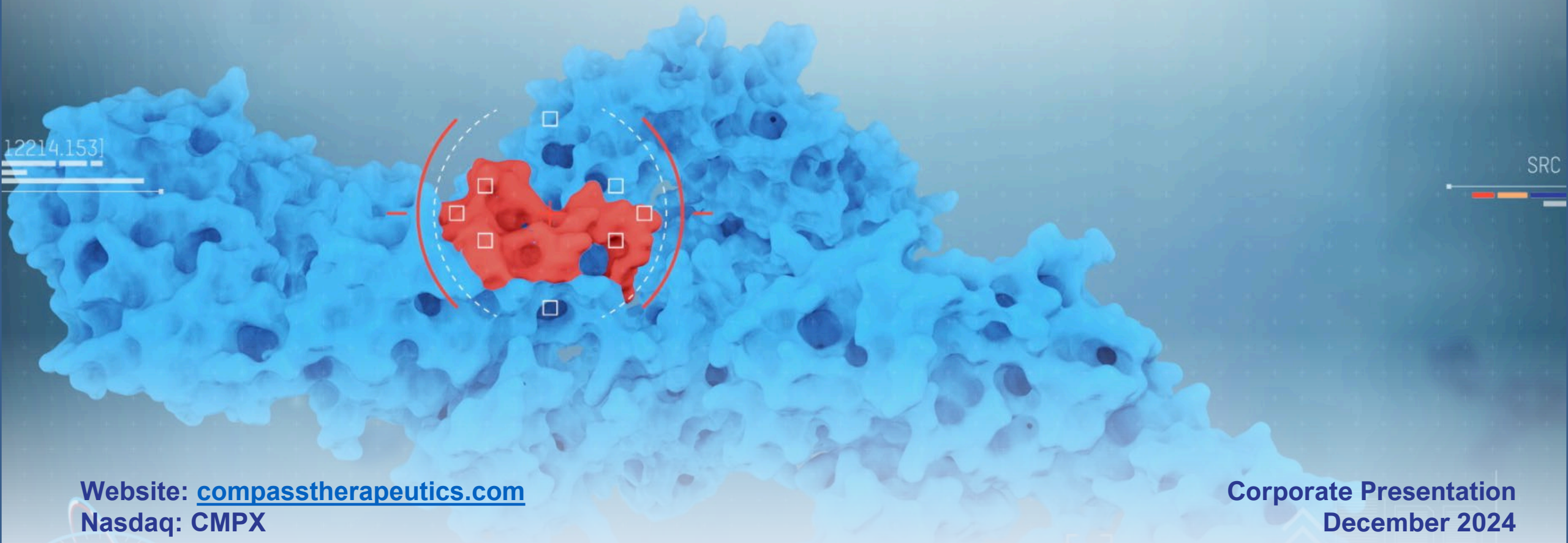
COMPASS THERAPEUTICS

Mission: Developing next generation antibodies into transformative cancer therapies that improve patients' lives



Website: compasstherapeutics.com
Nasdaq: CMPX

Corporate Presentation
December 2024

DISCLAIMER

This presentation has been prepared by Compass Therapeutics, Inc. ("we," "us," "our," or the “Company”). Statements contained herein are made as of the date of this presentation unless stated otherwise, and this presentation shall not 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 includes forward-looking statements regarding our drug candidates, the timing and outcome of regulatory decisions, future availability of clinical trial data, our collaborations for our product candidates and the maintenance of those collaborations, business and results from operations, and other matters. Actual results could differ materially from those contained in any forward-looking statements as a result of various factors, including without limitation: that our drug candidates do not advance in development or result in approved products on a timely or cost effective basis or at all; the cost, timing and results of clinical trials; that many drug candidates that have completed early-stage trials do not become approved drugs on a timely or cost effective basis or at all; the ability to enroll patients in clinical trials; possible safety and efficacy concerns; regulatory developments; our ability to protect our intellectual property rights, and unexpected costs, charges or expenses that reduce cash runway. Our pipeline programs are in various stages of pre-clinical and clinical development, and the process by which such pre-clinical or clinical therapeutic candidates could potentially lead to an approved therapeutic is long and subject to significant risks and uncertainties. These and other risks and uncertainties that we face are described in our most recent Annual Report on Form 10-K, and in other filings that we make with the Securities and Exchange Commission from time to time. We undertake no obligation to update forward-looking statements as a result of new information or otherwise.

This presentation also contains estimates and other statistical data made by independent parties and by us relating to market size and growth and other data about our industry. This data involves a number of assumptions and limitations, and you are cautioned not to give undue weight to such estimates. In addition, projections, assumptions, and estimates of our future performance and the future performance of the markets in which we operate are necessarily subject to a high degree of uncertainty and risk.

This presentation concerns drugs that are under clinical investigation, and which have not yet been approved for marketing by the U.S. Food and Drug Administration (FDA). It is currently limited by Federal law to investigational use, and no representation is made as to its safety or effectiveness for the purposes for which it is being investigated.

Compass Corporate Highlights

Multiple Clinical Stage Assets	**Three antibodies in the clinic** (two bispecifics and one monoclonal)
Unprecedented Phase 2 Biliary Tract Cancer Data	**37.5% Response Rate** in 2L/3L BTC; FOLFOX is 5% in Second-line BTC
Near Term Milestone	Potential registrational study in BTC with **top-line data readout in Q1 2025**
Deep Expertise in Antibodies	Deep **expertise in immuno-oncology, angiogenesis, and unique combinations thereof**, with an expansive catalogue of well characterized antibodies
Well Capitalized	**Cash runway into Q1 2027** (Q3 = $135M) and respected core investor base

Diversified and Robust Pipeline with Multiple Value Inflection Points

Program	Target	Discovery	Pre-Clinical	Phase 1	Phase 2	Phase 3	Anticipated Milestones
CTX-009	DLL4 x VEGF-A	COMPANION-002: BTC					**Top line data: Q1 2025**
		COMPANION-003: CRC					Phase 2 completed
		COMPANION-004: 2L CRC					**Trial initiation: Mid-2025**
CTX-471	CD137	CD137 agonist: NCAM (CD56)+ Basket Study					**Trial initiation: Mid-2025**
		CD137 agonist: Post-checkpoint Basket Study					Completed
CTX-8371	PD-1 x PD-L1	Solid Tumors					**Complete dose escalation: H1 2025** **Phase 1 data readout: H2 2025**
VEGF-IO Bispecifics	Multiple						**IND-enabling studies: 2024-2025**

Leadership Team Experienced in Drug Discovery and Development

Thomas J. Schuetz, MD, PhD
President, CEO, &
Vice Chairman of the Board

Barry Shin, JD, MBA
CFO

Bing Gong, PhD
SVP, Discovery Research

Minori Rosales, MD, PhD
SVP, Head of Clinical Development

Jon Anderman, JD
SVP, General Counsel &
Corporate Secretary

Ian Chia, PhD
VP, Business Development

Karin Herrera
VP, Clinical Operations

James Kranz, PhD
VP, CMC

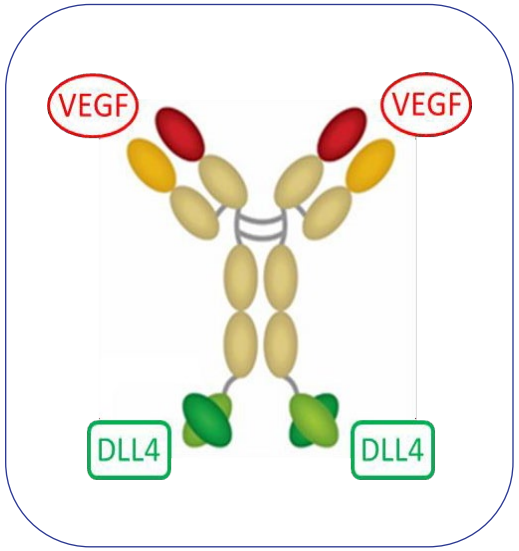
Neil Lerner, CPA, MIM
VP, Finance

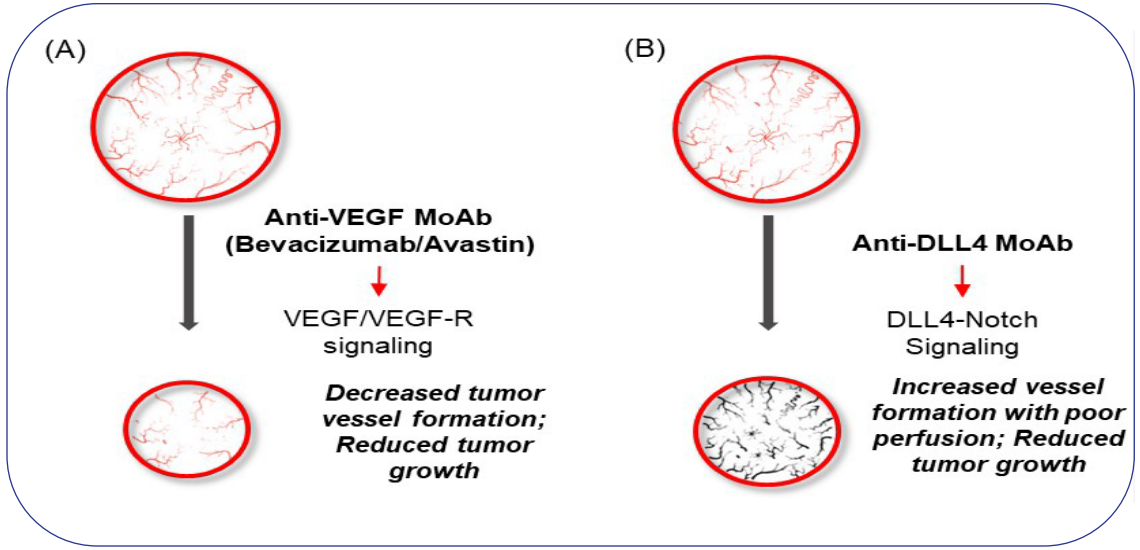
Kris Sachsenmeier, PhD
VP, Translational Science

CTX-009

DLL4 X VEGF-A bispecific antibody

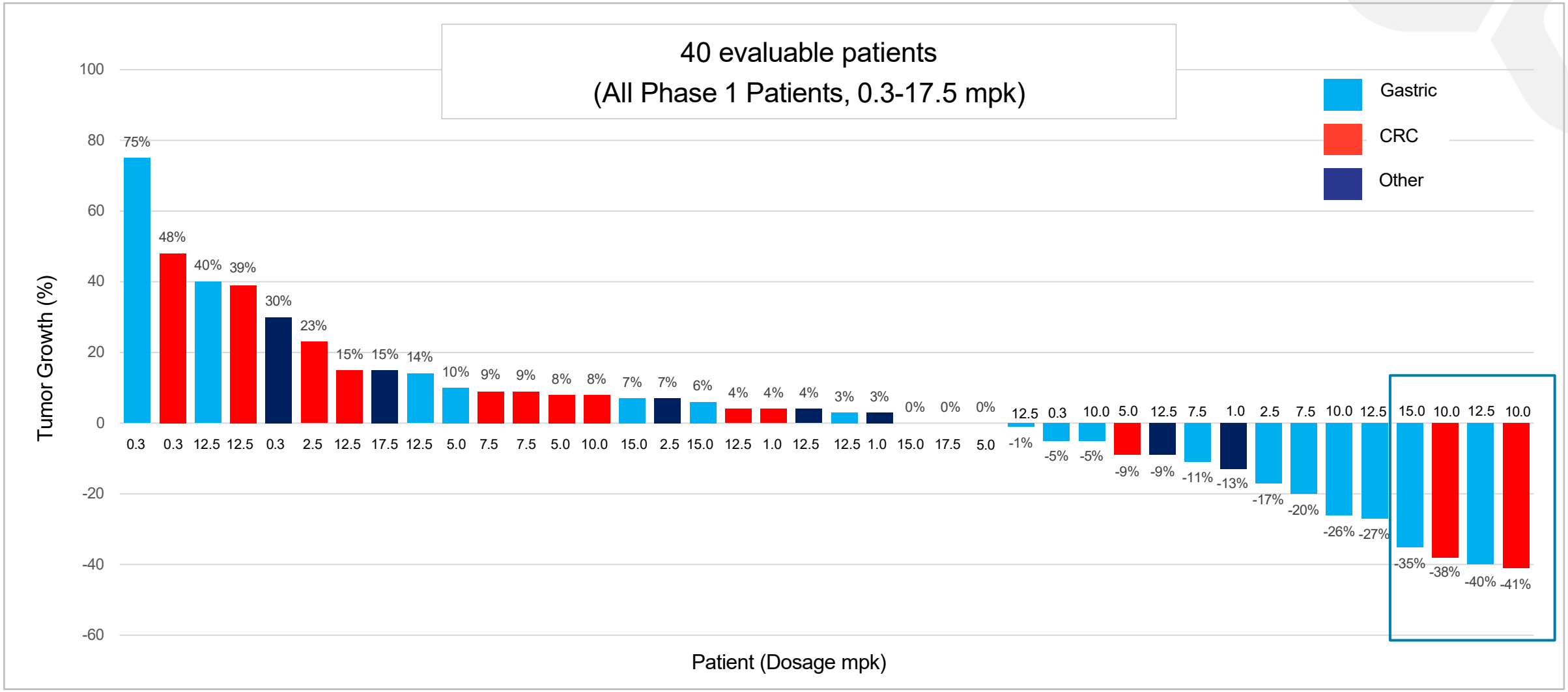
CTX-009 Overview (DLL4 x VEGF-A Bispecific Antibody)





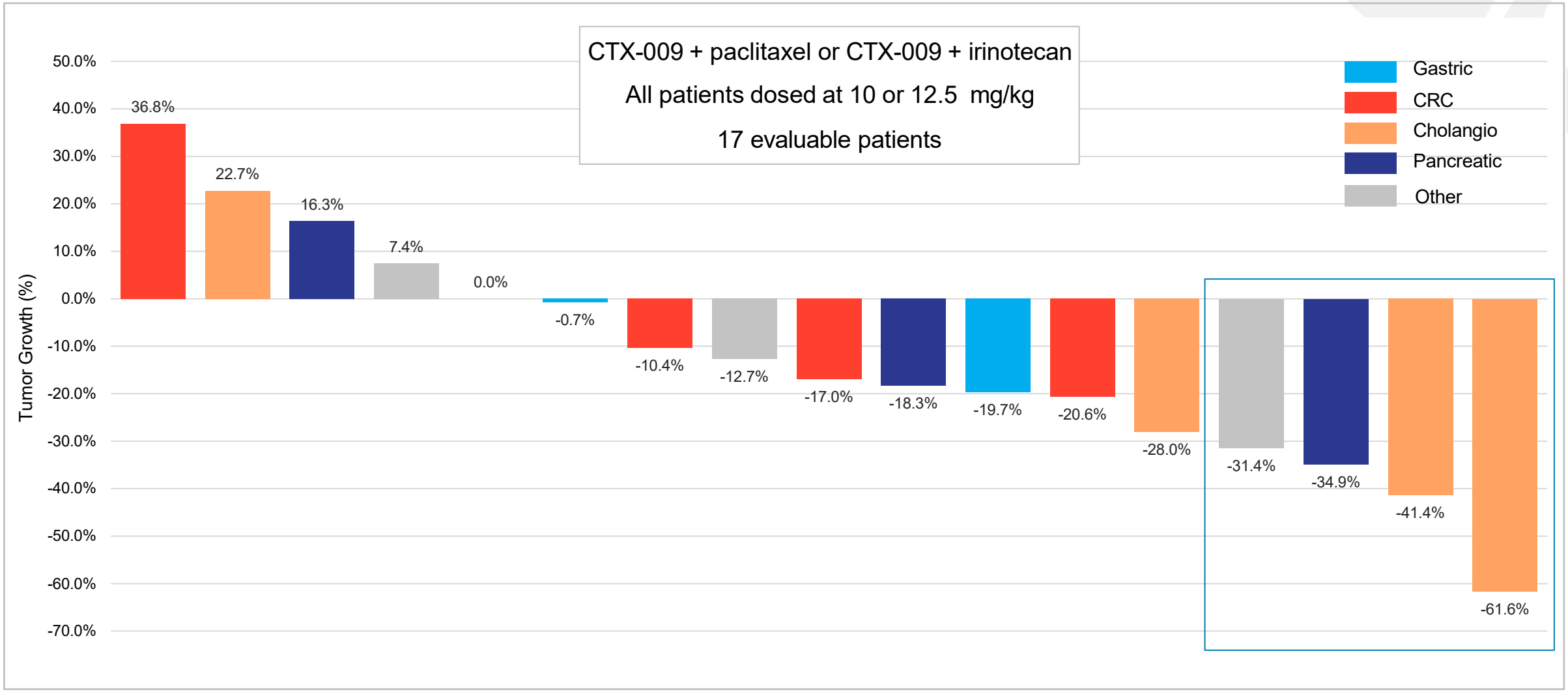
- Dual blockade of DLL4 (Notch-1 ligand) and VEGF-A (soluble ligand) overcomes VEGF resistance
- Target binding with 2:2 valency
- Approximately the same VEGF-A capturing capacity as bevacizumab (CTX-009 at 10 mg/kg)
- Only DLL4 X VEGF bispecific to demonstrate monotherapy activity in patients with CRC and GC
- Durable responses in patients with CCA (Phase 1b study of CTX-009 + paclitaxel)

Phase 1a CTX-009 Monotherapy (all doses)



COMPASS THERAPEUTICS

Phase 1b CTX-009 Combination Study



CTX-009 – Phase 1 Clinical Studies Summary

Overall Response Rate at the Efficacious Dose

(10-12.5 mg/kg)

Monotherapy	Combination
18.8% ORR (3/16)	**23.5% ORR (4/17)**

Clinical Benefit Rate at the Efficacious Dose

(10-12.5 mg/kg)

Monotherapy	Combination
68.8% (11/16)	**76.5% (13/17)**

Overall safety generally well-tolerated

(10-12.5 mg/kg)

Monotherapy

Grade 3 hypertension (16%), comparable to Avastin (Avastin label 5%-18%); typically managed with anti-hypertensive drugs

Combination

Grade 3 hypertension (24%); neutropenia (12%) anemia (18%) thrombocytopenia (12%); cytopenia events are related to the concomitant chemotherapy

CTX-009 Phase 2 Combination Study Design

Patients with unresectable biliary tract cancers after one or two prior therapies

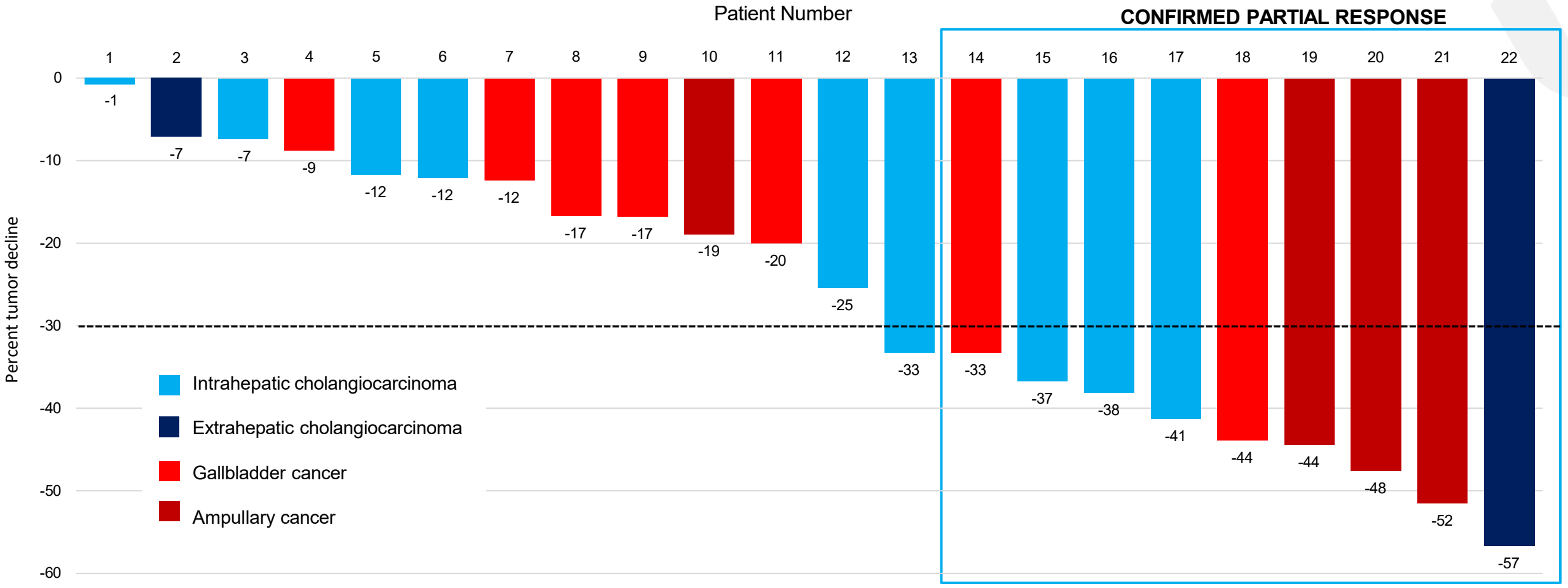
Open label, multi-center (S. Korea), single-arm Phase 2 Study

- Patients were treated with CTX-009 (10 mg/kg IV biweekly) in combination with paclitaxel (80 mg/m^2 IV weekly, three weeks out of four)
- The primary endpoint was objective response rate (ORR) based on RECIST v1.1.
- Secondary endpoints included time to treatment failure (TTF), duration of response (DOR), progression-free survival (PFS), overall survival (OS), and safety.
- The study enrolled 24 patients
- Simon Two-Stage Design (Stage 2 not initiated)

Phase 2 CTX-009 Data

Responses achieved across multiple BTC subclasses.

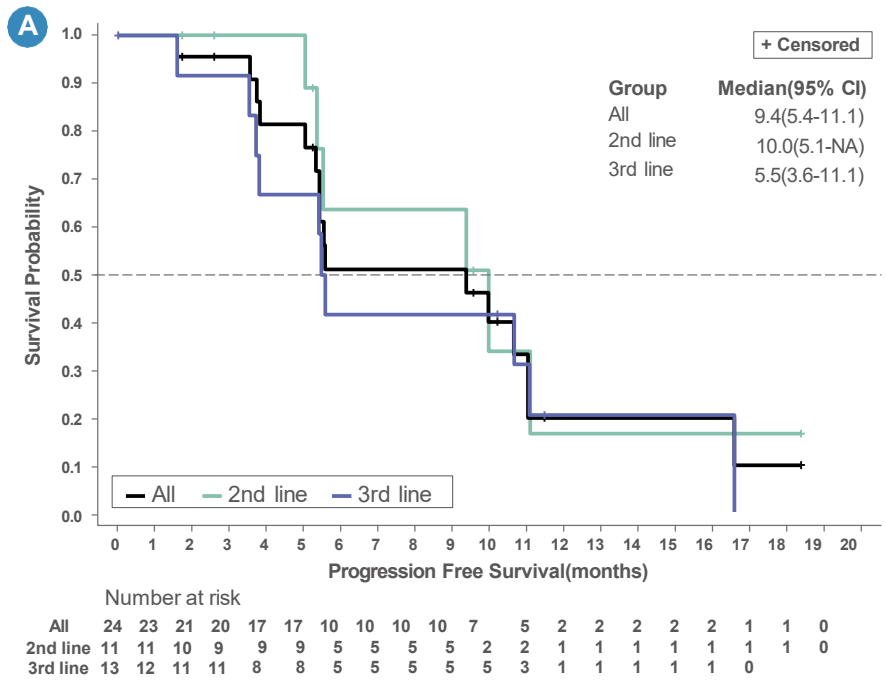
ORR = 37.5%
CBR = 91.5%



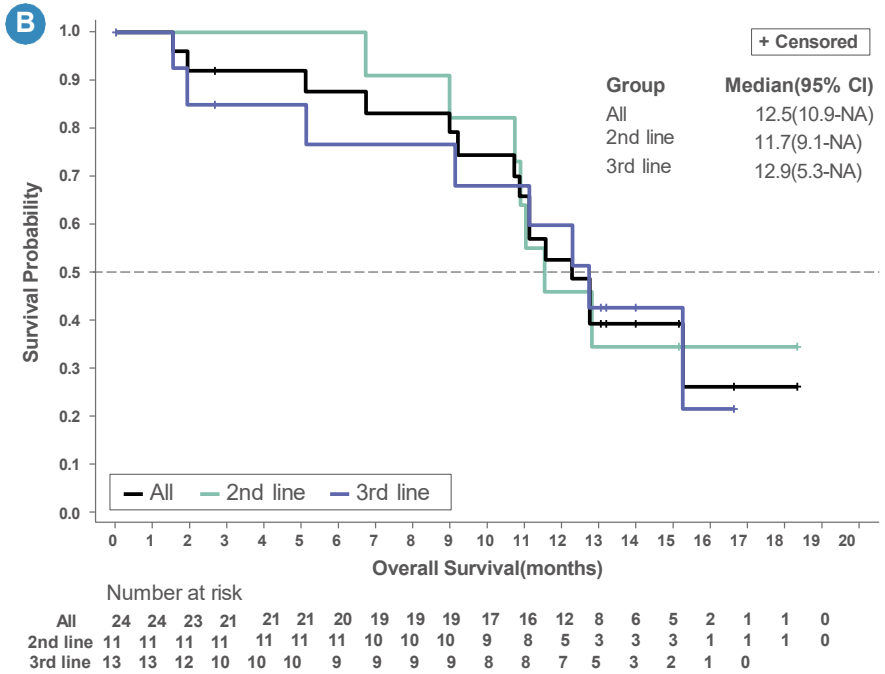
2 patients were not evaluable (one missing post baseline scan; one had a scan outside of protocol window)

Secondary Endpoints: PFS and OS

- **Median PFS: 9.40 m (5.4-11.1)**



- **Median OS: 12.5 m (10.9-NA)**



COMPASS THERAPEUTICS

CTX-009 Phase 2 Results

Endpoint	Value (95% CI)
Overall Response Rate (ORR)	**37.5%**
Stable Disease (SD)	**54.2%**
Progression Free Survival (PFS)	**9.4 m** (5.4 – 11.1)
Overall Survival (OS)	**12.5 m** (10.9 – NA)
Duration of Response	**6.9 m** (3.5 – NA)

Number of previous systemic therapies	ORR
Pts treated in the 2L [n=11]	**7/11 (63.6%)**
Pts treated in the 3L [n=13]	2/13 (15.4%)

Safety Profile Of CTX-009 is Consistent with Approved Agents

Treatment-Emergent ≥ Grade 3 Adverse Events (>10% of patients)

Phase 2 BTC study of CTX-009 plus paclitaxel

Event	24 total Patients N (%)
Neutropenia	20 (83.3%)
Anemia	5 (20.8%)
Hypertension	4 (16.7%)
Thrombocytopenia	3 (12.5%)
TEAE leading to discontinuation: confusion, embolism, pneumonia (grade 5), biliary fistula, large intestine perforation, blood creatinine increased, and blood urea nitrogen increased	

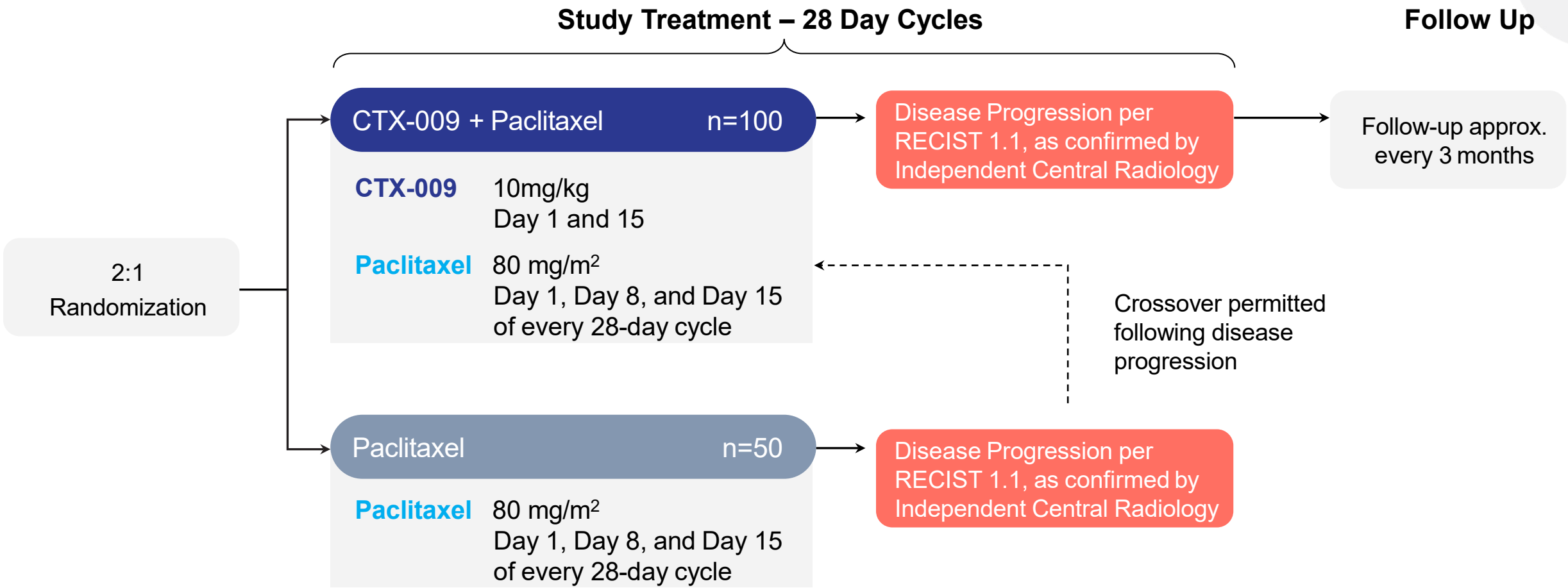
Bevacizumab and paclitaxel label information

Event	Bevacizumab (label) [1]	Paclitaxel (label) [2]
Neutropenia		52%
Hypertension	5-18%	
Anemia		16%
Thrombocytopenia		7%
	Additional events: GI perforation, wound healing complications, Proteinuria, hemorrhage	Additional events: Hypersensitivity reactions, infections, bleeding, neuropathy

1. https://www.accessdata.fda.gov/drugsatfda_docs/label/2022/125085s340lbl.pdf 2. https://www.accessdata.fda.gov/drugsatfda_docs/label/2011/020262s049lbl.pdf

COMPANION-002: Phase 2/3 U.S. BTC Study

Registrational-Intent Study in Patients who have received one prior line of therapy



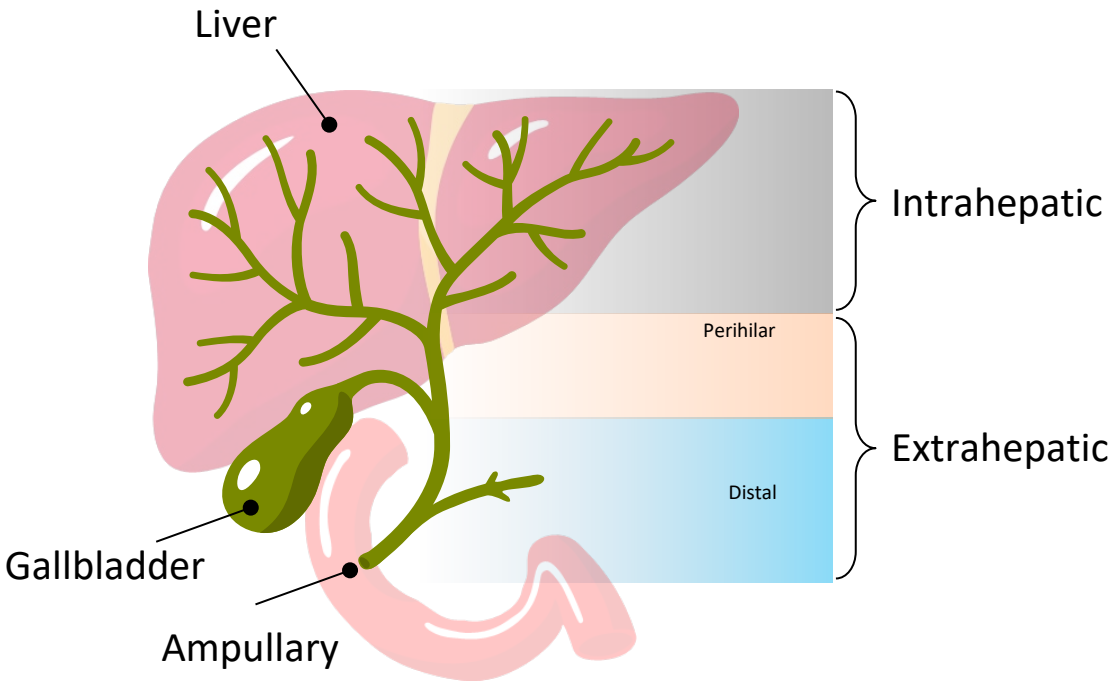
CTX-009 as New Potential Standard of Care in 2L BTC

Line	Program	N	ORR	Progression Free Survival / Overall Survival (Months: 0 2 4 6 8 10 12 14)
First Line				
1L	**Gem/Cis + Durv[1]**	341	26.7%	7.2 m; 12.8 m
1L	**Gem/Cis + Pembro[2]**	533	28.7%	6.5 m; 12.7 m
Second Line				
2L	**ABC-06[3]**	81 BSC	0%	5.3 m
		81 FOLFOX	5%	4.0 m; 6.2 m
CTX-009* in 2L and 3L				
2L/ 3L	**CTX-009 + Paclitaxel[4]**	24	**37.5%** [64% 2L; 15% 3L]	9.4 m; 12.5 m

*Historical data presented above. CTX-009 is investigational, and no head-to-head studies have been conducted.

1. PMID: 38319896; 2. PMID: 37075781; 3. PMID: 33798493; 4. DOI: 10.1200/JCO.2023.41.4_suppl.540

Incidence of BTC is Significant and Requires Reconciliation of Different Sources Due to the Complex Anatomy



Cancer site	Epidemiology-based Approach (SEER)	Claims-based Approach (ICD)
Liver & intrahepatic bile duct	**15%[2] of 41,630[1]**	**---**
Gallbladder & other biliary	**12,350[1]**	**---**
Other & unspecific primary sites	**11%[3] of 34,950[1]**	**---**
Incidence	**~22,400**	**~22,800[4]**

1. PMID: 38230766; 2. Lowe, R, et al. Epidemiology, risk factors, anatomy, and pathology of cholangiocarcinoma. UpToDate, Inc. (2022); 3. PMID: 35484217; 4. Komodo Health x Cholangiocarcinoma Foundation. (2023)

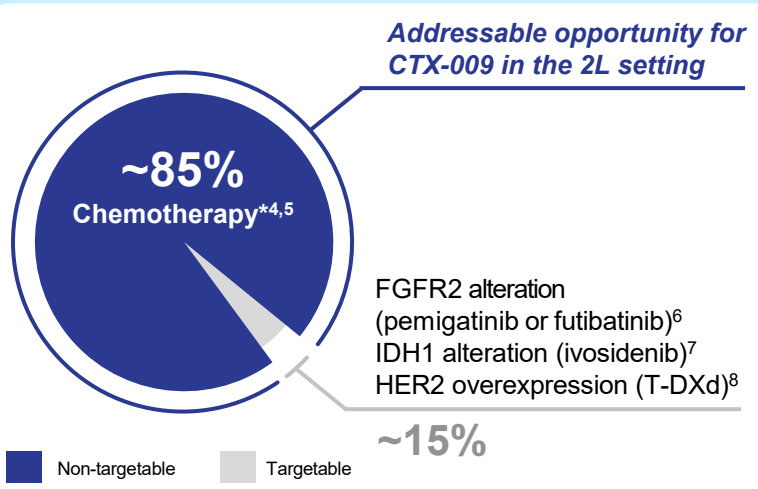
Significant Unmet Needs in Current Treatments for BTC

Currently Approved SoC

1L

Gem/Cis + durvalumab (TOPAZ1)[1] pembrolizumab (KN-966)[2]

2L



Unmet Needs

- 2-year OS of 23.6% (95% CI)[3]
- Majority of patients will progress

- FOLFOX chemotherapy[4]:
  - ORR of 5%
  - 72% ≥Grade 3 AEs
- 53% ≥Grade 3 AEs in patients receiving BSC in control arm.

1. PMID: 38319896; 2. PMID: 37075781; 3. Oh *et al.* Poster 56P ESMO 2022; 4. PMID: 33798493; 5. NCCN (2024). Biliary Tract Cancers (version 4.2024); 6. PMID: 37017301; 7. PMID: 33182517; 8. PMID: 38266541

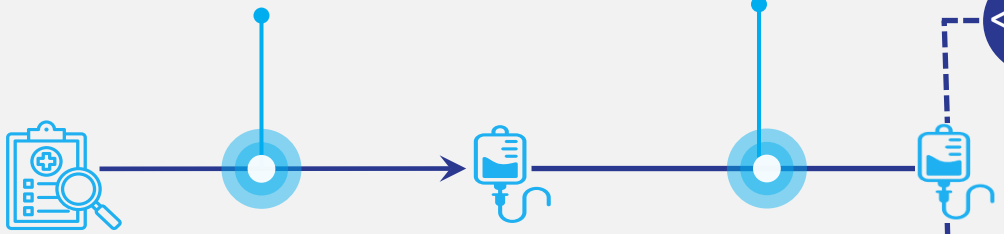
CTX-009: 2L BTC U.S. Market Potential is >$1 Billion

Annual BTC incidence in the U.S. (~22.8K)[1]

Clinical progression

~95% receive 1L treatment (~10% undergo resection but only ~5% are cured after surgery)[2]

~70% of 1L patients **receive 2L treatment**[3]



<15%

Approved 2L targeted therapies[4,5] (contraindications include: ocular toxicity, hyperphosphatemia)

>85%

Chemotherapy/ **Opportunity for CTX-009**

Patient numbers

~22.8K

~21.7K

~15.2K

1. Komodo Health x Cholangiocarcinoma Foundation. (2023); 2. PMID: 27829275; 3. Based on Compass Therapeutics' analysis and PMID: 38319896; 4. PEMAZYRE prescribing information; 5. LYTGOBI prescribing information

COMPASS THERAPEUTICS

Phase 2 Colorectal Cancer (CRC) Study

Patients who have received 2 or 3 prior regimens: 3rd and 4th line study 63% (26/41) were treated in the 4th line

Preliminary Results

Endpoint	Value
ORR	5% (2/41)
DCR	71% (29/41)
mPFS	3.9m
mOS	10.2m

Safety profile consistent with prior CTX-009 trials with hypertension as the most common AE

Significant Unmet Needs in Current CRC Treatments

>100,000 US Patients Annually

Line	Program	N	ORR	Progression Free Survival / Overall Survival (Months: 0 2 4 6 8 10 12 14)
Second Line				
2L	**Bevacizumab + Chemo[1]**	407	5%	5.7 m — 11.2 m
Third Line +				
3L+	**Regorafenib[2,3]**	505	1%	1.9 m — 6.4 m
3L+	**Fruquintinib[4]**	461	1.5%	3.7 m — 7.4 m
3L+	**Lonsurf[5]**	534	1.5%	2.0 m — 7.1 m
3L	**Lonsurf + Bevacizumab[6,7]**	246	6.1%	5.6 m — 10.8 m
CTX-009* in 3L and 4L				
3L / 4L	**CTX-009[8]**	41	**5%**	3.9 m — 10.2 m

*Historical data presented above. CTX-009 is investigational, and no head-to-head studies have been conducted.

1. PMID: 23168366; 2. PMID: 23177514; 3. Grothey, A., et al., *ASCO Presentation.* (2012); 4. PMID: 37331369; 5. PMID: 25970050; 6. PMID: 37133585; 7. Tabernero, J., et al., *ASCO GI Presentation* (2023); 8. Compass Therapeutics Q2 Press Release. Aug 2024.

The COMPANION (COMPASS ANTI-ANGIOGENESIS) Studies

CTX-009 granted Fast Track Designation in BTC by FDA in April 2024

Next Steps: BTC

Initiation of an IST at MDACC in patients with BTC. CTX-009 will be added to the standard first-line regimen of gemcitabine, cisplatin, and durvalumab

NCT06548412

Data: Top-line BTC Q1 2025

COMPANION-002
Phase 2/3 Randomized BTC study in the US

Next Steps: CRC

COMPANION-004
Designing a Phase 2 study in 2L DLL4+ CRC

Evaluating additional indications for CTX-009 both as a monotherapy and in combination with chemotherapy

CTX-471

CD137 monoclonal antibody

CTX-471: Potential Best-in-Class CD137 Agonist

CTX-471: next generation CD137 agonist

Fully human, IgG4, optimized affinity for agonistic antibody

Unique epitope: non-ligand blocking

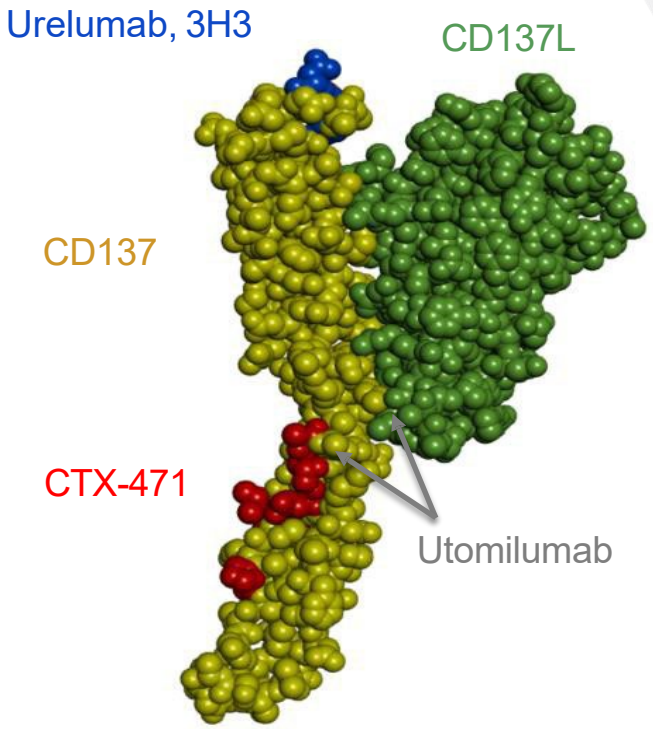
Phase 1 Study Update

Monotherapy Phase 1a ascending dose study completed

- MTD defined by immune thrombocytopenia

Monotherapy Phase 1b Post-PD-1 Basket Study completed

- Patients with 17 different tumor types enrolled
- 4 PRs observed: melanoma (3 of 11) and mesothelioma (1 of 4)
- 1 CR: small cell lung cancer (1 of 3)
- Potential biomarker of response identified in biopsies: NCAM (CD56)+ tumors were more likely to respond to CTX-471
- Planning a Phase 2 NCAM (CD56)+ Basket Study



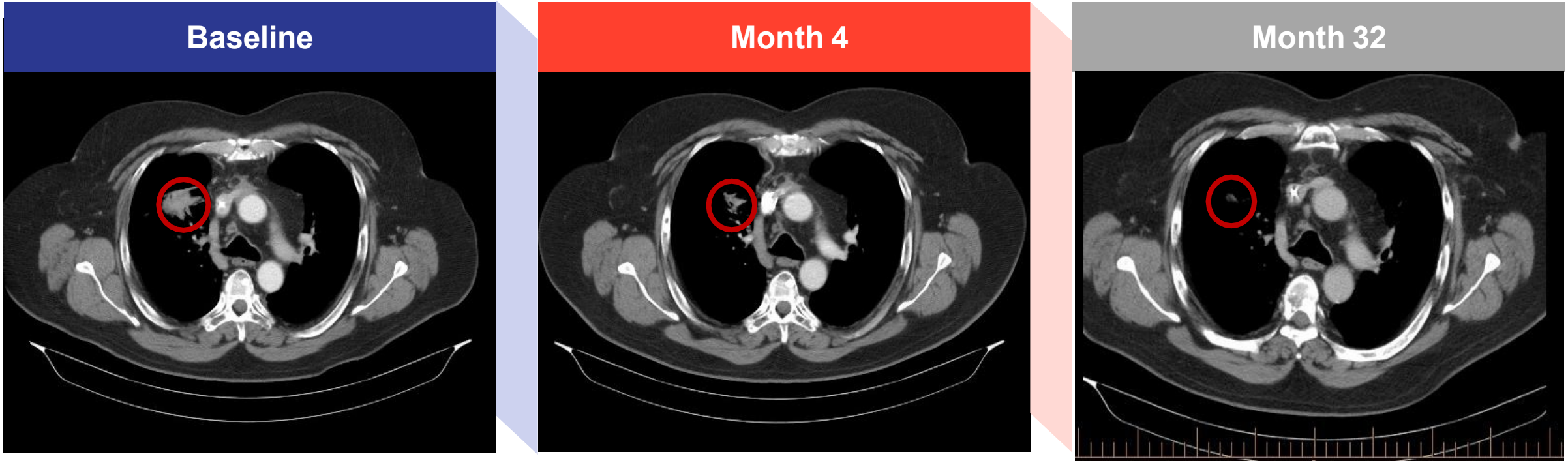
JCI Insight. 2020;5(5):e133647

PMID: 36725933, ASCO 2024, Abstract #2535, SITC 2024 Abstract #679

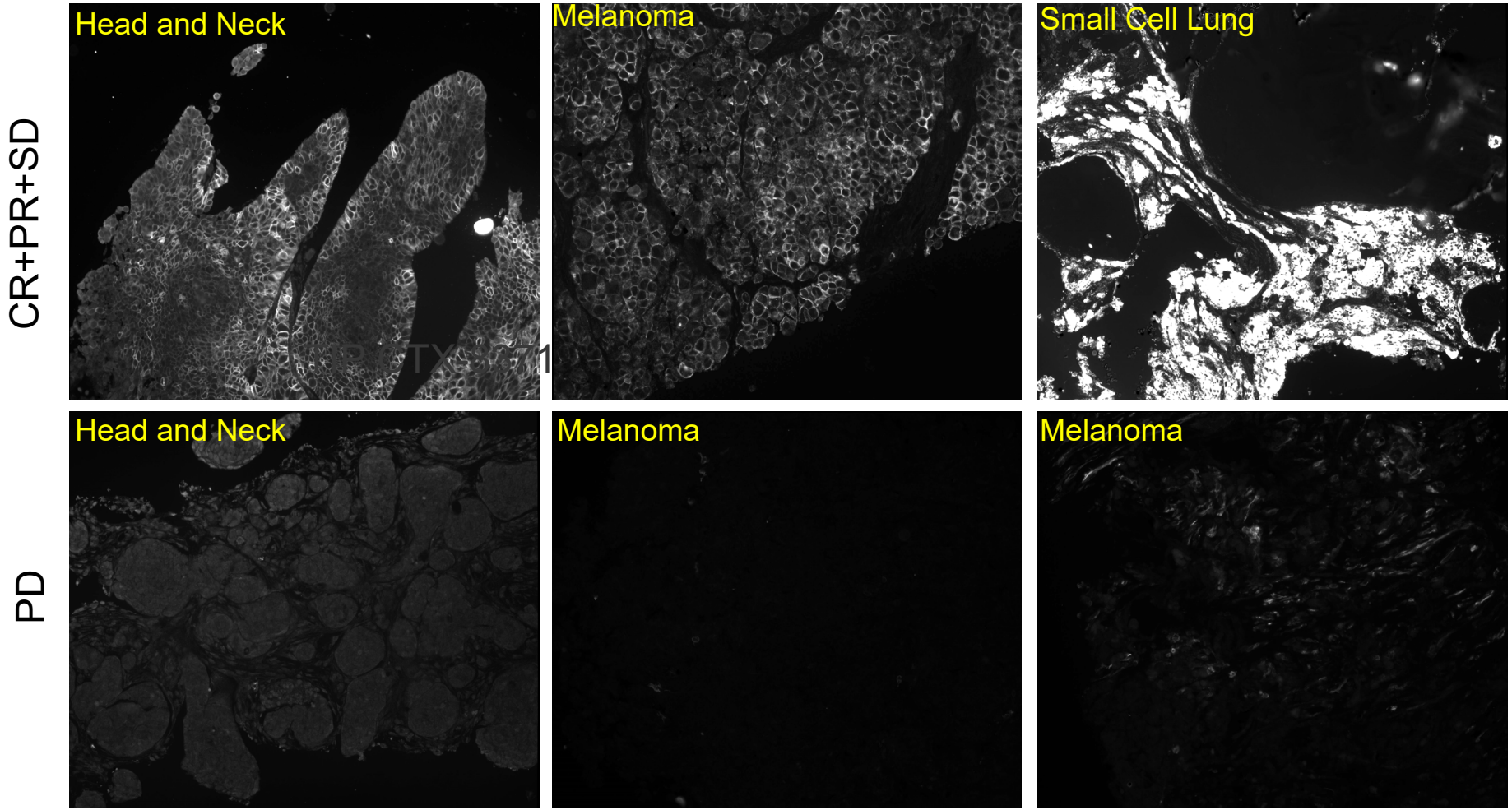
CTX-471: Complete Response in a Patient with Small Cell Lung Cancer

After progression on atezolizumab/chemo and nivolumab

- 66 y.o. man with advanced SCLC: Carboplatin/etoposide plus atezolizumab first line; nivolumab second line
- Confirmed, complete response (CR) by PET ~ 3 years on therapy



High NCAM (CD56) Expression in Patients with CTX-471 Disease Control

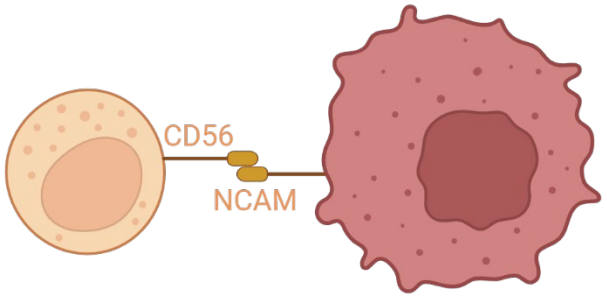


NCAM (CD56) High in Patients with CTX-471 Disease Control

NCAM may render tumors sensitive to CTX-471 treatment: proposed mechanism of action

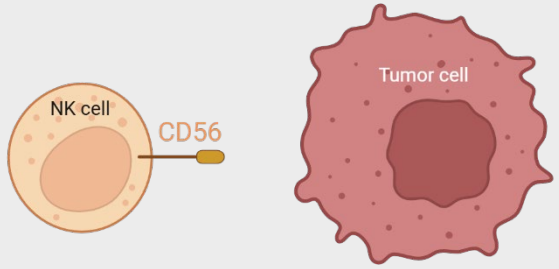
NCAM (CD56) "Positive" Tumor

1



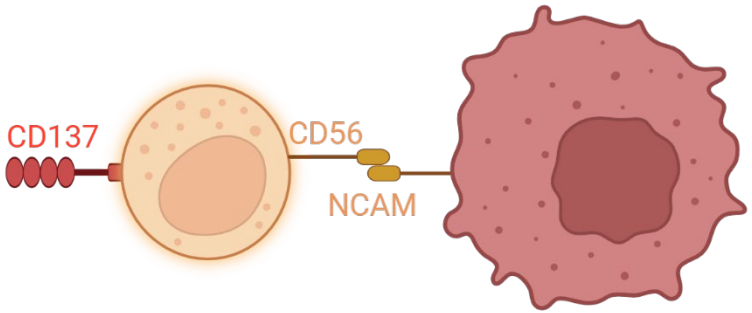
Binding of tumor cell to NK cell via NCAM (CD56)

NCAM (CD56) "Negative" Tumor



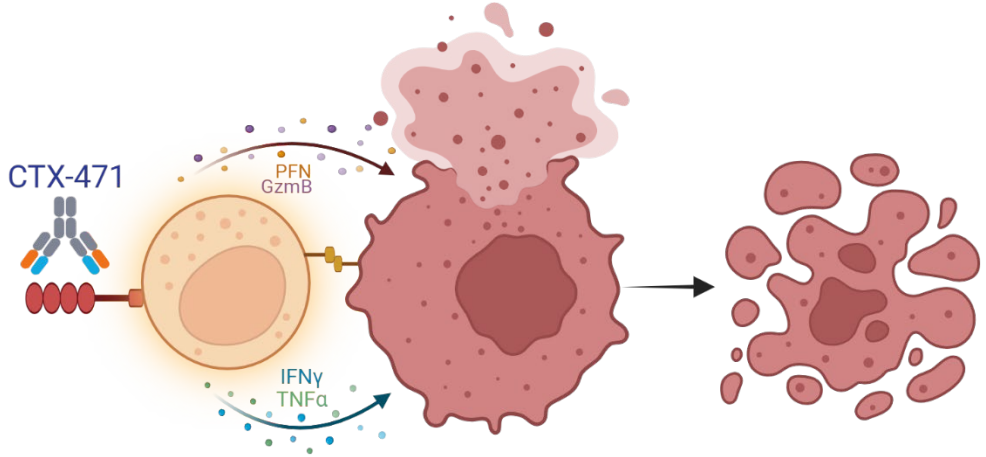
No NCAM (CD56) binding to NK cell

2



Infiltration and upregulation of CD137 leading to an activated NK cell

3

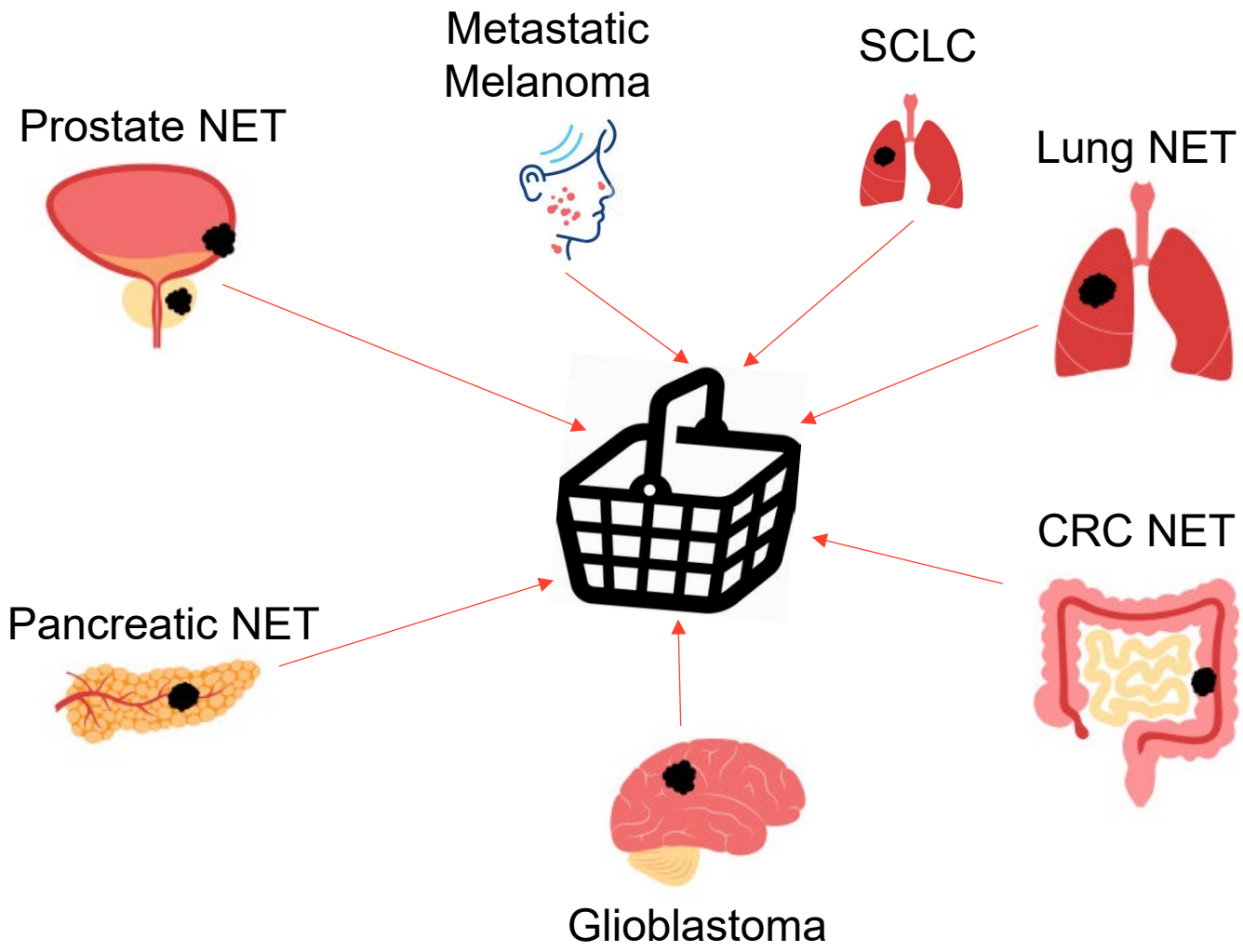


CD137 agonism via binding of CTX-471 leading to tumor cell killing

Created with BioRender.com

COMPASS THERAPEUTICS

Proposed CD56 (NCAM) Basket Trial



US 2023– SEER Database	
Indication	NCAM Pts
SCLC*	37,000
Glioblastoma*	14,707
Metastatic Melanoma	5,610
Pancreatic NET	3,203
Prostate NET	2,883
NSCLC NET	2,383
Colon NET	1,530
TOTAL	**60,316**

* ~100% NCAM+

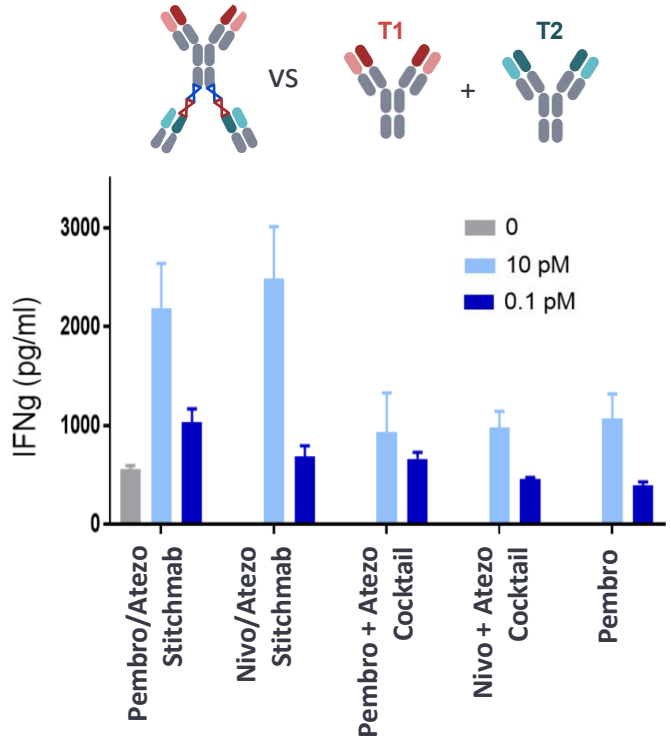
NET = "Neuroendocrine Tumor

CTX-8371

PD-1 x PD-L1 bispecific antibody

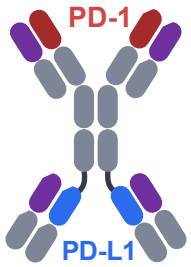
StitchMabs™ Platform was Utilized to Identify CTX-8371

Unexpected synergistic activity of PD-1/PD-L1 combination in bispecific Stitchmabs format



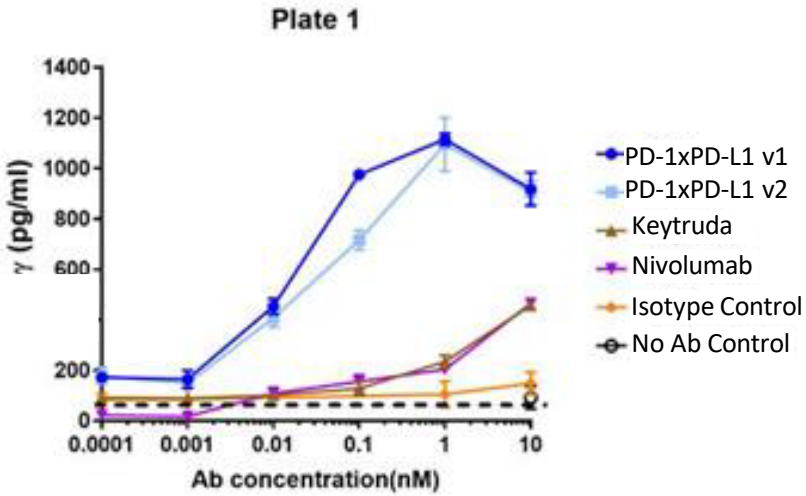
Mixed lymphocyte reaction (MLR) assay

Common Light Chain bispecifics were generated to test therapeutic hypothesis



CTX-8371

Our PD-1xPD-L1 bispecifics observed to outperform PD-1 blockers in T-cell activation assay

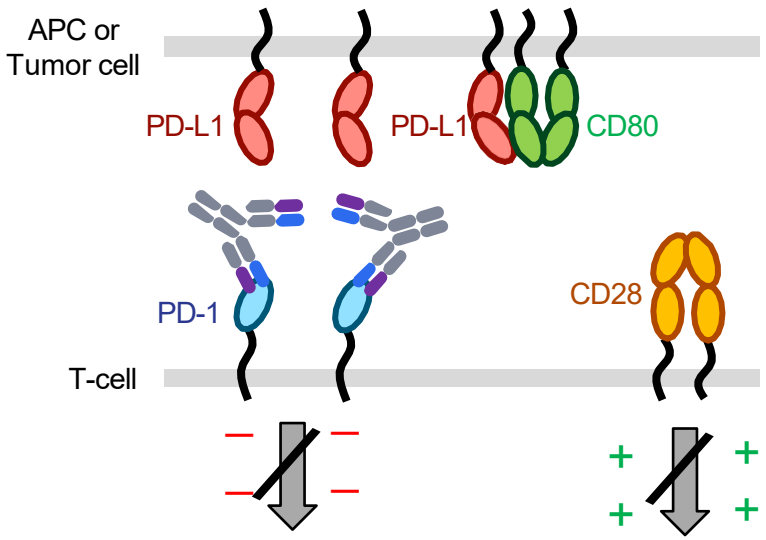


COMPASS THERAPEUTICS

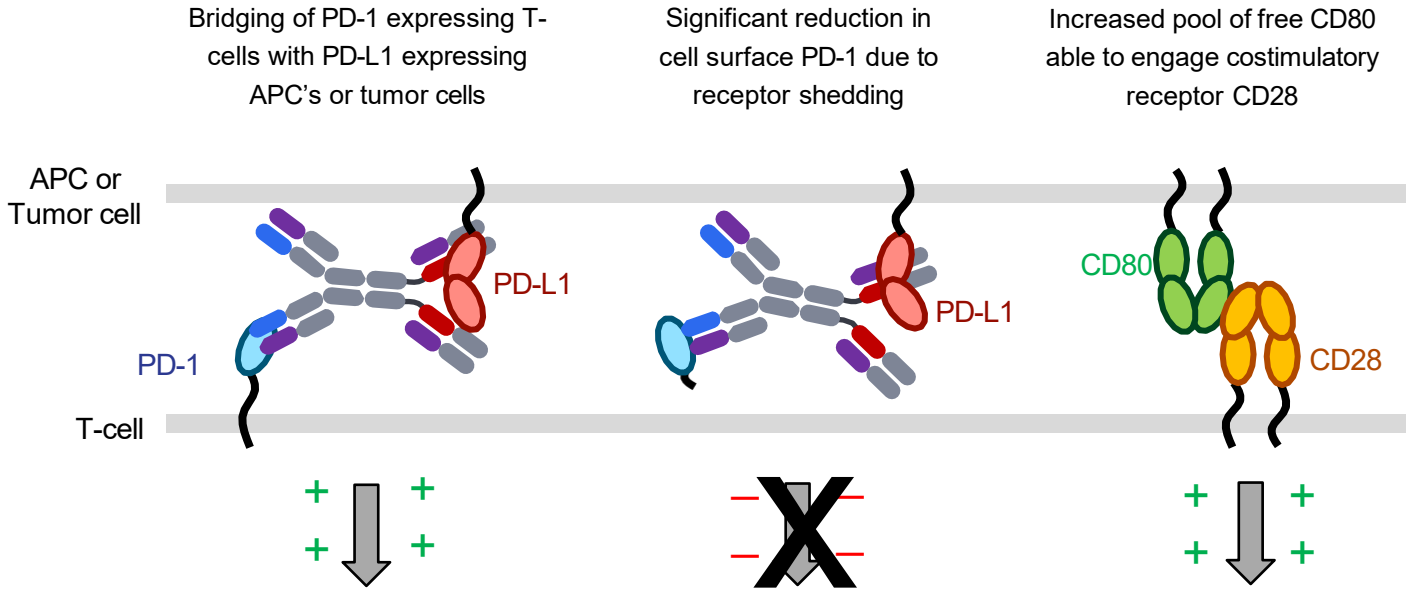
CTX-8371: Differentiated MoA Leads to Enhanced T-Cell Activation

Converting PD-1 positive T cells into PD-1 negative T cells

PD-1 blockers release brake but don't directly promote T-cell activation



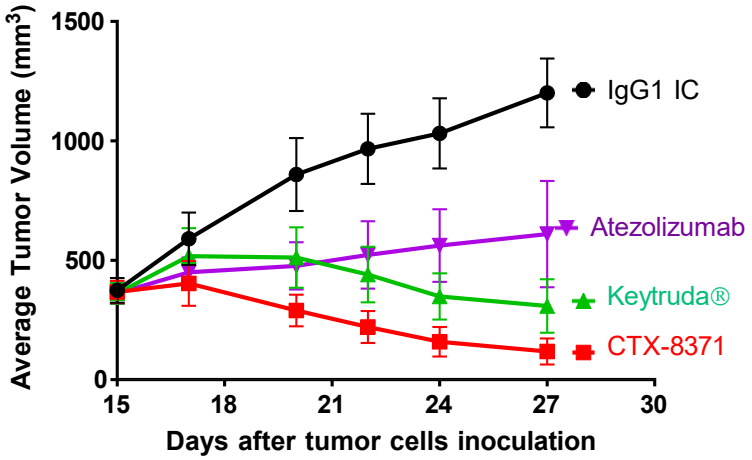
CTX-8371 activates T-Cells Through Diverse Mechanisms of Action

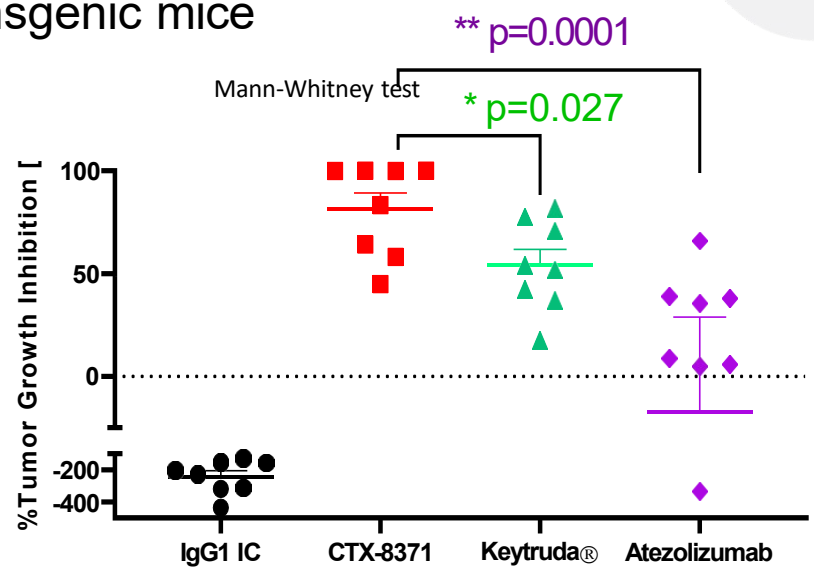


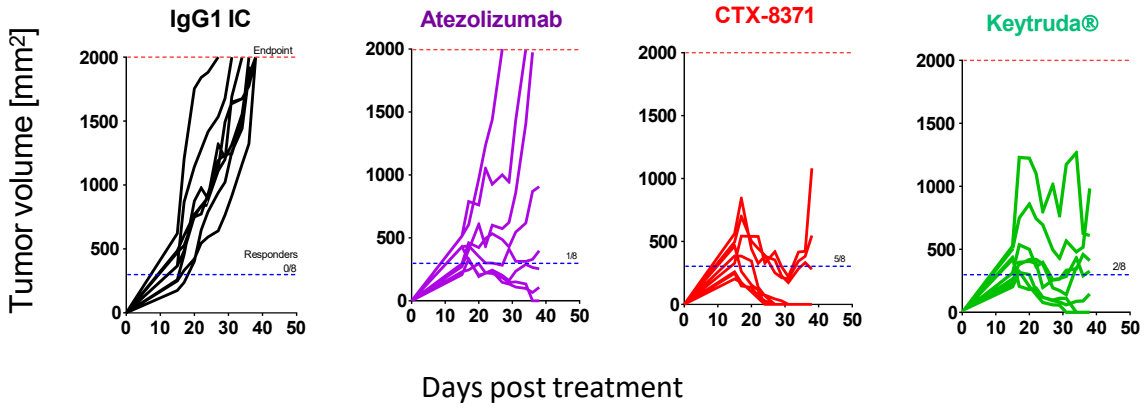
PMID: 38379869

CTX-8371 Pre-Clinical Proof of Concept

Activity in MC38-hPD-L1 model implanted in hPD-1/hPD-L1 transgenic mice







Group	% Cured	Tumor free / total
CTX-8371	**62.5**	**5/8**
Atezolizumab	12.5	1/8
IgG1 IC	0	0/8
Keytruda	25	2/8

COMPASS THERAPEUTICS

CTX-8371: Development Status

IND was accepted

First patient was dosed in April 2024

No DLTS; third dose level enrolling

Currently enrolling patients in dose escalation and opening additional clinical sites

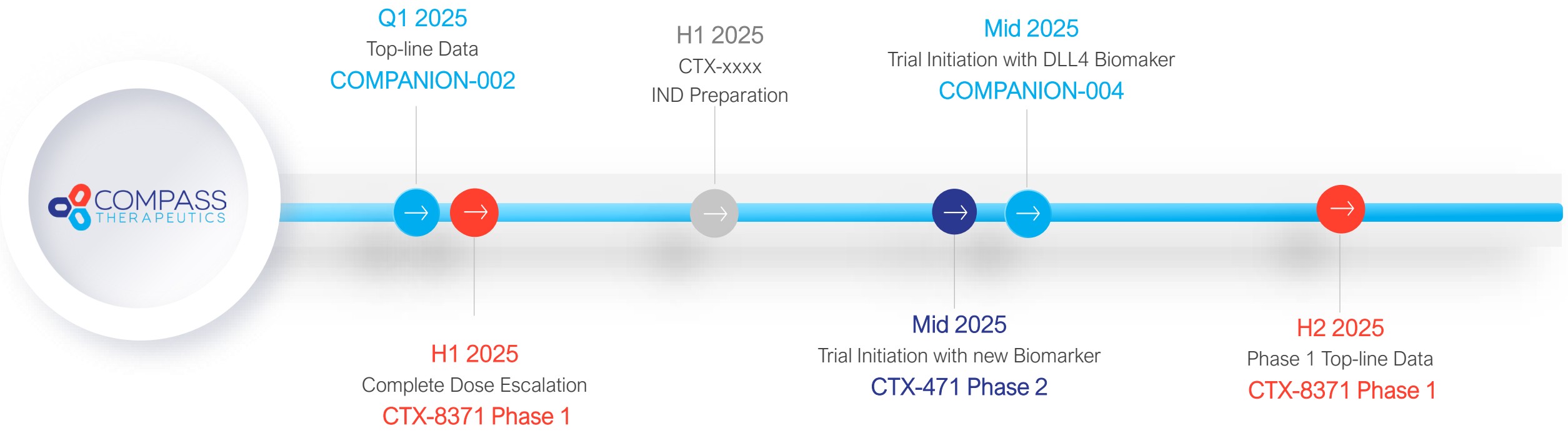
Phase 1 study design

Multiple ascending dose, dose-escalation study 5 doses planned: 0.1, 0.3, 1.0, 3.0, and 10 mg/kg

Post PD-1 or PD-L1 patient population: Melanoma, NSCLC, HNSCC, Hodgkin's Lymphoma, TNBC

Potential for proprietary combination regimens with CTX-009 and CTX-471

Upcoming Key Milestones



Compass Therapeutics

Website: compasstherapeutics.com
Nasdaq: CMPX