Q1-FY 2021 Investor Update Call

Immune Responses, On Cue™

Nasdaq: CUE | May 17, 2021

Forward-Looking Statements Disclaimer

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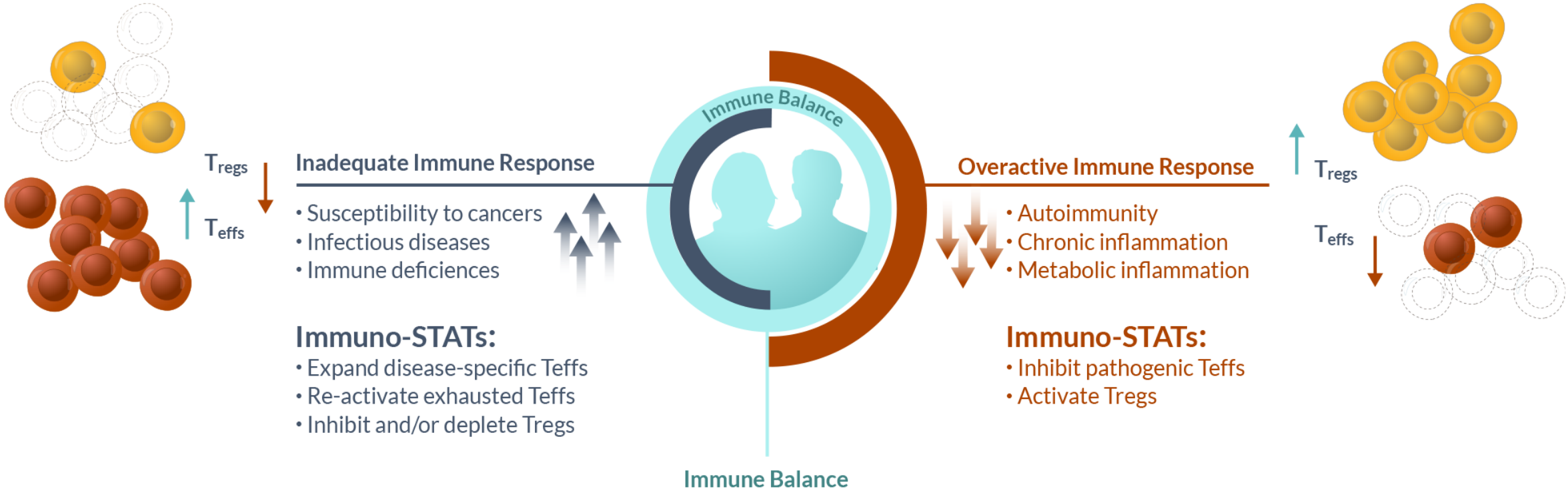
Agenda

• **Introduction and 1Q-FY 21 Highlights**	Dan Passeri, CEO
• **Pipeline and Platform Progress**	Dr. Anish Suri, President and CSO
• **CUE-101 Clinical Update**	Dr. Ken Pienta, Acting CMO Dr. Matteo Levisetti, SVP, Clinical Development
• **1Q-FY 21 Financial Results & Guidance**	Kerri-Ann Millar, CFO
• **Concluding Remarks**	Dan Passeri, CEO
• **Q&A**	All

Rationally Engineered Biologics to Restore Immune Balance by Harnessing Nature's "Cues" for Selective and Specific Immune Modulation

Restoring Immune Balance



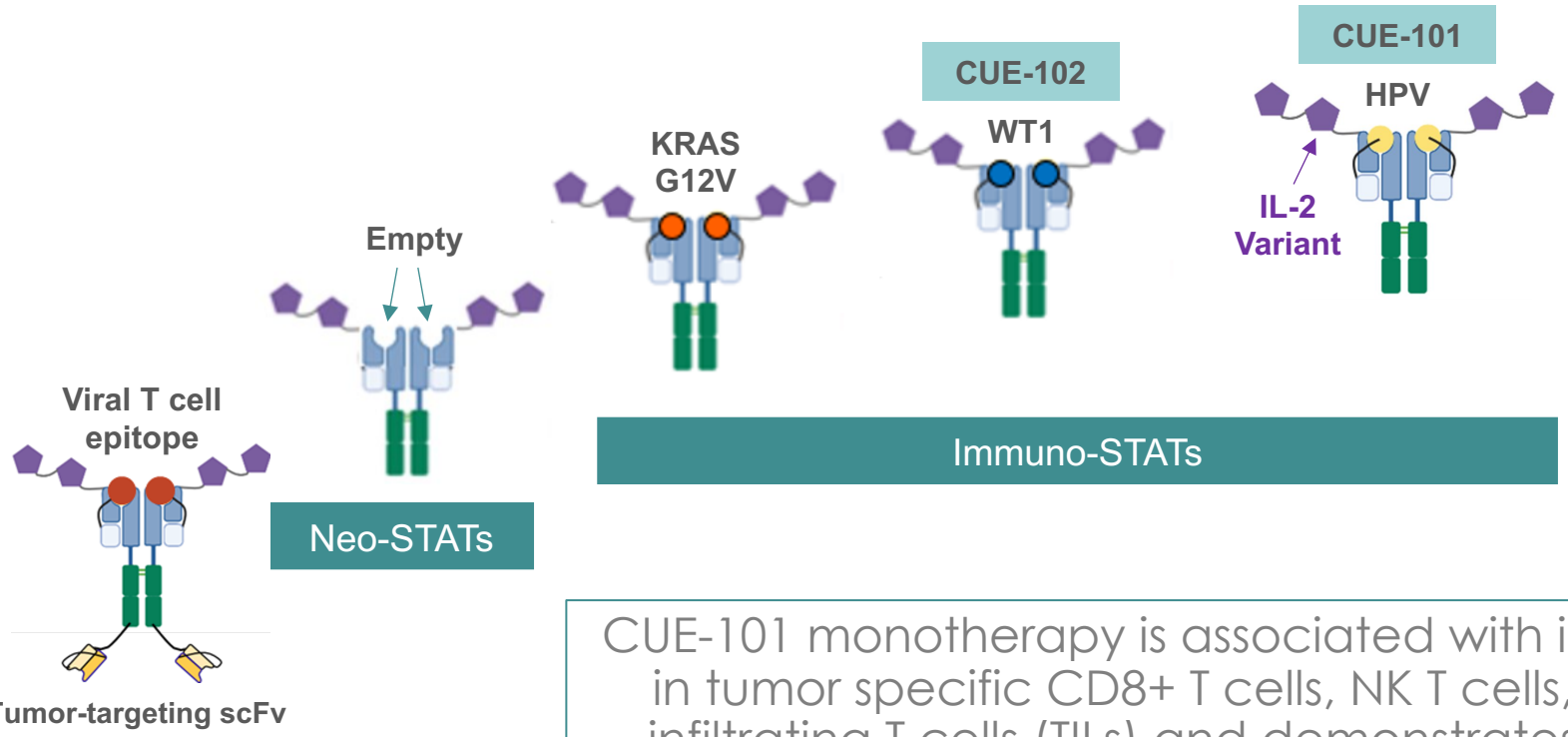
Restoration of immune balance is a key pillar of human health

KEY: T_{effs}, effector T cells; T_{regs}, regulatory T cells

CUE-101: Foundational to the CUE-100 Series and Derivatives

PROTEIN DESIGN	TARGET SELECTION	PRE-CLINICAL IND-ENABLING	PHASE 1 (A)/(B)	PHASE II

Immuno-oncology Pipeline



LG Chem

Asia Rights:
CUE-101
CUE-102
CUE-103 (TBD)

CUE-101 monotherapy is associated with increases in tumor specific CD8+ T cells, NK T cells, tumor infiltrating T cells (TILs) and demonstrates tumor regression (cPR).

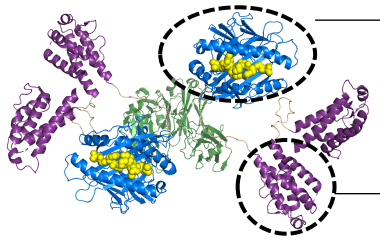
IL-2-based CUE-100 Series

CUE BIOPHARMA

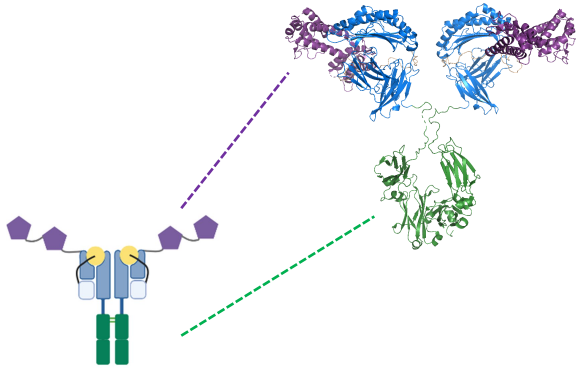
IL-2-based CUE-100 Series: CUE-101 Clinical Data Supports Broad Utility of CUE-100 Series Immuno-STATs in Oncology

CUE-100 Series

Top View



Side View



Tumor-Peptide Loaded HLA

"Signal 1" TCR engagement of Tumor-specific T cells

Engineered IL-2

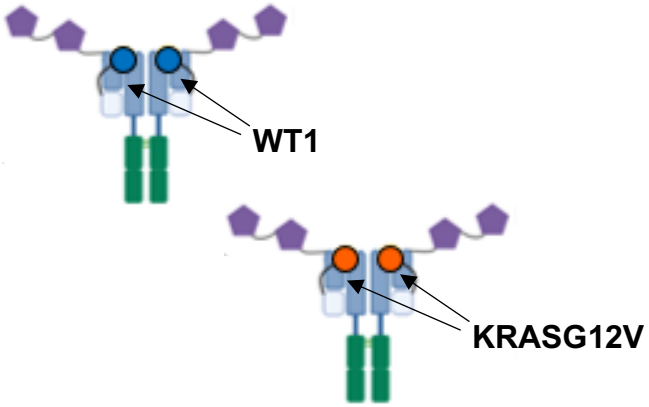
"Signal 2" rationally engineered IL-2:

- ***Abrogate binding to IL-2Rα: Minimize Treg activation and improves safety***
- ***Attenuate binding to IL-2Rβ: Allows for selective activation of tumor-specific T cells***

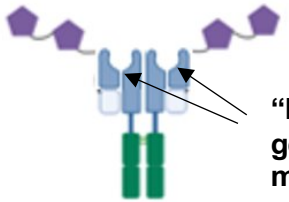
CUE-100 series is designed for biased targeting of IL-2 to tumor-specific T cells

CUE-101 Experience Enables Broad Opportunities in IO and AI

Immuno-STAT Pipeline



Neo-STAT Pipeline
(addresses tumor heterogeneity)



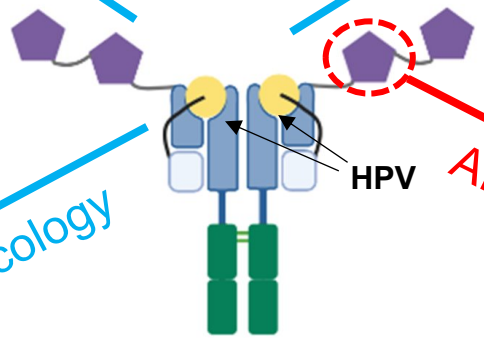
"Empty" HLA for rapid generation of therapeutic molecules that can accommodate multiple tumor epitopes

Immuno-oncology

Immuno-oncology

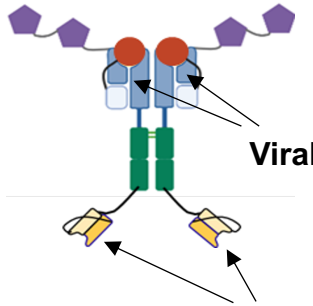
Immuno-oncology

AI & Inflammation

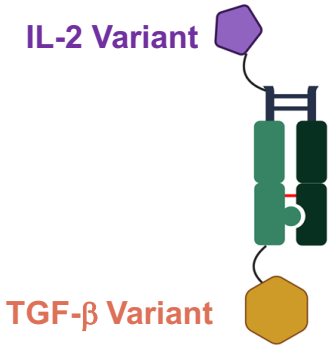


CUE-101

Bi-specific RDI-STATs Pipeline
(addresses tumor-escape mechanisms)



CUE-401: iTreg Inducer



Approaches to Modulate Autoimmunity

T Cell Mediated Autoimmune Diseases

MERCK

Antigen-Specific Approach

AIM: Deploy class I/II Immuno-STATs to modulate autoreactive T cells and/or generate antigen-specific inhibitory Tregs

- Focus on diseases with restricted auto-antigens
- Focus on earlier stages of breakdown of tolerance prior to antigen/epitope spreading

Pathway-Specific Approach

AIM: Engineered key signals to restore immune balance through generation of polyclonal induced Tregs (iTregs)

- Focus on IL-2 and TGF-β for iTreg induction and expansion
- Focus on indications and chronic disease stages with diverse auto-antigens

Cue Biopharma is applying **protein engineering** and **mechanistic biology** to develop drug candidates applicable to both approaches

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CUE-101: Phase 1 Clinical Development Network

Cue Biopharma has engaged a network of nationally recognized clinical investigators and 14 Phase 1 sites are now open

- **Emory Winship Cancer Institute** | Nabil Saba
- **Karmanos Cancer Institute** | Elizabeth Heath and Ammar Sukari
- **MD Anderson Cancer Center** | Bonnie Glisson
- **Memorial Sloan Kettering Cancer Center** | Lara Dunn
- **MGH/Harvard and Dana Farber Cancer Institute** | Sara Pai and Lori Wirth
- **Moffitt Cancer Center** | Christine Chung
- **Sidney Kimmel Comprehensive Cancer Center-Johns Hopkins** | Tanguy Seiwert
- **Stanford Cancer Center** | A. Dimitrios Colevas
- **University of Arizona Center** | Julie Bauman
- **University of Michigan Rogel Cancer Center** | Frank Worden
- **University of Washington Fred Hutch Cancer Center** | Cristina Rodriguez
- **Vanderbilt-Ingram Cancer Center** | Jill Gilbert and Mike Gibson
- **Washington University Siteman Cancer Center** | Doug Adkins
- **Yale Cancer Center** | Barbara Burtness

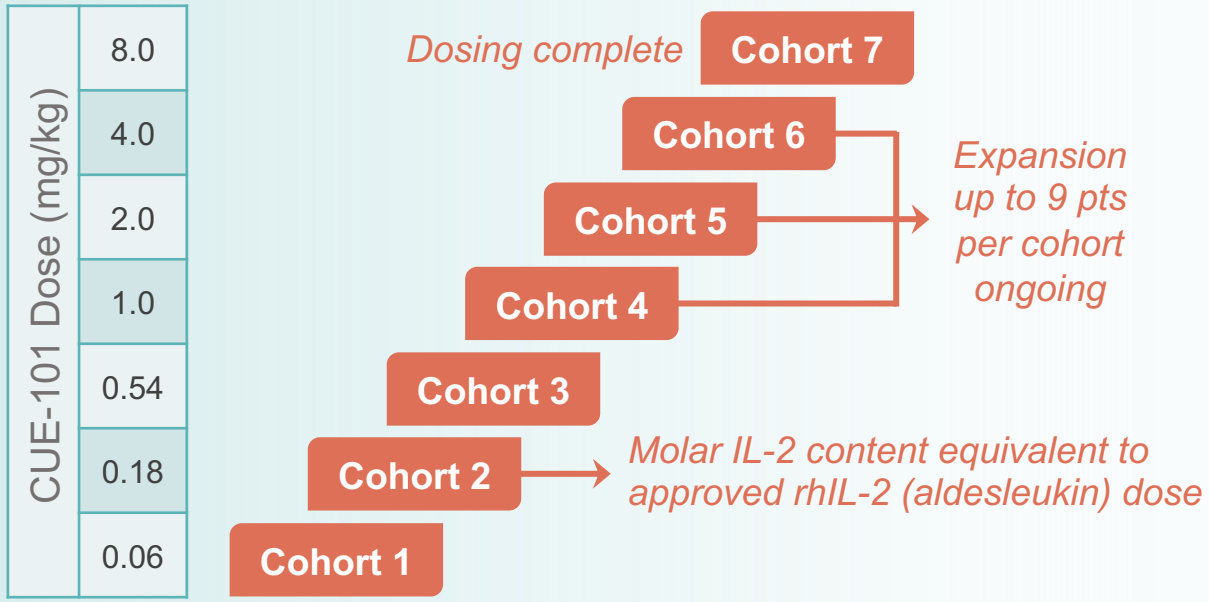
CUE BIOPHARMA

CUE-101: Ongoing Monotherapy First-In-Human Phase 1 Trial

Indication: HPV+ Recurrent or metastatic head and neck cancer with confirmed progressive disease

Heavily pretreated: Refractory or resistant to 1st line platinum-based chemotherapy and/or CPIs

Part A: Monotherapy Dose Escalation
(Q3W, 3 + 3 design, with expansion up to 9 patients per cohort)



Part B: Monotherapy Expansion
(up to 20 total patients)

Parts A & B:

Primary endpoints:
- Safety and tolerability

Secondary endpoints:
- PK/PD
- Anti-tumor activity per RECIST 1.1

ClinicalTrials.gov: NCT03978689

No maximal tolerated dose (MTD) observed in patients dosed up to 8 mg/kg. Part A enrollment projected to be completed by 31May2021.

Abbreviations: CPI, checkpoint inhibitors; HPV, human papilloma virus; PK/PD, pharmacokinetics/pharmacodynamics; Q3W, once every 3 weeks; rhIL-2, recombinant human interleukin-2; RECIST, Response Evaluation Criteria for Solid Tumors; RP2D, Recommended Phase 2 Dose

CUE-101-01: Patient Characteristics

Age	Mean (range)	63.5 (48-82)
Sex	Male	35 (97.2%)
	Female	1 (2.8%)
ECOG	0	14 (38.9%)
	1	22 (61.1%)
Prior Therapies	Median (range)	3 (1-7)
Prior Platinum Treatment/Regimens	Total	34 (94.4%)
	Multiple Platinum Regimens	18 (50%)
	Regimens	
	Single Agent	19 (52.8%)
	Paclitaxel/Carboplatin +/- Cetuximab	25 (69.4%)
	Carboplatin/5-FU/Cetuximab (EXTREME)	6 (16.7%)
	Other	7 (19.4%)
Prior Checkpoint Inhibitor Exposure	Total	35 (97.2%)
	Pembrolizumab	17 (47.2%)
	Nivolumab	14 (38.9%)
	Other	11 (30.5%)
	Multiple Inhibitors	8 (22.2%)

All Patients express HLA-A2:02 and have tumor expressing of HPV to be eligible

Data cut-off: 25MAR2021

CUE BIOPHARMA

CUE-101: Investigator-Assessed AEs by Subject Count

	Treatment-Related Adverse Events		All Adverse Events*	
	≥ Grade 3	Any Grade	≥ Grade 3	Any Grade
Fatigue	2 (6%)	12 (35%)	2 (6%)	16 (47%)
Anaemia	1 (3%)	2 (6%)	2 (6%)	12 (35%)
Lymphocyte count decreased	3 (9%)	3 (9%)	6 (18%)	10 (29%)
Dyspnoea	0 (0%)	1 (3%)	1 (3%)	7 (21%)
Chills	0 (0%)	5 (15%)	0 (0%)	7 (21%)
Decreased appetite	0 (0%)	3 (9%)	2 (6%)	7 (21%)
Hyponatremia	0 (0%)	1 (3%)	0 (0%)	6 (18%)
Hypophosphatemia	0 (0%)	3 (9%)	1 (3%)	6 (18%)
Diarrhoea	1 (3%)	3 (9%)	1 (3%)	5 (15%)
Dysphagia	0 (0%)	0 (0%)	1 (3%)	5 (15%)
Blood lactate dehydrogenase increased	0 (0%)	0 (0%)	0 (0%)	5 (15%)
Weight decreased	0 (0%)	2 (6%)	0 (0%)	5 (15%)
Arthralgia	0 (0%)	3 (9%)	0 (0%)	5 (15%)
Muscular weakness	0 (0%)	3 (9%)	0 (0%)	5 (15%)
Myalgia	0 (0%)	5 (15%)	0 (0%)	5 (15%)

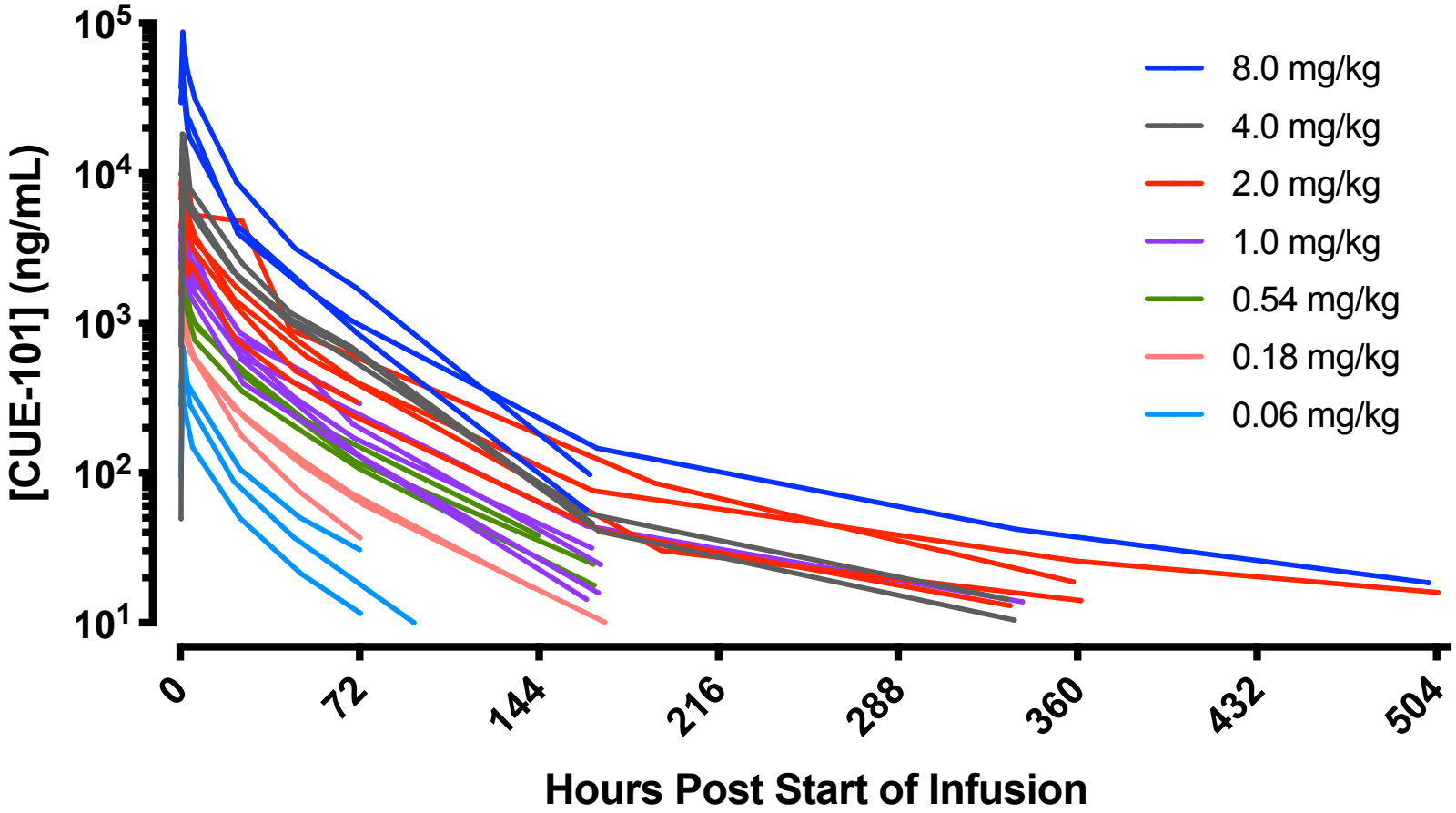
Treatment-Related-SAEs (All ≤5% Frequency): Anemia, diarrhea, nausea, vomiting, fatigue, infusion related reaction, dehydration, acute kidney injury, pemphigoid, vertigo and pneumonitis

*Safety Population (N=34); ≥ 15% AE frequency

Subjects reporting more than one AE are counted only once at the highest toxicity grade

Data collection is ongoing and subject to change

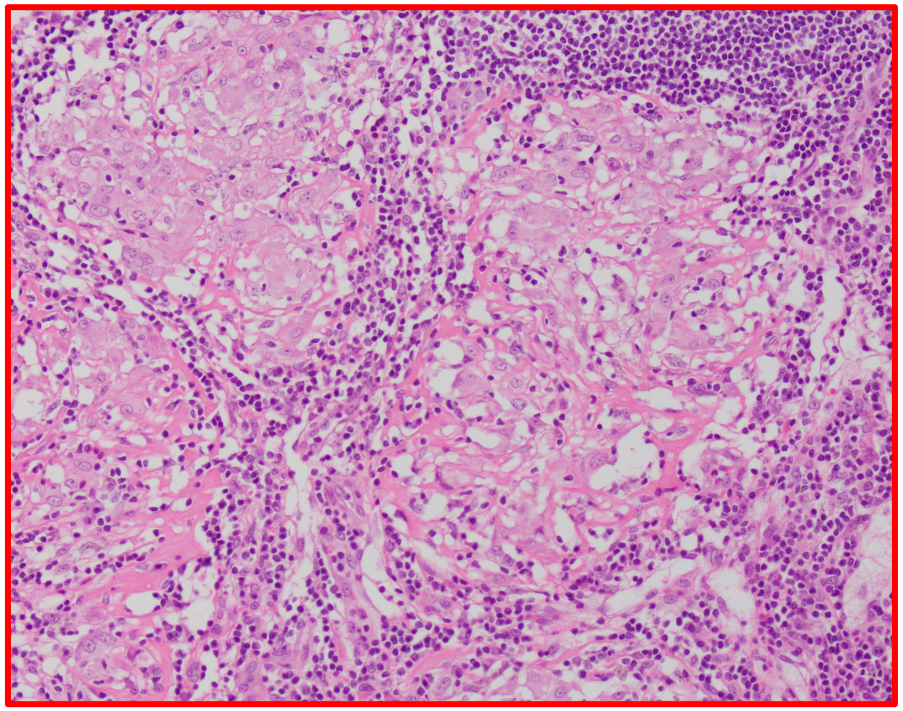
CUE-101-01: Sustained Exposure Observed with Repeat Dosing



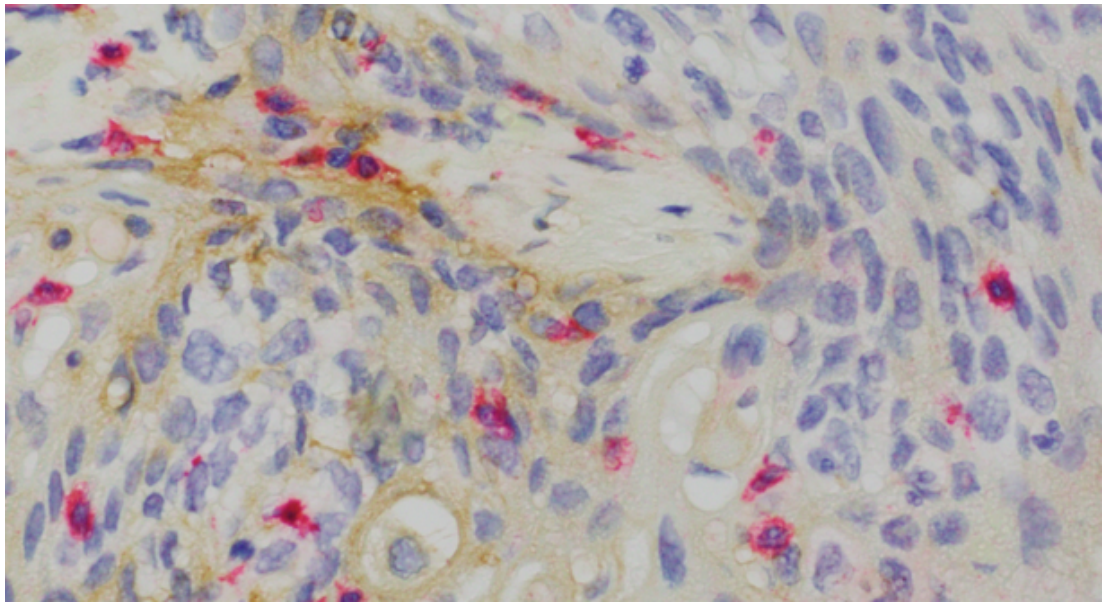
CUE-101 exposures are dose-proportional and comparable upon repeat dosing

CUE-101: Cohort 4 Case Study – Necrosis and a T Cell Infiltrate

Cohort 4 (1 mg/kg) patient was on therapy for over 18 weeks



Hematoxylin and eosin stain
(cell nuclei = blue; extracellular matrix and cytoplasm = pink)



Immunostaining
(cell nuclei = blue; CD8+ T cells = rose; PD-LI = brown)

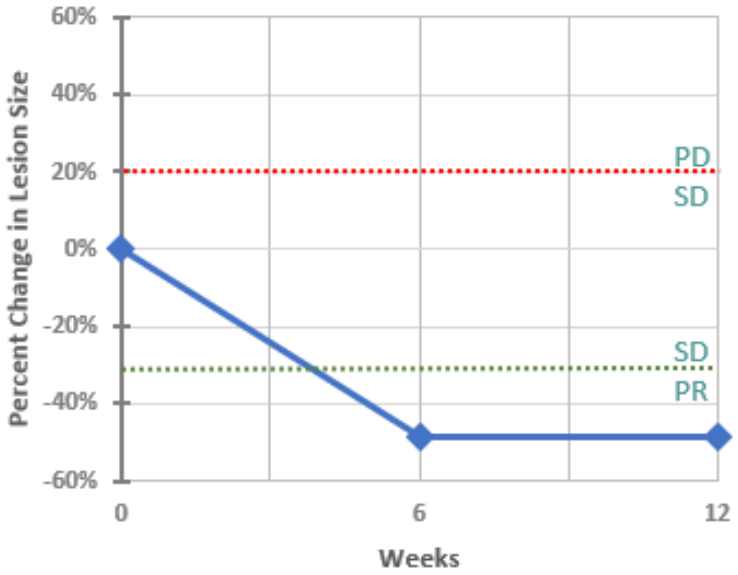
CUE-101: Objective Response Observed in Patient with Increased E7-specific CD8+ T cells

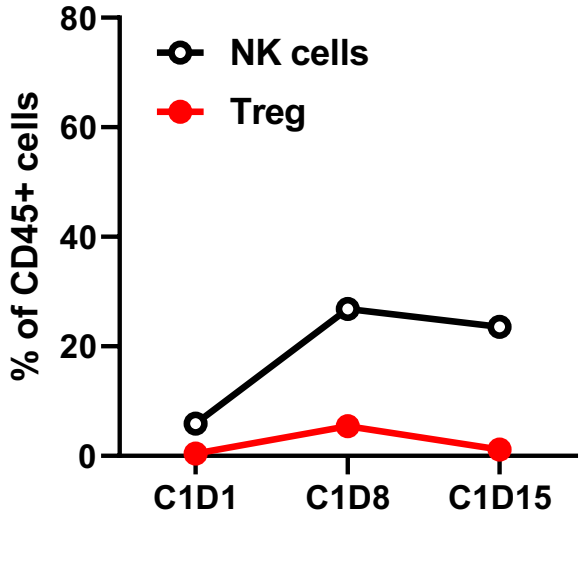
Two target lesions at baseline:

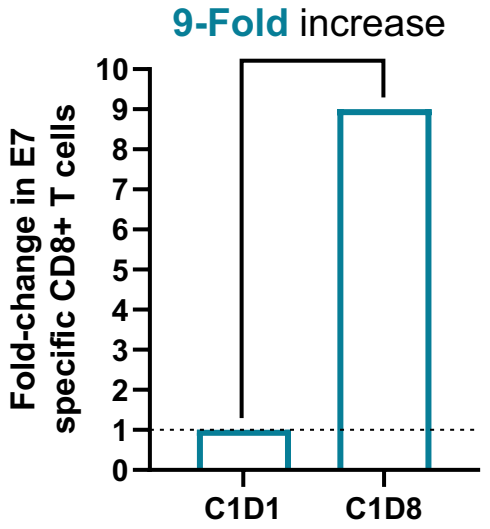
Cohort 6, 4 mg/kg

Pharmacodynamics:
Sustained increase in NK cells with a transient increase in Tregs

Pharmacodynamics:
Increased numbers of E7-specific CD8+ T cells in the blood



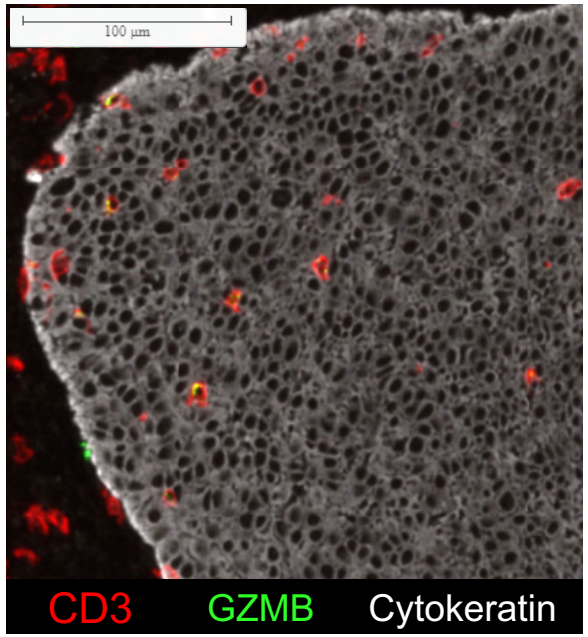




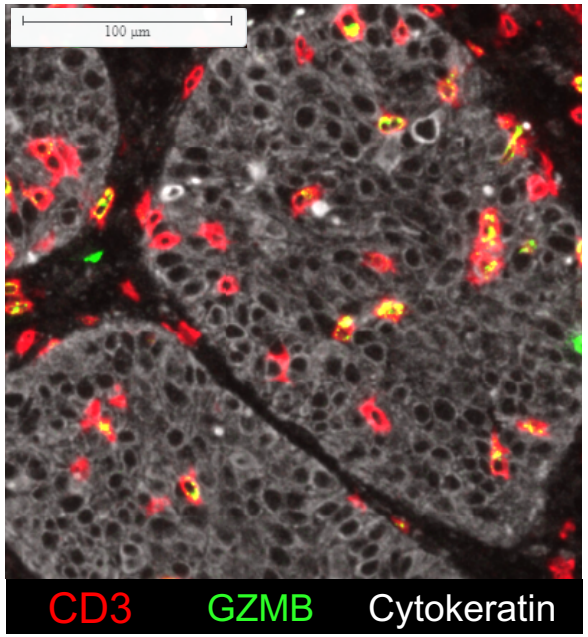
Confirmed PR by RECIST 1.1

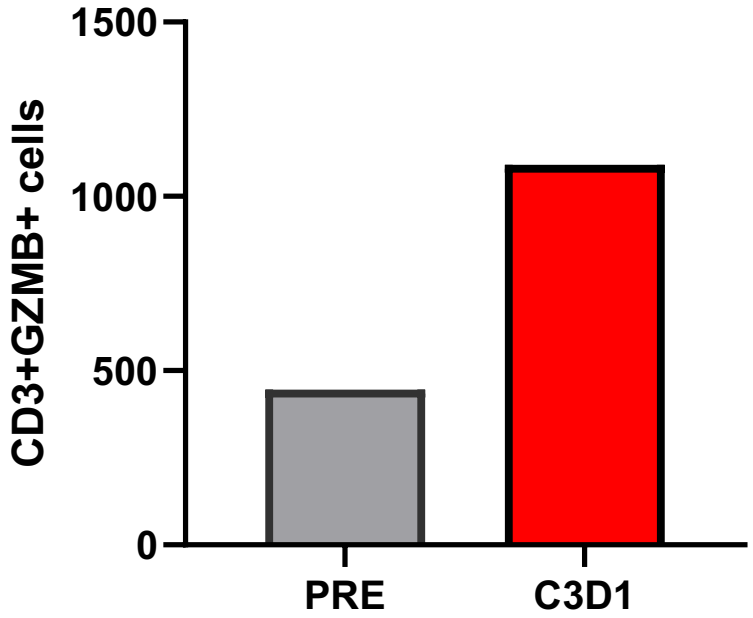
Increase in Tumor Infiltrating T cells (TILs) Observed Following CUE-101 Administration

Pre-dose



Cycle 3 Day 1





Cue Biopharma, Inc: Q1 2021 Financial Highlights

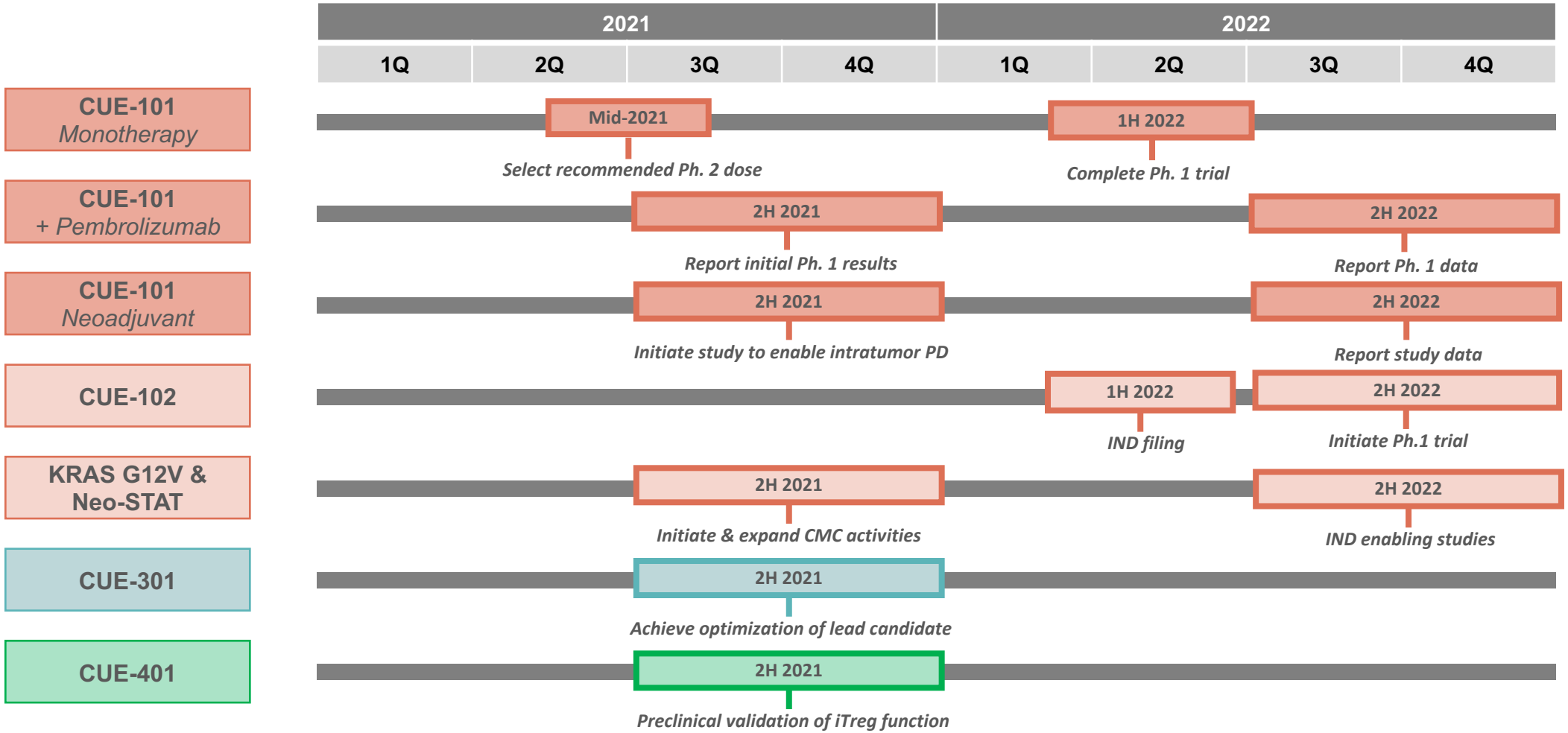
Cue Biopharma, Inc.
Selected Consolidated Statement of Operations Data
(in thousands)

	Three Months Ended March 31,	
	2021	2020
Collaboration revenue	$ 1,553	$ 900
Operating expenses:		
General and administrative	4,255	3,989
Research and development	9,816	9,906
Total operating expenses	14,071	13,895
Loss from operations	(12,518)	(12,995)
Other income:		
Interest income, net	13	177
Net Loss	$ (12,505)	$ (12,818)
Net loss per common share – basic and diluted	$ (0.41)	$ (0.48)
Weighted average common shares outstanding – basic and diluted	30,434,525	26,569,681

Cue Biopharma, Inc.
Selected Consolidated Balance Sheet Data
(in thousands)

	March 31, 2021	December 31, 2020
Cash and cash equivalents	73,257	74,866
Marketable securities	-	10,003
Total current assets	77,405	87,527
Working Capital	60,772	71,212
Total assets	88,721	99,533
Total Stockholders' equity	69,669	78,911

Key Anticipated Milestones: Risk Reduction and Value Creation



Thank you

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