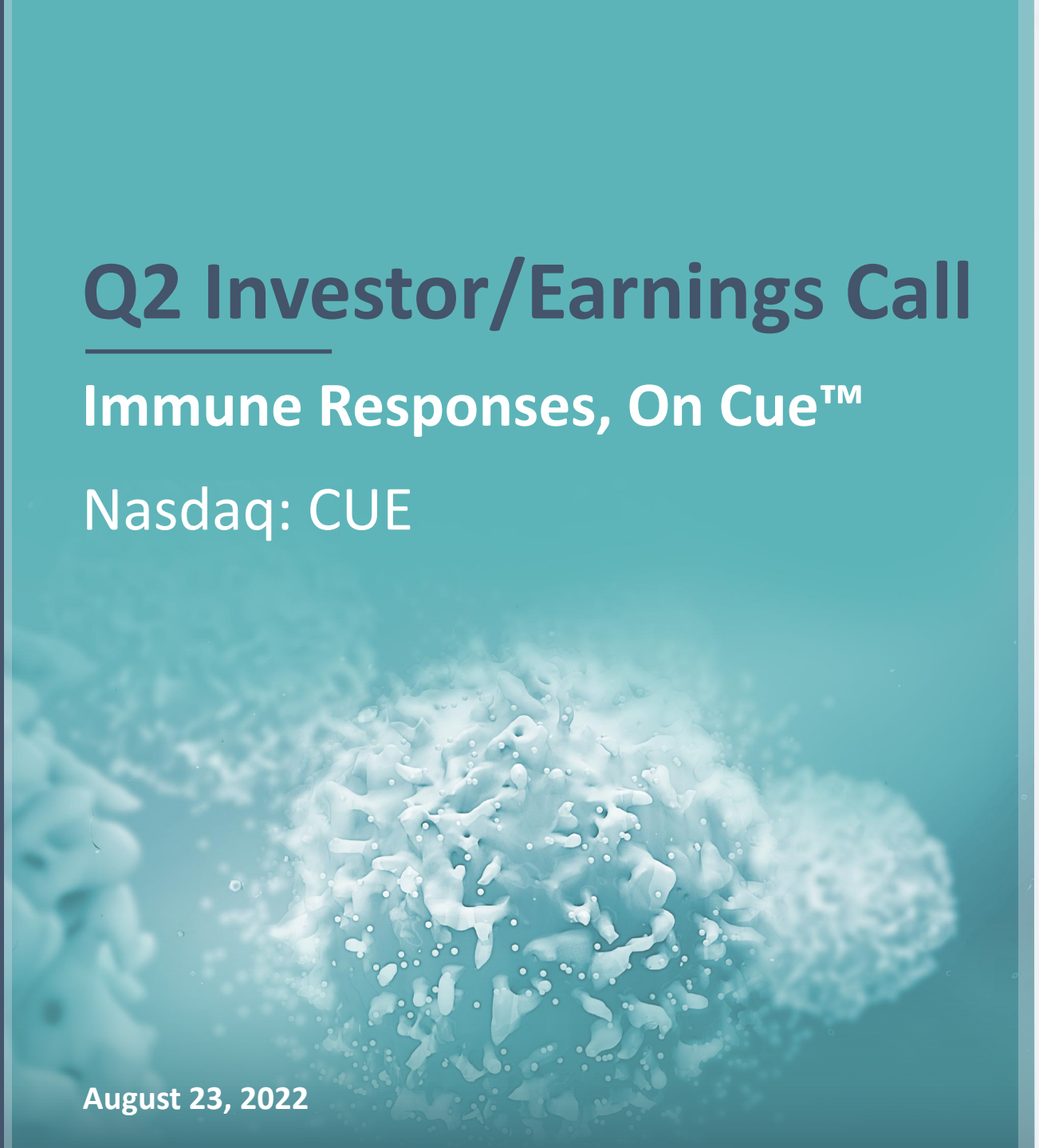
Q2 Investor/Earnings Call

Immune Responses, On Cue™

Nasdaq: CUE



August 23, 2022

CUE™
BIOPHARMA

Forward-Looking Statements Disclosure

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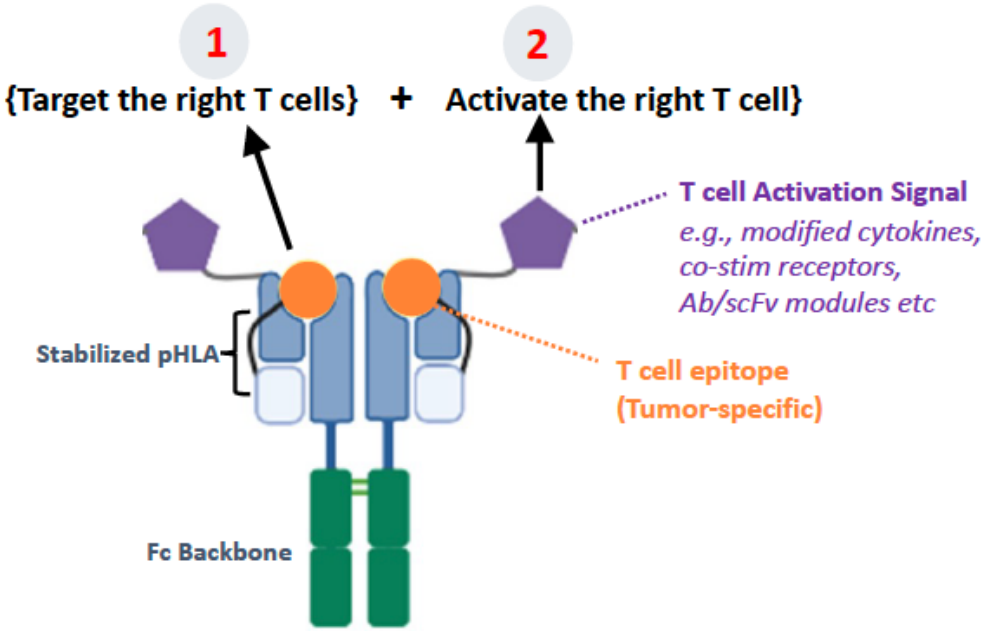
This presentation contains "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995 that are intended to be covered by the "safe harbor" created by those sections. Forward-looking statements, which are based on certain assumptions and describe our future 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

• **Introduction**	Dan Passeri, CEO
• **Immuno-STATS:** TCR-selective Engagers	Anish Suri, President and CSO
• **Clinical Update**	Dr. Ken Pienta, Acting CMO
– CUE-101: Representative of IL2 based CUE-100 series	Dr. Matteo Levisetti, SVP, Clinical Development
• **2Q-FY22 Financial Results**	Kerri-Ann Millar, CFO
• **Concluding Remarks**	Dan Passeri, CEO
• **Q&A**	All

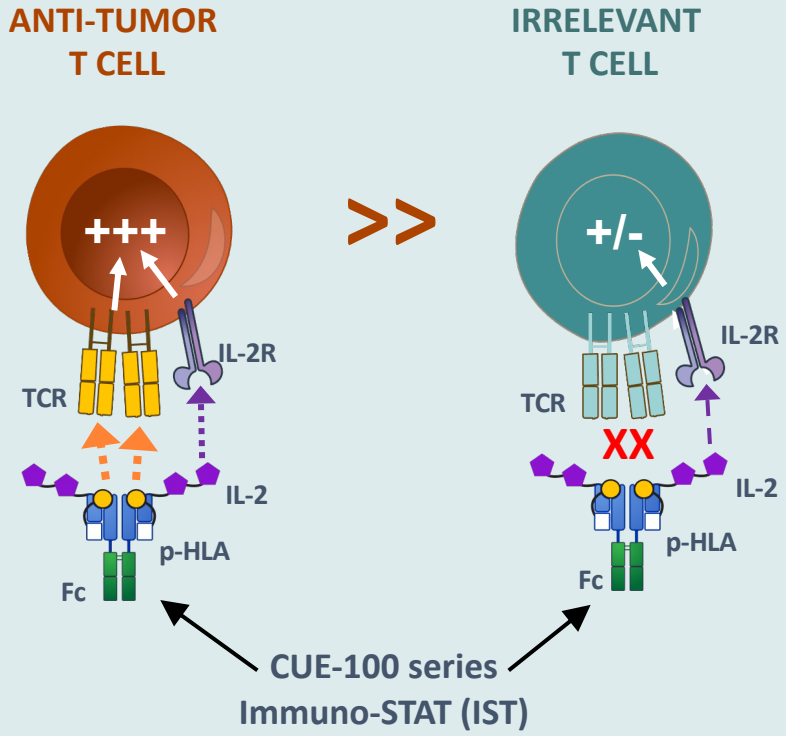
Immuno-STATs (ISTs): TCR-selective Engagers of Tumor-specific T cells

Immuno-STAT Protein Design



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

CUE-100 Series ISTs Enable a Therapeutic Index for IL-2



Key TAKEAWAYS

Immuno-STAT is an innovative biologics platform for selective delivery of activating signals to tumor-specific T cells

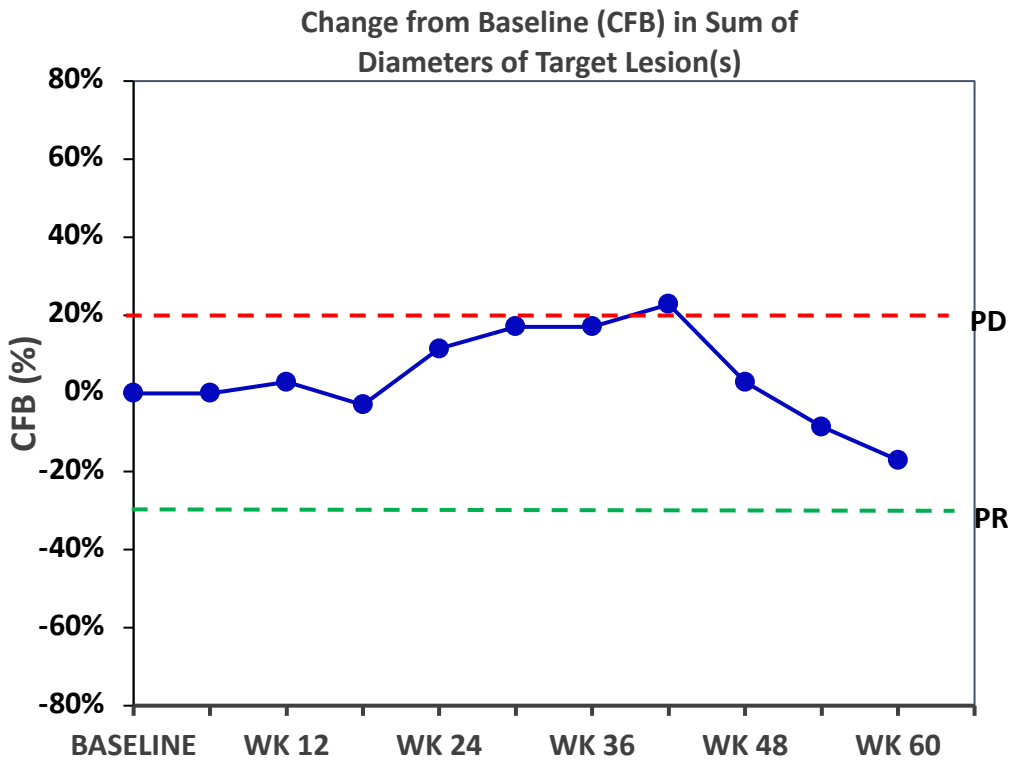
- **Initial focus on selectively delivering IL-2 to tumor-specific T cells (CUE-100 series)**
- **First clinical experience with CUE-101 in late-stage cancer patients reveals several positive attributes for the platform:**
  - Well tolerated (no systemic immune activation)
  - Exhibits drug-like properties: dose-dependent PK/PD; ease of manufacturability and favorable COGs for commercial success
  - Efficacy as a mono-Tx (RECIST-based PR and durable SDs)
  - Evidence of T cell infiltration and tumor necrosis in patient tumor biopsies
  - Patients deriving clinical benefit after staying on drug for long periods, which supports prior observations made by others regarding longer kinetics for evidence of durable response as a measure of successful immunotherapy
  - Emerging clinical data in combo with CPI supports potential for significant expansion of patient benefit
- **Clinical de-risking with CUE-101 has essentially de-risked the entire platform (CUE-100 series)**
  - Recent IND approval of the 2nd clinical candidate, CUE-102, underscores the de-risking proposition mentioned above
- **Modularity of our platform coupled with the clinical de-risking positions us to generate vast numbers of therapeutic molecules that are selective for targeting anti-tumor T cells across many cancers**

CUE BIOPHARMA

Ongoing SD and Tumor Reduction in Patient Treated with CUE-101 (2 mg/kg)

Case History

- Prior therapy:
  - 1L cisplatin, 5-FU, pembrolizumab
  - 2L Cetuximab/RT
  - 3L Pembrolizumab
- Progressive disease prior to enrollment
- Treated in metastatic 4L setting with 2.0 mg/kg CUE-101 Q3W
- Patient has completed 22 cycles and continues treatment



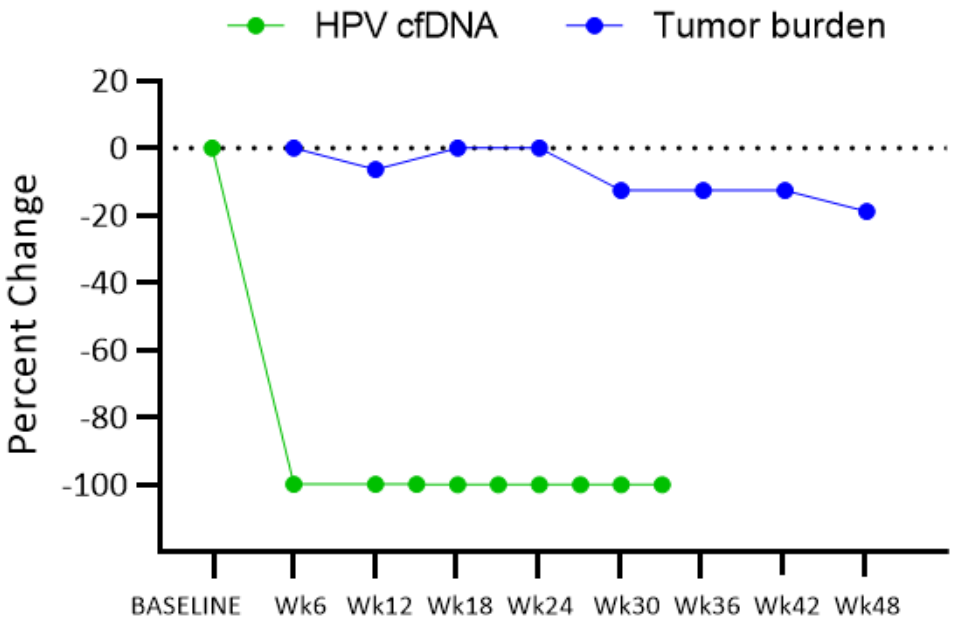
CUE-101 Monotherapy: 2 mg/kg

- Durable SD > 14 months
- Tumor reduction observed ~ 1 year after starting treatment

Ongoing Durable SD, Tumor Reduction and Undetectable cf HPV DNA in Patient Treated with CUE-101 (4 mg/kg)

Case History

- Prior relapse therapy:
  - 1L pembrolizumab
  - 2L carboplatin/taxol
- Progressive disease prior to enrollment
- Treated in metastatic 3L setting with 4.0 mg/kg CUE-101 Q3W
- Patient has completed 18 cycles of CUE-101, continues on treatment



CUE-101 Monotherapy: 4 mg/kg

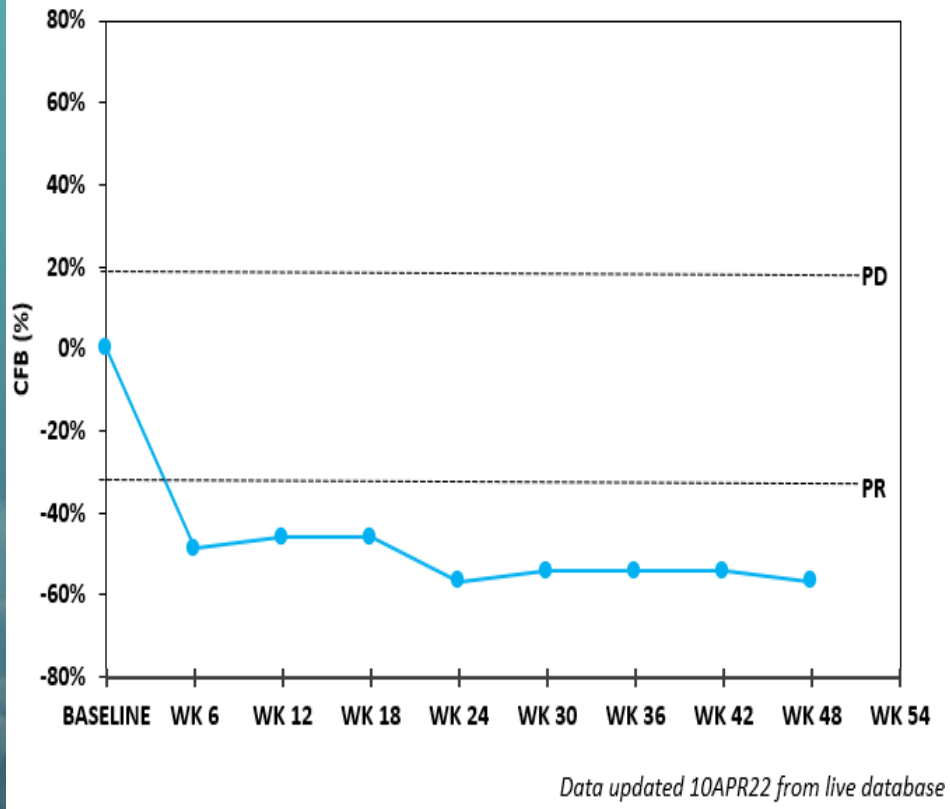
- Durable SD approaching 1 year

CUE-101: Confirmed PR in Monotherapy with Supporting PD Metrics

Case History

- Prior therapy:
  - 1L cetuximab
  - 2L pembrolizumab
- Progressive disease prior to enrollment
- Treated in metastatic 3L setting with 4.0 mg/kg CUE-101 Q3W
- Patient received 15 cycles of treatment
- Patient alive in survival follow-up (OS 16 months)

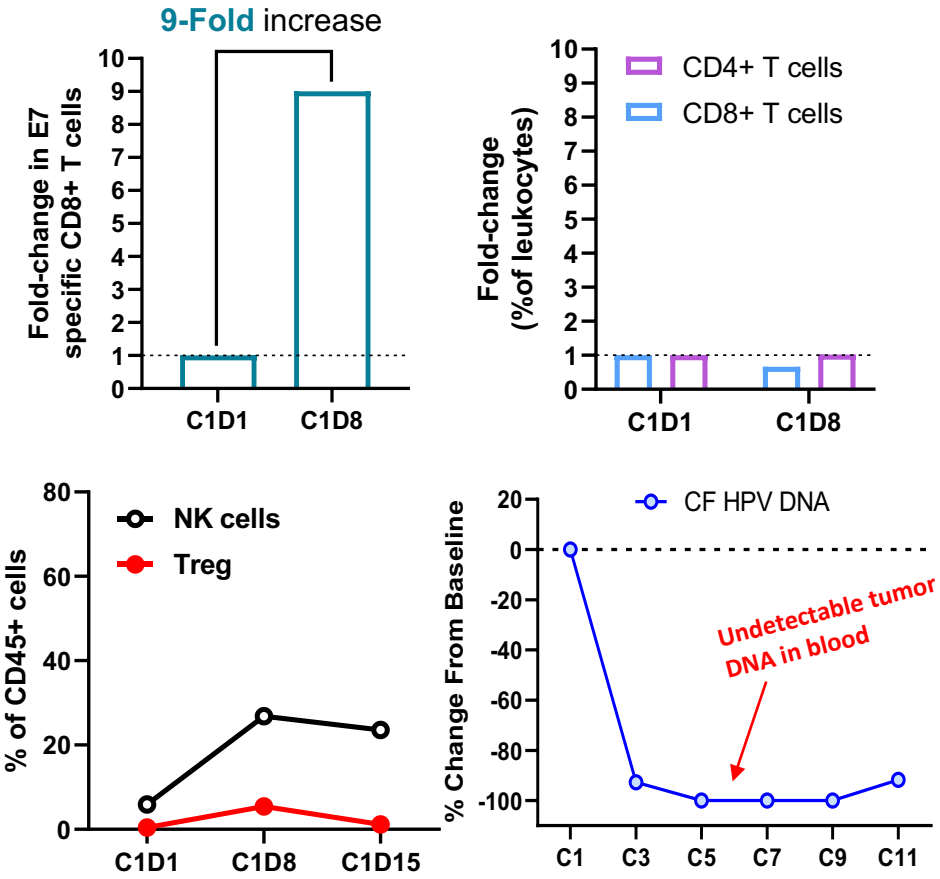
Change from Baseline (CFB) in Sum of Diameters of Target Lesion(s)



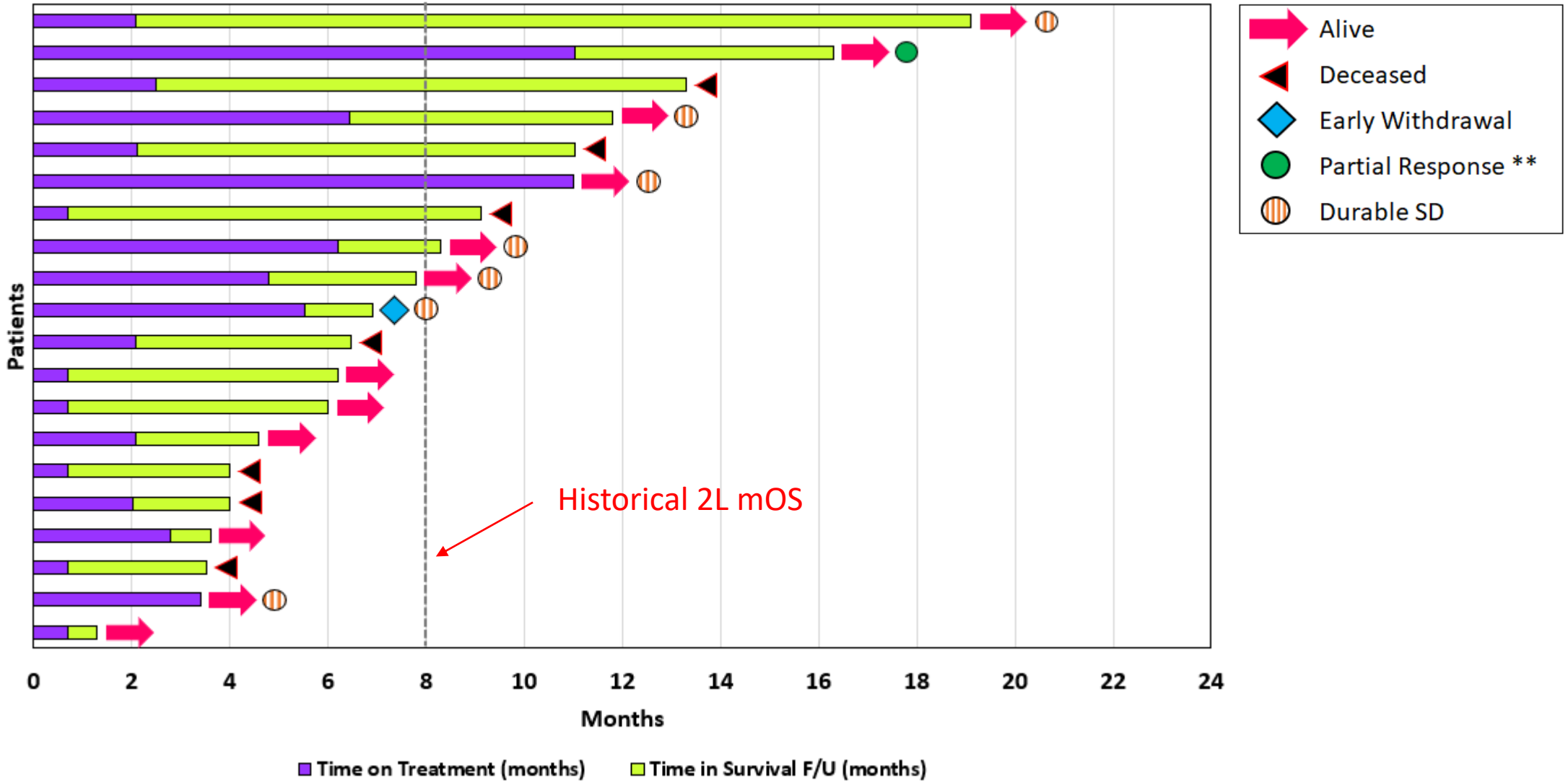
Data updated 10APR22 from live database

- Confirmed PR
- Duration of Response 42 weeks

Increase in HPV E7-specific CD8+ T cells with minimal change in total T cells

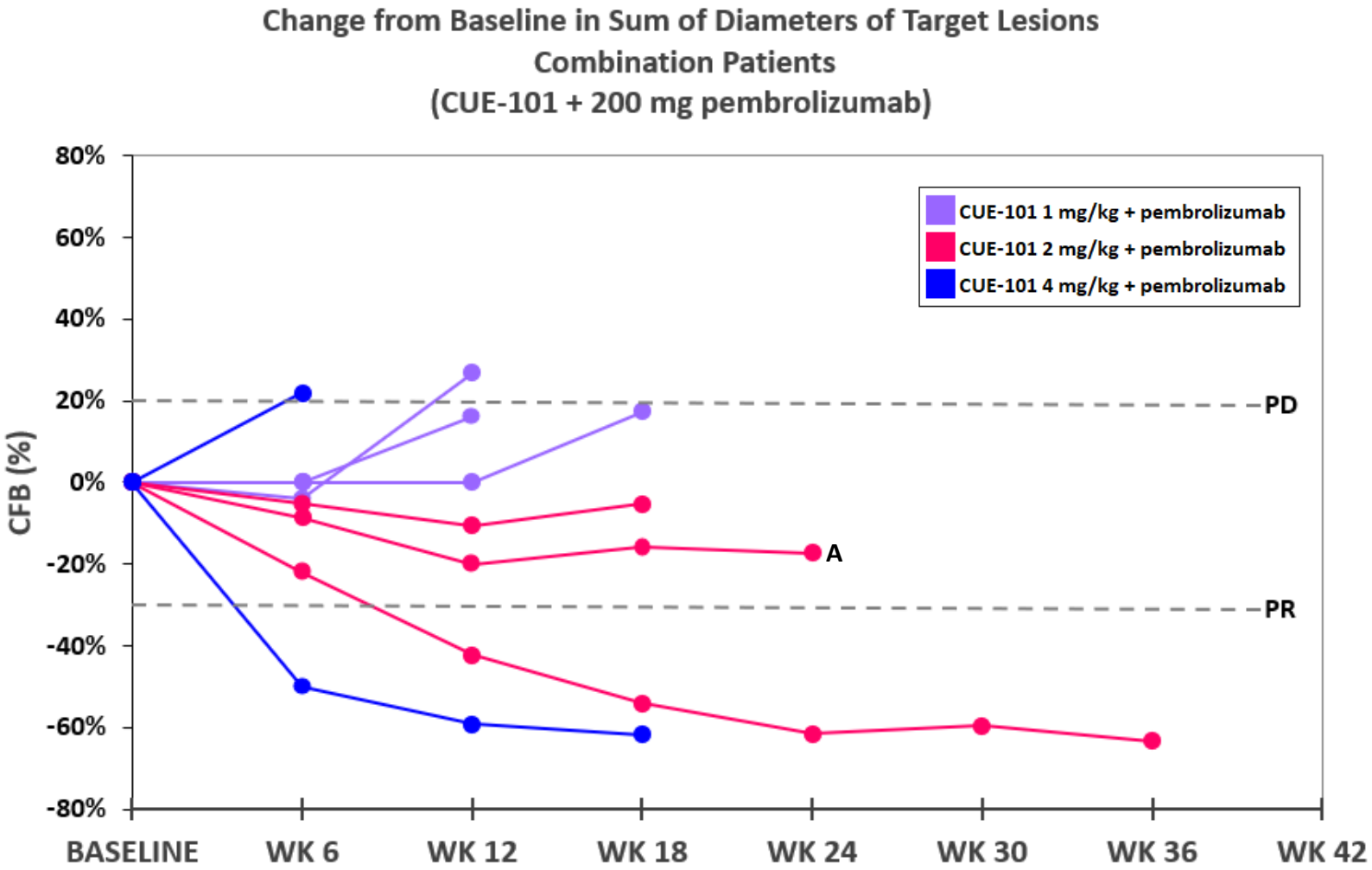


Positive Trend in Overall Survival Observed at RP2D (n=20)



*** Response symbols indicate patient experienced PR or Durable SD during the study. Onset and duration of the response is not indicated on the plot. Data Extract 26-July-2022*

Tumor Responses Observed in Dose-Escalation (Part C)



1 mg/kg CUE-101 + pembrolizumab (N=3)

- Durable SD: 1 patient (off treatment WK 18 withdrew consent)
- PD: 2 patients (off treatment WK 12 PD)

2 mg/kg CUE-101 + pembrolizumab (N=3)

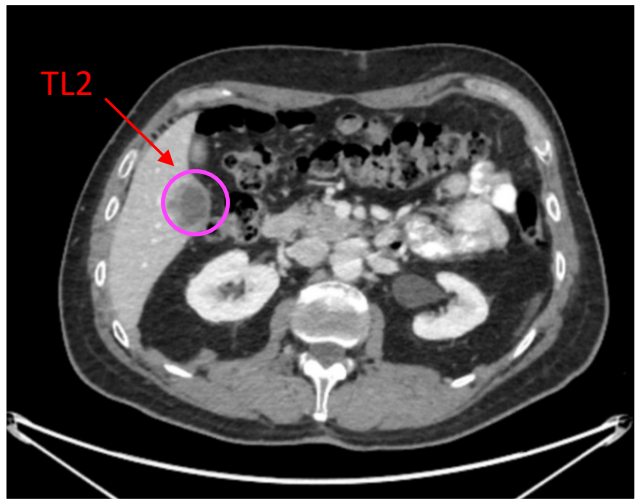
- Confirmed PR: 1 patient (ongoing at WK 36)
- Durable SD: 1 patient (off treatment WK 18 AE)
- PD[A]: 1 patient (RECIST PD WK 6 (on iRECIST through WK 24)

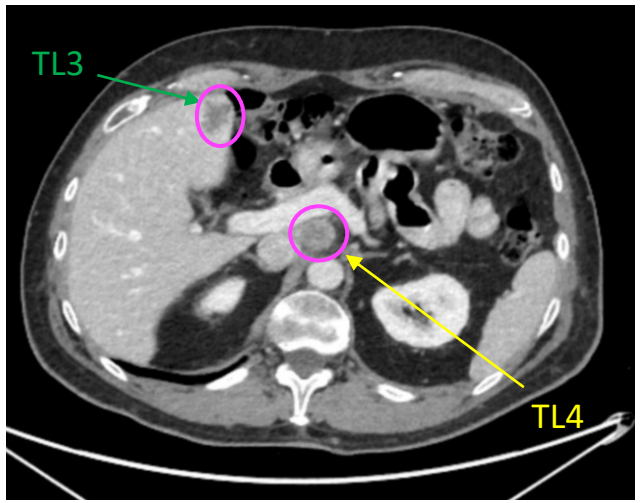
4 mg/kg CUE-101 + pembrolizumab (RP2D) N=2

- Confirmed PR: 1 patient (ongoing at WK 18)
- PD: 1 patient (off treatment WK 6 PD)

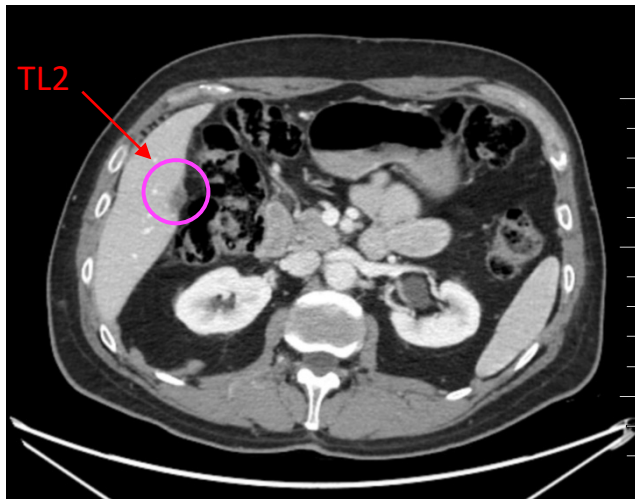
CUE-101: Confirmed PR in Combo Cohort 2 (2 mg/kg + pembrolizumab)

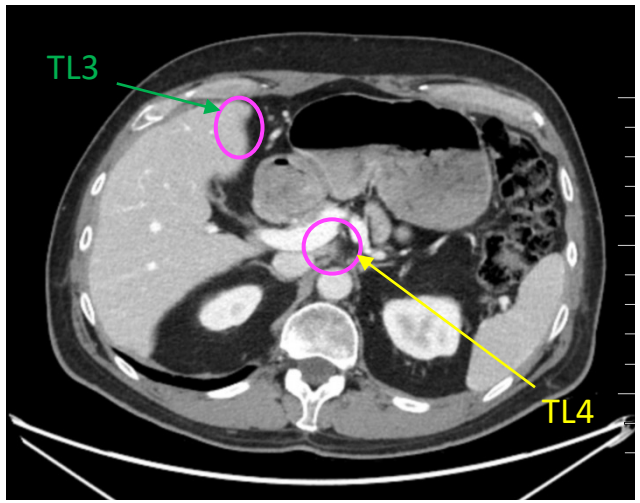
Baseline



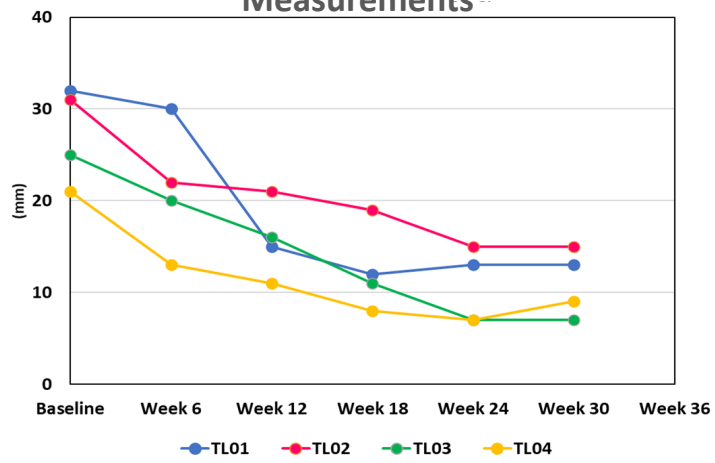


Week 18

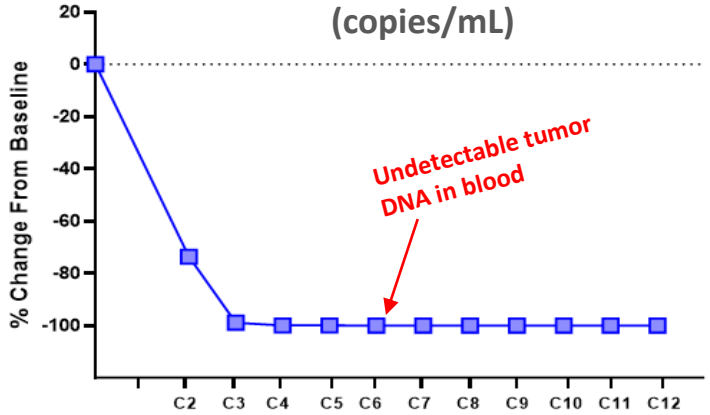




Longitudinal Target Lesion (TL) Measurements

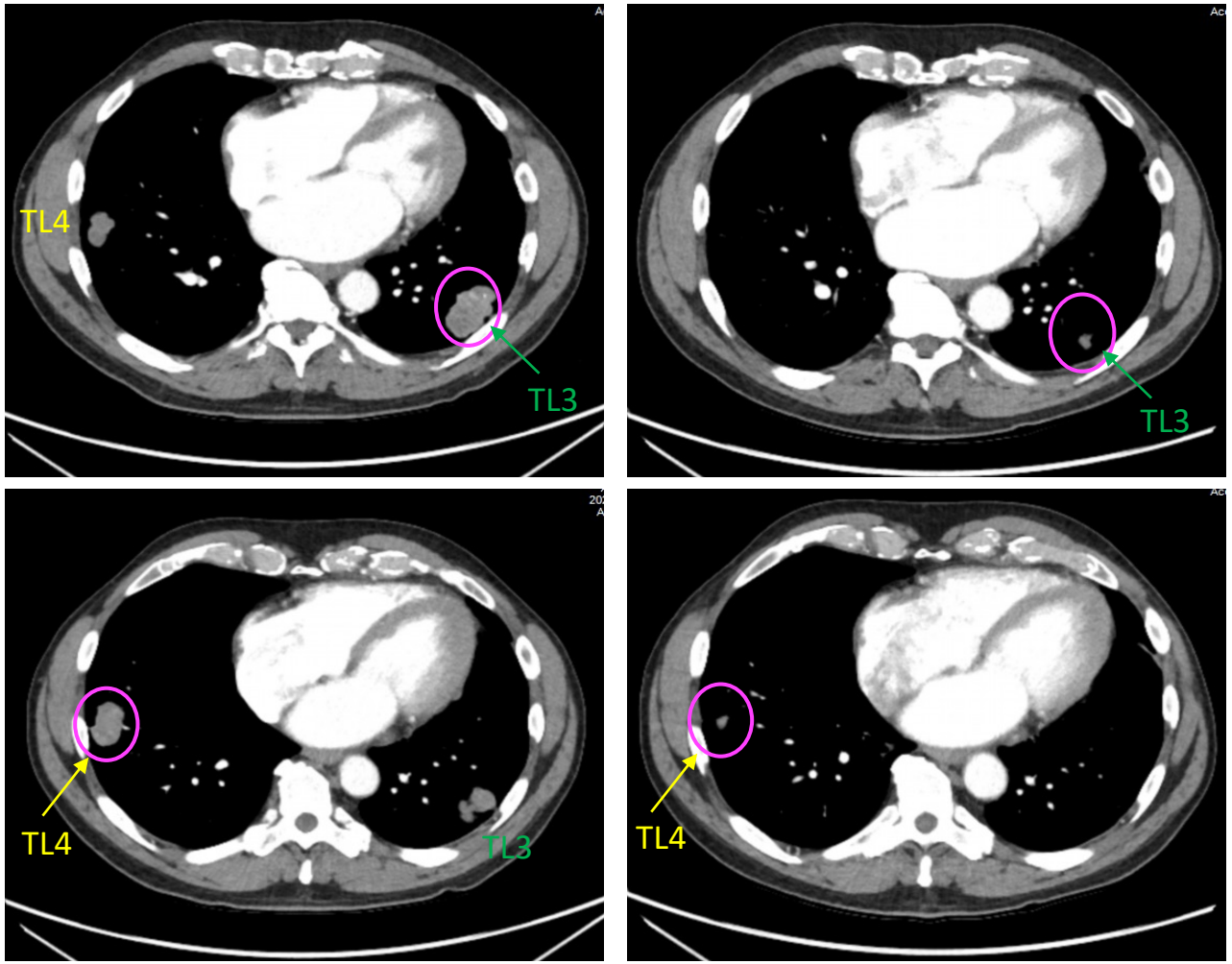


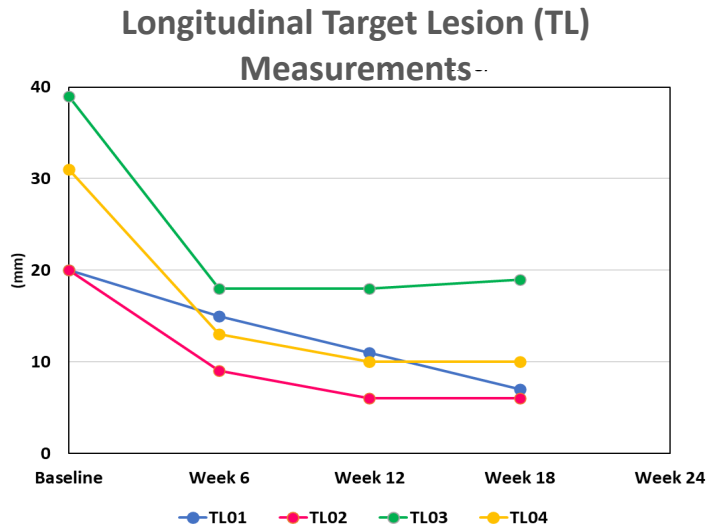
Change from Baseline in HPV cfDNA (copies/mL)

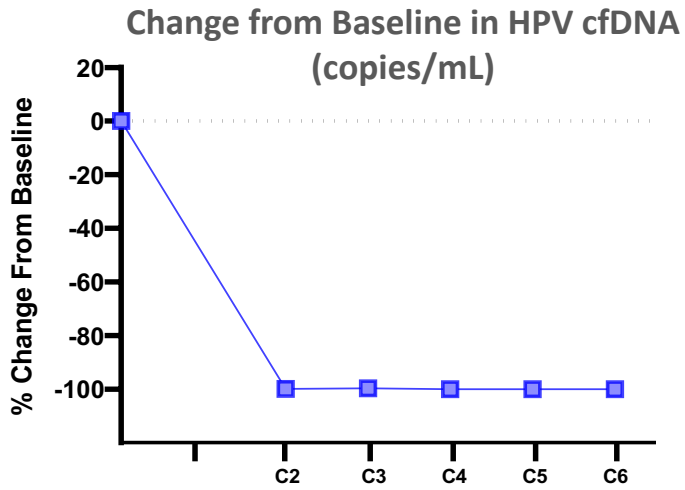


CUE-101: Confirmed PR in Combo Cohort 3 (4 mg/kg + pembrolizumab)

Baseline **Week 12**

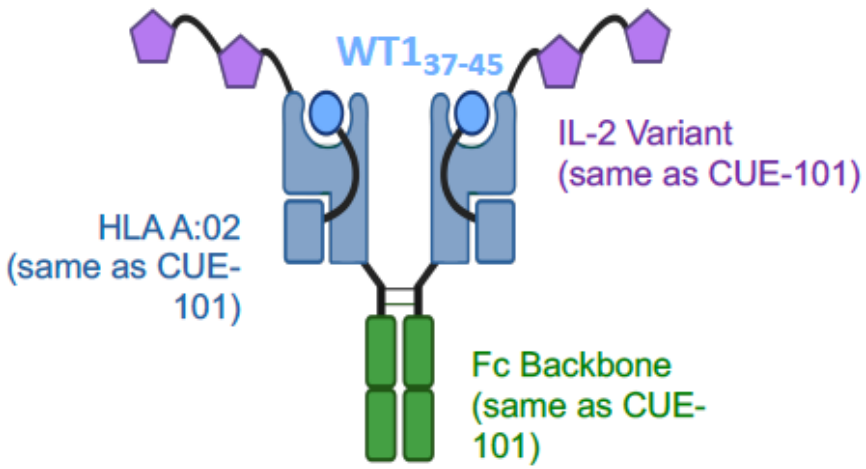






CUE-102 (WT1): Significant Opportunity in Multiple Solid and Heme Cancers

Molecular Design
(99% sequence identity to CUE-101)

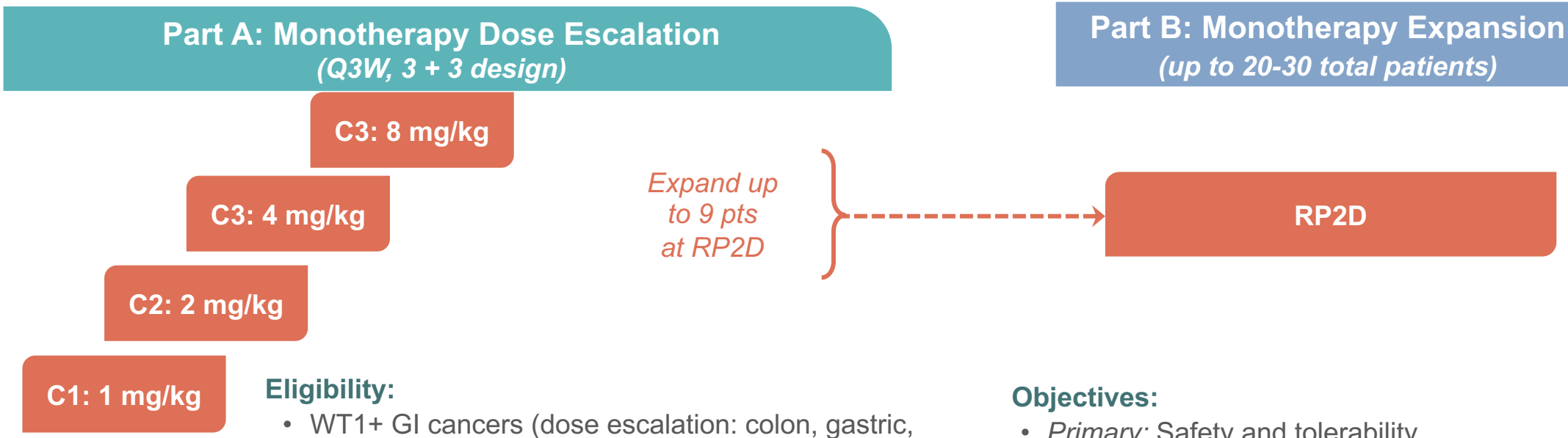


CUE-102

- 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, ALL, MM, MDS*
- CUE-102 targets a dominant T cell epitope from WT1
- Clinical de-risking with CUE-101 paved a seamless and successful IND approval for CUE-102 (Apr 2022)
  - *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)*
- **Clinical trial has been initiated**

CUE-102: Monotherapy First-in-Human Phase 1 Trial

CUE-102-01 is a Phase 1, FIH study to characterize the safety, tolerability, PK, PD, immunogenicity, and preliminary antitumor activity of CUE-102 in subjects who are HLA A*0201-positive, have WT1-positive, recurrent/metastatic cancers, and have failed conventional therapies.



Eligibility:

- WT1+ GI cancers (dose escalation: colon, gastric, pancreatic; colon only for expansion)
- Measurable dz by RECIST 1.1
- HLA-A*0201 genotype
- Life expectancy ≥ 12 weeks

Objectives:

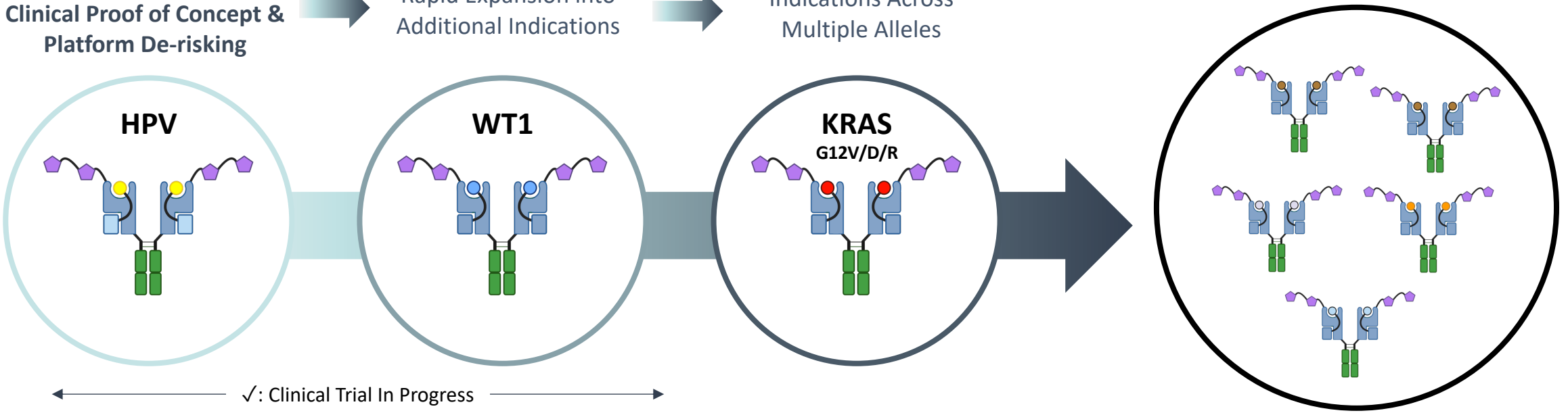
- *Primary:* Safety and tolerability
- *Secondary:* PK/PD, Anti-tumor activity (RECIST 1.1)

Biomarkers: (Pre/Post CUE-101 dose)

- WT1-specific CD8+ T cell counts and functionality
- Immunophenotyping, cytokine release, and TCR sequencing

BROAD Opportunities for CUE-100 Series in Cancer Immunotherapy

CUE-101 in r/m HNSCC: Clinical Proof of Concept & Platform De-risking → Rapid Expansion into Additional Indications → Indications Across Multiple Alleles



✓: Clinical Trial In Progress

CUE-101	CUE-102		CUE-103	CUE-104, CUE-105, CUE-106 …
Head & Neck ✓ Cervical Anal Vulvar Penile	**Solid** CRC✓ Gastric✓ Lung Ovarian✓ Pancreatic✓ Breast	**Heme** AML ALL MM MDS	Pancreatic CRC Lung	Broad Indications Across Multiple Alleles to Address the Spectrum of Unmet Need

Cue Biopharma, Inc: Q2 2022 Financial Highlights

Cue Biopharma, Inc. Selected Consolidated Statement of Operations Data (in thousands, except share data)				
	Three Months Ended June 30,			
	2022		2021	
Collaboration revenue	$	26	$	2,739
Operating expenses:				
General and administrative		3,782		4,280
Research and development		9,592		8,762
Total operating expenses		13,374		13,042
Loss from operations		(13,348)		(10,303)
Other income:				
Total other income, net		140		24
Net Loss	$	(13,208)	$	(10,279)
Net loss per common share – basic and diluted	$	(0.37)	$	(0.33)
Weighted average common shares outstanding – basic and diluted		35,357,343		31,233,794

Cue Biopharma, Inc. Selected Consolidated Balance Sheet Data (in thousands)	June 30, 2022	December 31, 2021
Cash and cash equivalents	66,126	64,371
Total current assets	69,004	68,469
Working Capital	60,681	55,681
Total assets	84,749	83,401
Total Stockholders' equity	59,756	65,492

Strategic Positioning and Core Strategic Metrics Going Forward

1) CUE-101 (A02) has clearly demonstrated tolerability and single agent activity

- ✓ dose range from 0.06mg/kg – 8 mg/kg with no MTD
- ✓ clear evidence of PD effect on tumor-specific immune cells (T cells/ NK cells)
- ✓ clinical activity demonstrated from 1mg/kg – 4mg/kg (4mg/kg RP2D)
- ✓ clear evidence of anti-tumor activity (1PR/7SD/1 potential pathologic CR)
- ✓ appears to provide survival benefit (TBD)

2) CUE-101 combination with pembrolizumab shows encouraging early signs of activity

3) CUE-102 IND accepted at 1mg/kg starting dose (major achievement underscoring quality of supporting data)

- evidence of clinical activity is a catalyst for validation
- significant market potential in multiple tumor types

4) Neo-STAT represents next-generation, providing scale and flexibility (tumor heterogeneity)

- attachment of peptide in HLA pocket (defined SOP)
- preclinical PoC

CUE BIOPHARMA

Upcoming Key Milestones

- In CUE-101 Monotherapy (mOS data EOY 2022- registration trial anticipated mid 2023)
- CUE-101 + Pembrolizumab Combination (preliminary ORR 2Q 2023)
- CUE-102 Monotherapy (data from dose escalation by mid 2023-significant market opportunities)
- We believe, as substantiated by multiple recent BD discussions, that maturing clinical datasets may catalyze significant BD/Corp Dev opportunities for pipeline expansion

Thank You

Rationally Engineered Biologics to Restore Immune Balance by Harnessing “Nature’s Cues” for Selective and Specific Immune Modulation

CUE™
BIOPHARMA