCC Patients



> 85% of R/M HNSCC patients are CPS > 1 (~ 50% are CPS 1-19; ~50 % are CPS ≥ 20) [1,2]

1. Harrington et al J Clin Oncol 41:790-802, 2022 2. Burtness et al J Clin Oncol 40:2321-2332, 2022

CUE-101 in Combination with Pembrolizumab in 1L R/M HNSCC: 44% ORR at 4 mg/kg RP2D *(vs. 19% historical ORR with pembro alone)*



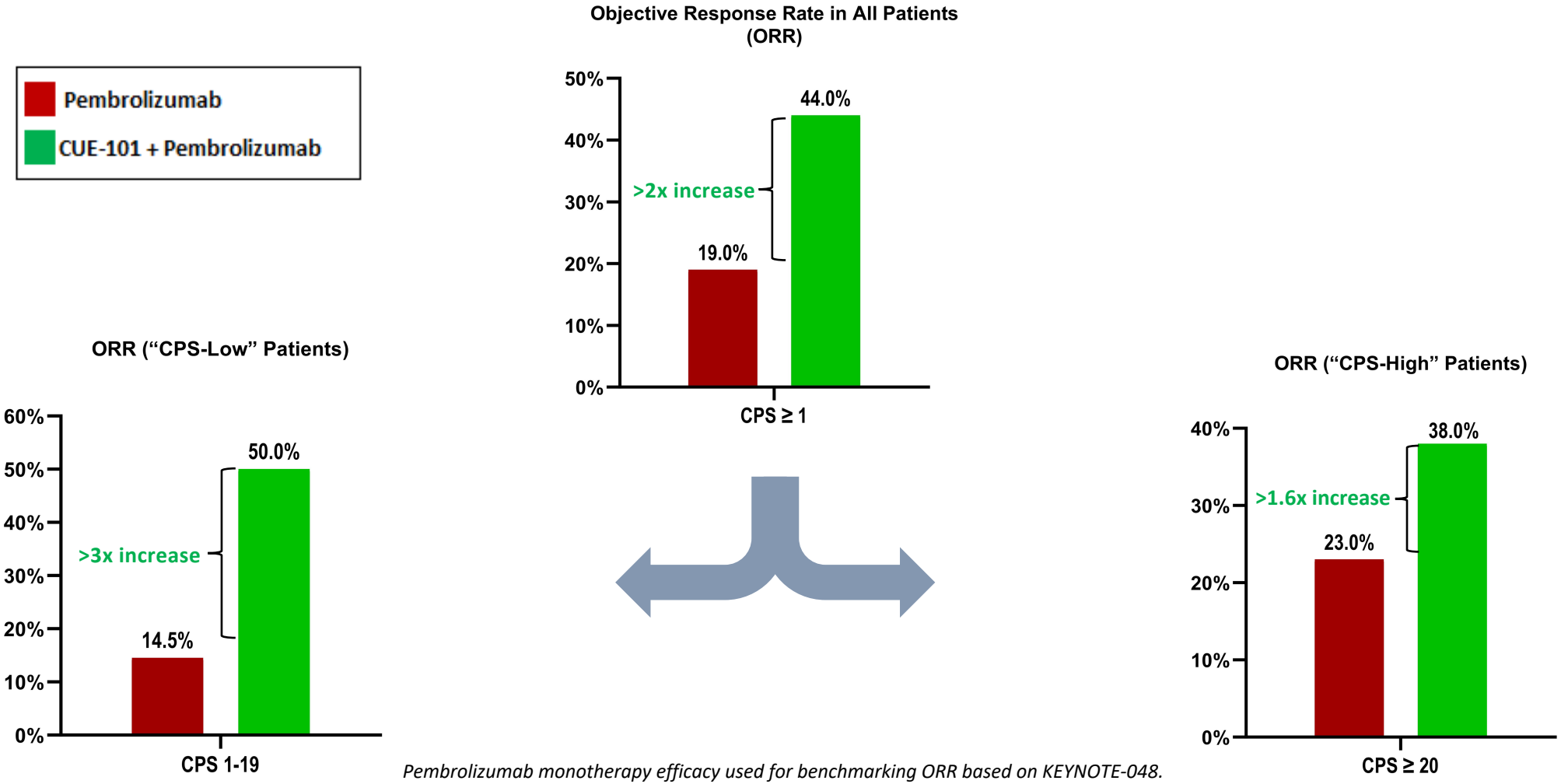
- **ORR: 44% (1 CR; 6 PR)**
- **4/7 CR/PRs with CPS < 20**
- **DCR: 69% (1 CR; 6 PR; 4 DSD)**

Complete Response
Partial Response
Stable Disease/Durable Stable Disease
Progressive Disease
Ongoing on treatment

1L R/M HNSCC (KEYNOTE-48)	
Pembro ORR	19%
Lancet 2019	

Data Extract: 26-Jul-2023. Confirmation of uPR and dosing of 18th patient: 8-Aug-2023. Plot includes 16/18 patients with post-dose scans to date. CFB = Change from baseline in sum of diameters of target lesions.

Benchmarking Against Pembrolizumab Monotherapy [1,2]



Pembrolizumab monotherapy efficacy used for benchmarking ORR based on KEYNOTE-048.

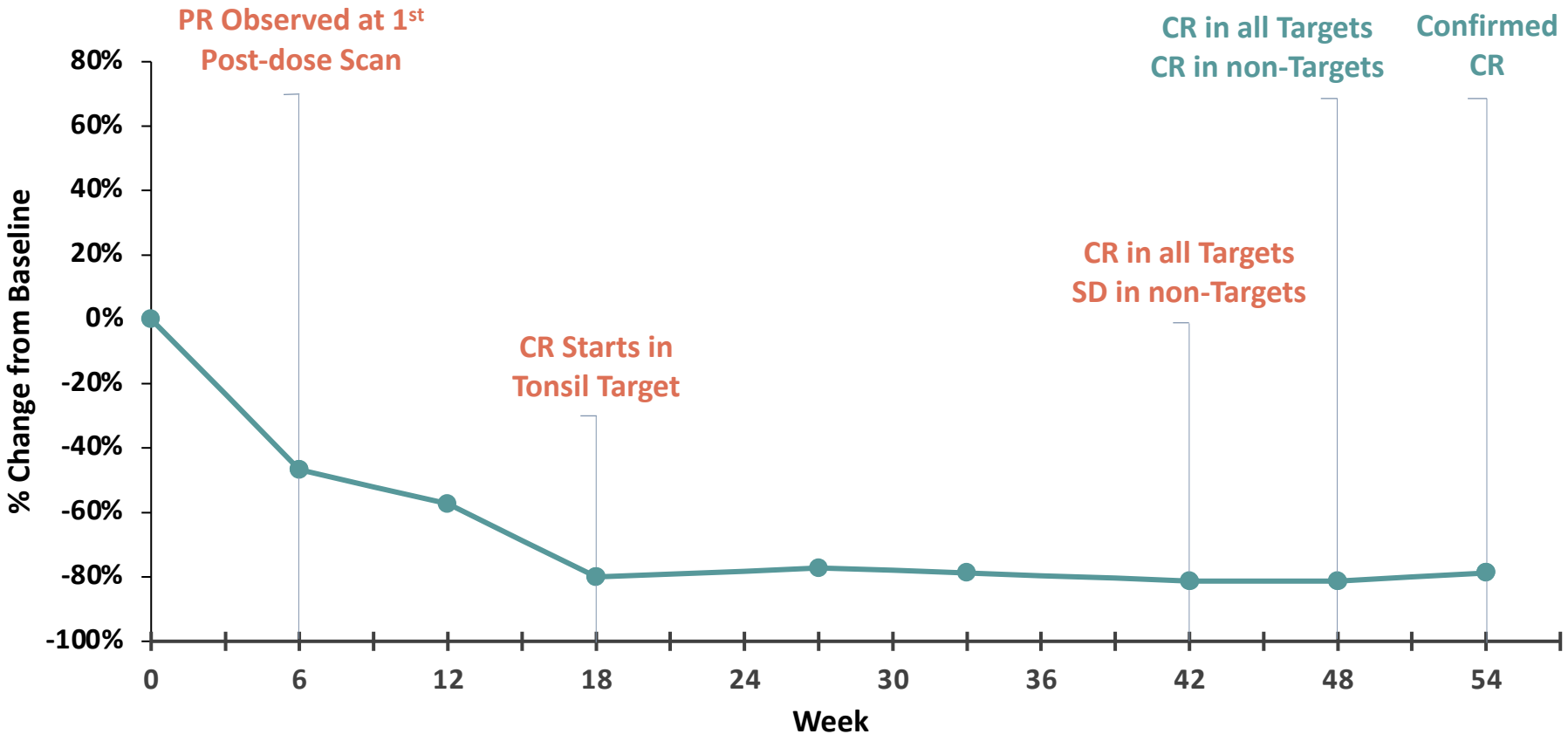
[1] Harrington et al J Clin Oncol 41:790-802, 2022; [2] Burtness et al J Clin Oncol 40:2321-2332, 2022.

Data Extract: 26-Jul-2023.

Complete Response Confirmed in Patient at 54 Weeks

Case History

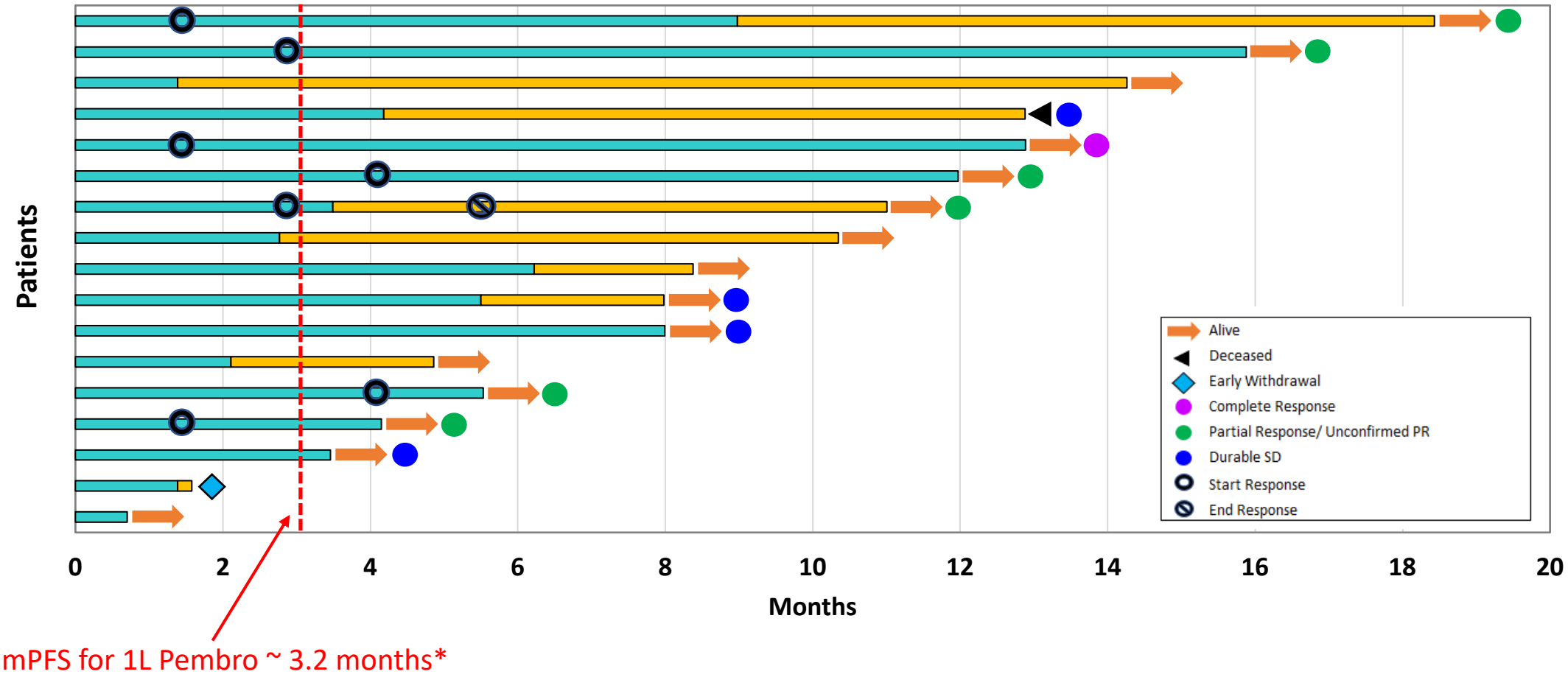
- 62 y/o with HPV16+ HNSCC
- Metastatic disease
- 3 Target Lesions
  - Tonsil (36mm)
  - 2 lymph nodes
- 3 Non-Target Lesions (bone, liver, lymph node)
- Sum of diameters at baseline 75mm



Data Extract: 26-Jul-2023.

Response is Ongoing

Emerging Increase in mPFS in Combination RP2D Patients



(Data Extract 26-July-2023)

*Historical, not head-to-head data comparison; KEYNOTE-048 *Lancet* 2019

CUE-101: Clinical Validation and Platform De-risking

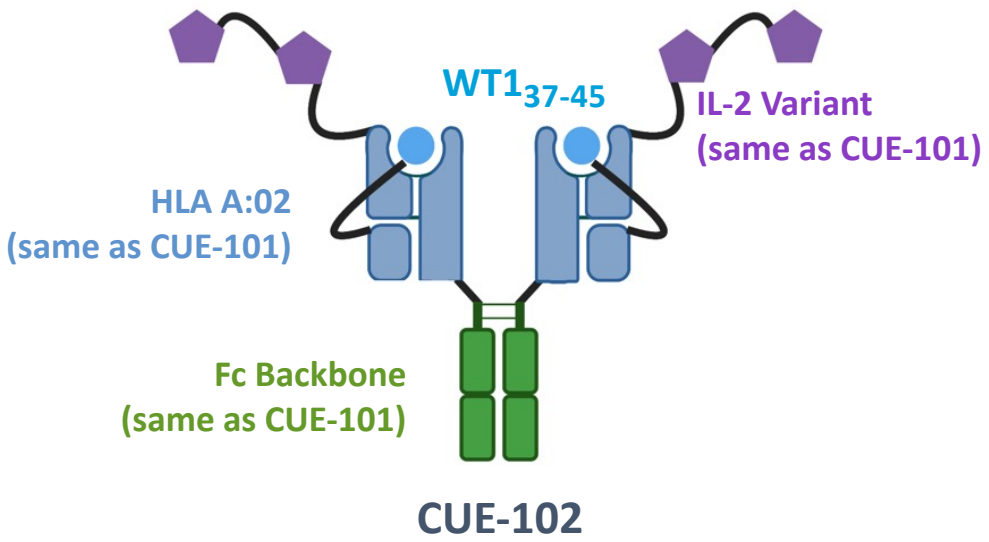
- ✓ **Tolerability at Efficacious doses**
- ✓ **Demonstration of single-agent anti-tumor efficacy**
  - *RECIST-based PR and DSD in 3L+ R/M HNSCC patients*
  - *mOS benefit emerging from survival follow-up*
- ✓ **Demonstrable enhancement of clinical efficacy in combination with CPI in 1L R/M HNSCC**
  - ***44% ORR** in combo w/pembro vs ~19% ORR pembro alone*
  - *Confirmed Complete Response*
  - *Objective responses observed in tumors with low PD-L1 expression*
    - ***50% ORR** in CPS 1-19 (compared to 14% with pembrolizumab monotherapy)*
    - *Expands patient reach*
  - *PFS and mOS maturing*
- ✓ **Fast Track Designation granted for both monotherapy and combination therapy (Oct. 2022)**

CUE BIOPHARMA

CUE-102 Wilms Tumor 1 (WT1): Broad Potential Opportunity in Multiple Solid and Heme Cancers

Molecular Design

(99% sequence identity to CUE-101)



CUE-102

- IND approval for CUE-102 harnessed the clinical de-risking observed with CUE-101, leading to potential advantages:
  - *Clinical development efficiencies (approval to start at a higher dose and minimize cohorts for dose escalation)*
  - *Regulatory advantages (FDA did not require additional IND tox)*
- CUE-102 targets a dominant T cell epitope from WT1
- WT1 is an attractive onco-fetal tumor antigen with significant expression in numerous solid and heme cancers
  - *Solid: CRC, Ovarian, Lung, Gastric, Pancreatic, Breast, GBM*
  - *Heme: AML/MDS, ALL, MM*

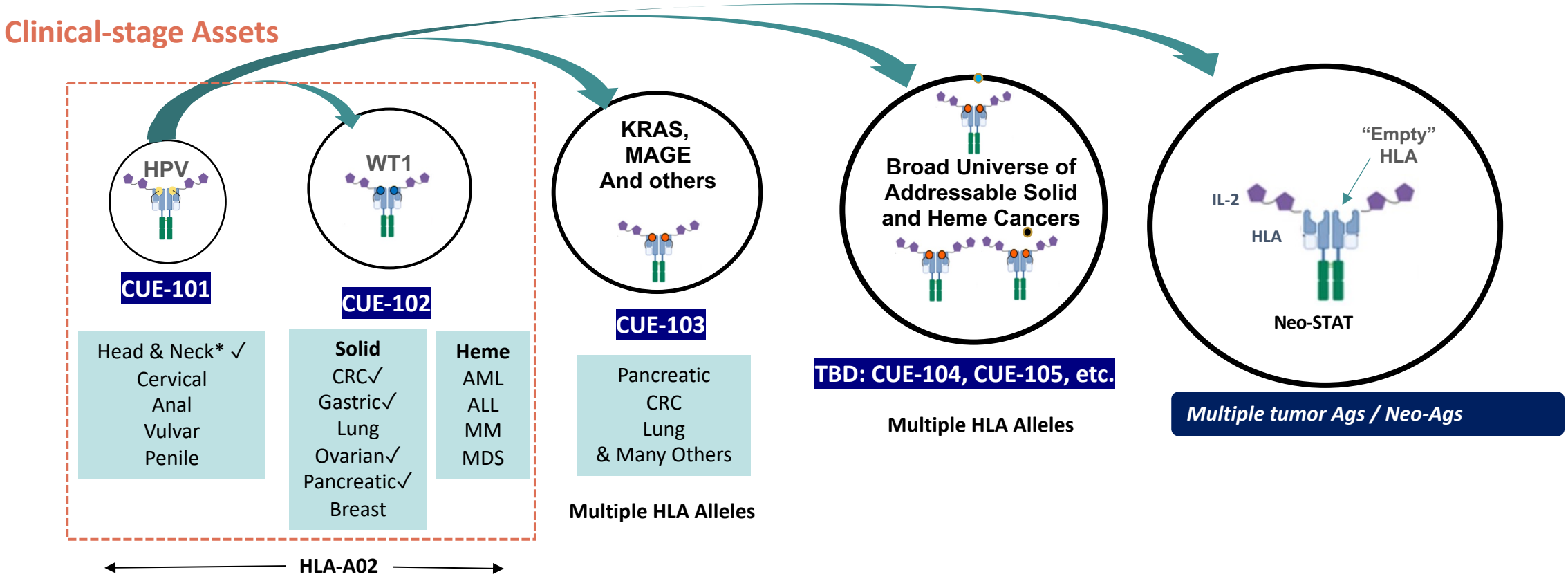
Phase 1 Monotherapy Trial Currently Enrolling (NCT05360680)

CUE-102: Evidence of Anti-tumor Activity Across Multiple Indications Observed in Patients Treated in Dose Escalation

- CUE-102 trial enrolling patients with advanced colon, pancreatic, gastric and ovarian cancer
- Patients have failed multiple lines of prior therapy, including checkpoint inhibitors
- CUE-102 has been well-tolerated to date with no DLTs observed
  - Presently enrolling patients at 8 mg/kg and expanding 2 and 4 mg/kg cohorts
- Evidence of activity in several patients includes:
  - Reduction of target lesions (>12 weeks and ongoing)
  - Durable stable disease
  - Reduction of tumor markers
- Investigator enthusiasm has driven abundant pre-screening/screening activity

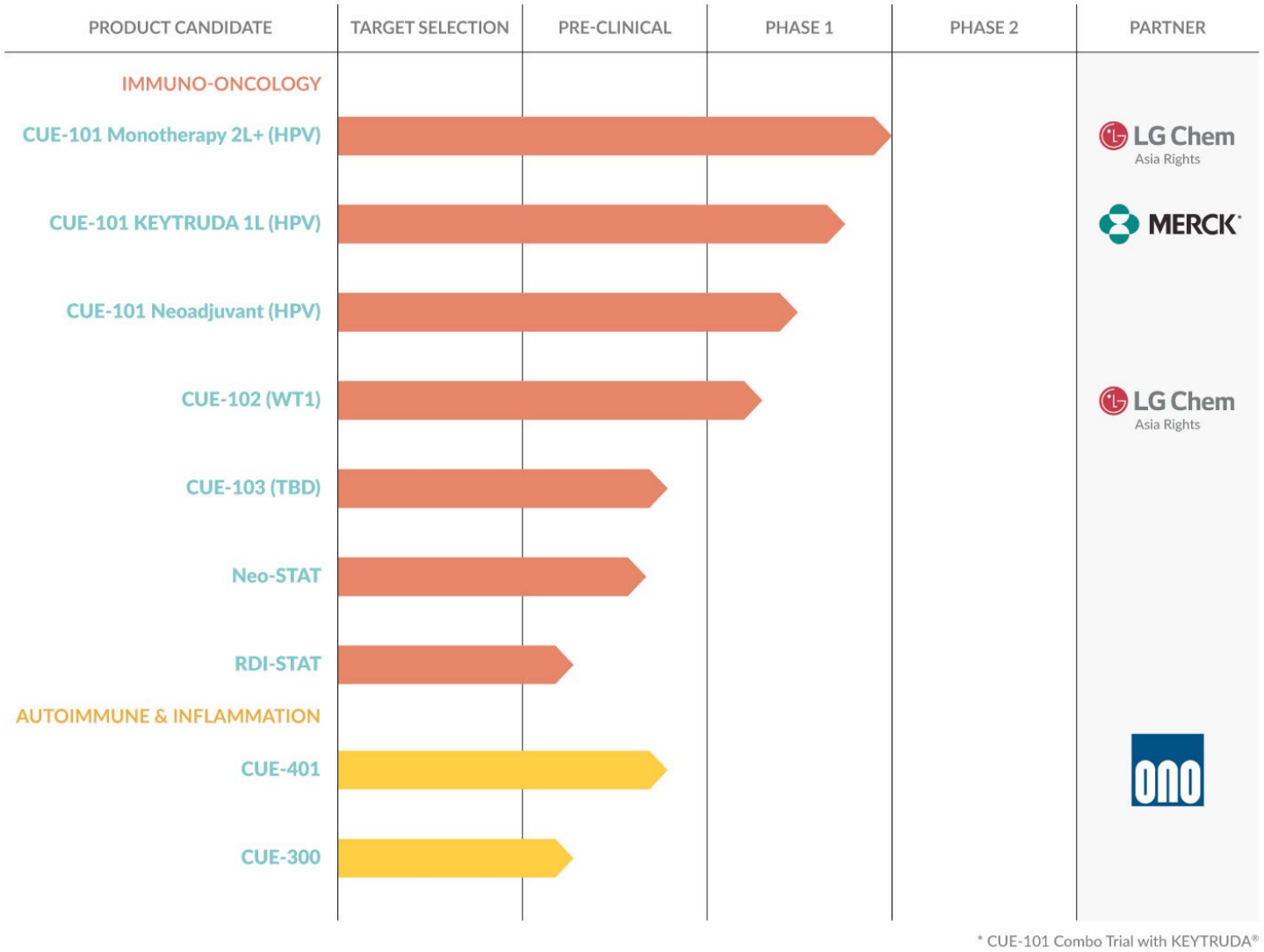
BROAD Opportunities for CUE-100 Series in Cancer Immunotherapy

Clinical PoC with CUE-101 Provides a Springboard for Platform Expansion into Broad Indications



Structural similarity creates potential regulatory and development efficiencies

Cue Biopharma Pipeline



* CUE-101 Combo Trial with KEYTRUDA®

Second Quarter and June 30, 2023 YTD Financial Results

Cue Biopharma, Inc.

Selected Consolidated Statement of Operations and Other Comprehensive Loss Data

(In thousands, except per share amounts)

	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
Collaboration revenue	$ 1,382	$ 26	$ 1,570	$ 1,026
Operating expenses:				
General and administrative	4,249	3,782	8,425	8,938
Research and development	10,650	9,592	20,041	19,675
Gain on right-of-use asset termination	-	(258)	-	(258)
Total operating expenses	14,899	13,116	28,466	28,355
Loss from operations	(13,517)	(13,090)	(26,896)	(27,329)
Other income (expense):				
Interest income	564	88	1,056	96
Interest expense	(232)	(206)	(454)	(230)
Total other income (expense)	332	(118)	602	(134)
Net loss	$ (13,185)	$ (13,208)	$ (26,294)	$ (27,463)
Unrealized gain from available-for-sale securities	34	-	91	-
Comprehensive loss	$ (13,151)	$ (13,208)	$ (26,203)	$ (27,463)
Net loss per common share – basic and diluted	$ (0.29)	$ (0.37)	$ (0.59)	$ (0.81)
Weighted average common shares outstanding – basic and diluted	44,798,760	35,357,343	44,725,875	34,005,410

Cue Biopharma, Inc.

Selected Consolidated Balance Sheet Data

(In thousands)

	June 30,	
	2023	2022
Cash and cash equivalents	$52,901	$66,126
Marketable securities	4,988	-
Total current assets	60,935	69,004
Working capital	44,628	60,681
Total assets	73,163	84,749
Total stockholders' equity	46,004	59,756

Thank You

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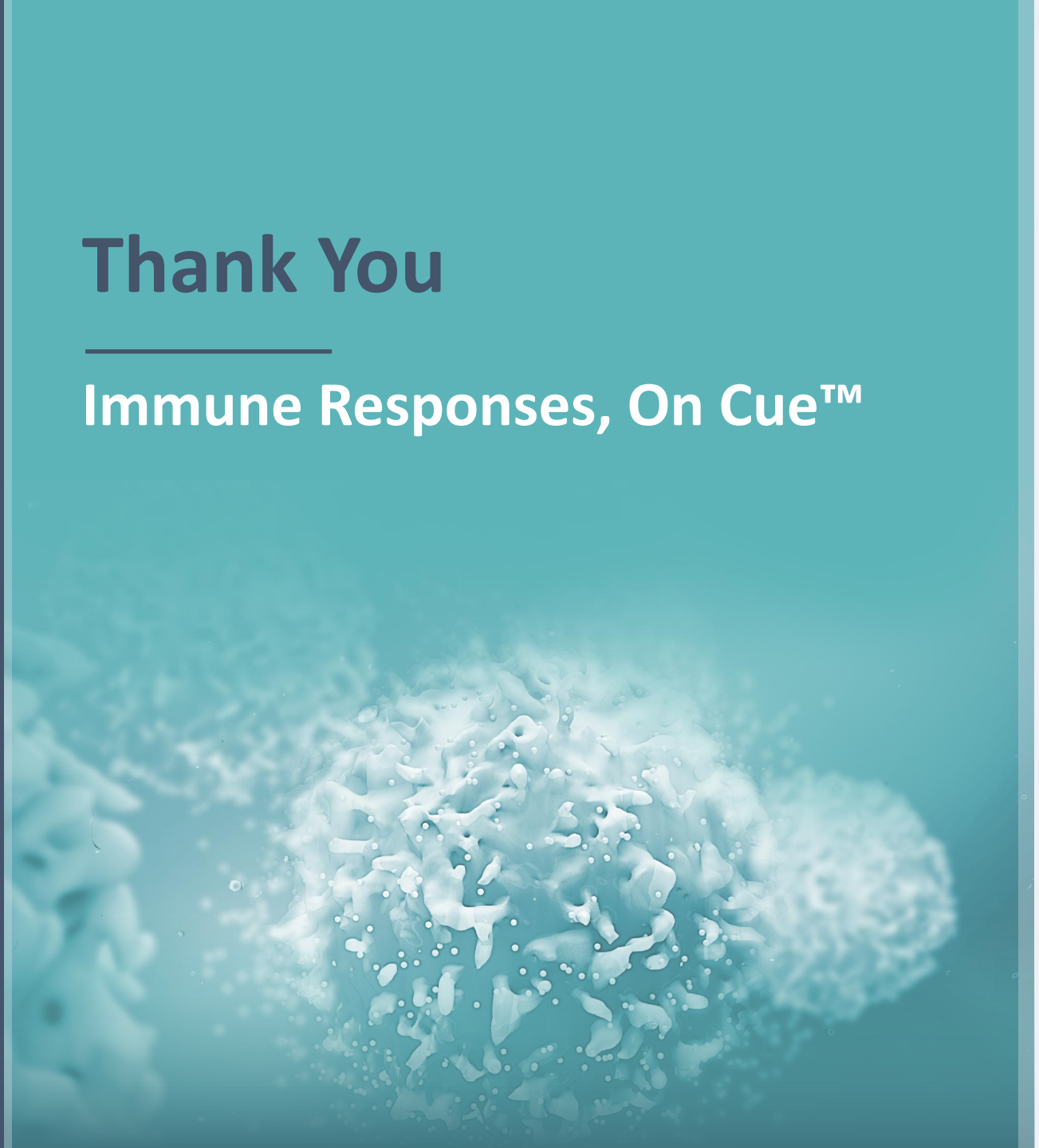

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