



Antibody Drug Conjugates : A Revolution in Breast Cancer Treatment for Advanced HER2 Negative Breast CAncer

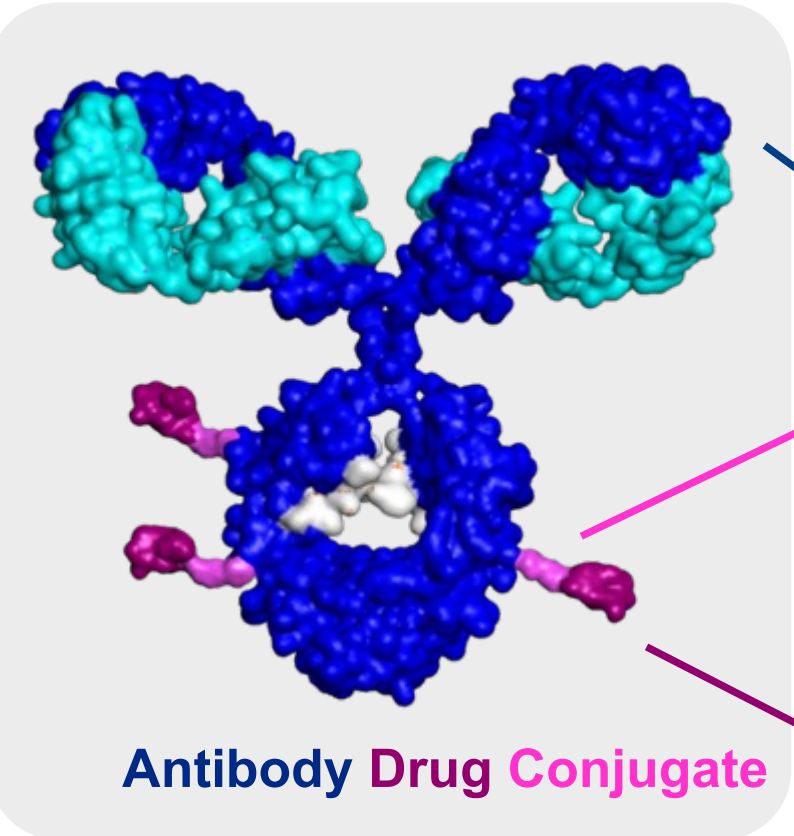
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ADCs have different antibodies, linkers and payloads

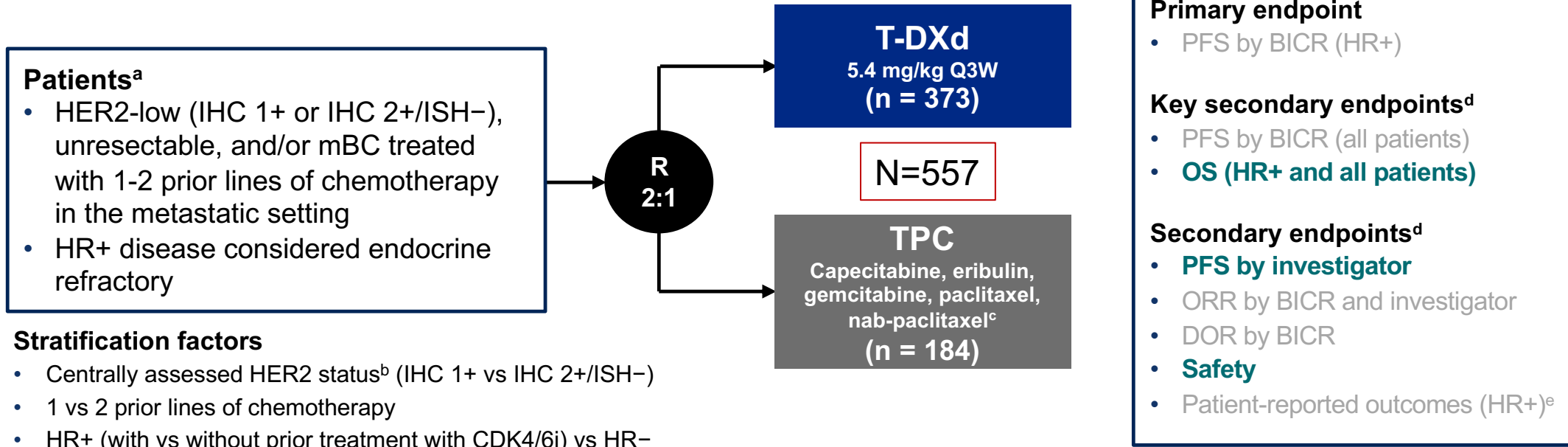


ADC Attributes	Trastuzumab emtansine (T-DM1)	Trastuzumab deruxtecan (T-DXd)	Sacituzumab govitecan (SG)	Datopotamab deruxtecan (Dato-DXd)	MK2870 Sacituzumab Tirumotecan (Sac-TMT)	Patritumab deruxtecan (HER3-DXd)	Disitamab vedotin (RC-48)	ARX788	
Antibody	Target	HER2	HER2	TROP2	TROP2	TROP2	HER3	HER2	HER2
	Antibody	Trastuzumab	Trastuzumab	hRS7 IgG1k	Datopotamab	hRS7 IgG1	Patritumab	Hertuzumab	Trastuzumab
Linker	DAR	~3.5:1	7-8:1	~7.6:1	~4:1	~7.4:1	~8:1	4:1	2:1
	Linker	Thioether	Tetrapeptide-based	Hydrolysable	Tetrapeptide-based	2-methylsulfonyl pyrimidine	Tetrapeptide-based	Valine-citrulline	Hydroxylamine-PEG4
	Cleavable linker?	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Payload	Payload	Emtansine	DXd	SN-38	DXd	KL610023 (T030)	DXd	Monomethyl Auristatin E (MMAE)	Amberstatin (MMAF)
	Payload MoA	Anti-microtubule	Topo1 inhibitor	Topo1 inhibitor	Topo1 inhibitor	Topo1 inhibitor	Topo1 inhibitor	Anti-microtubule	Anti-microtubule
	Membrane permeable?	Low	Yes	Yes	Yes	Yes	Yes	Yes	No

ADC=antibody-drug conjugate; DAR=drug to antibody ratio; Dato-DXd=datopotamab deruxtecan; HER2/3=human epidermal growth factor receptor 2/3; IgG-immunoglobulin; MMAE-Monomethyl Auristatin E; MoA=mechanism of action; SG=sacituzumab govitecan; T-DM1=trastuzumab emtansine; T-DXd=trastuzumab deruxtecan; TROP=trophoblast cell surface antigen.

Destiny-Breast04: Updated Survival Results of T-DXd in HER2-low Metastatic Breast Cancer

An open-label, multicenter study (NCT03734029)¹⁻³

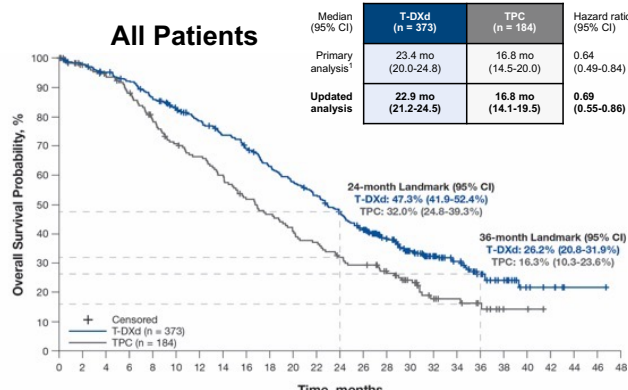
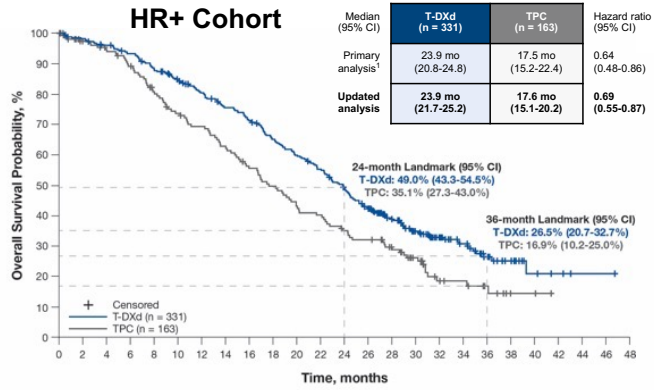


Chemotherapy, n (%)	
Eribulin	94 (51.1)
Capecitabine	37 (20.1)
Nab-paclitaxel	19 (10.3)
Gemcitabine	19 (10.3)
Paclitaxel	15 (8.2)

At the updated data cutoff (March 1, 2023), median follow-up was 32.0 months (95% CI, 31.0-32.8 months)

- At the primary analysis (data cutoff, January 11, 2022), median follow-up was 18.4 months
- The primary analysis of PFS was by BICR; this is comparing investigator assessment
- Patient population: Median one line of chemotherapy for MBC, 65-70% prior CDKi, 70% liver mets

DB04: Updated Overall Survival in HER2 low MBC



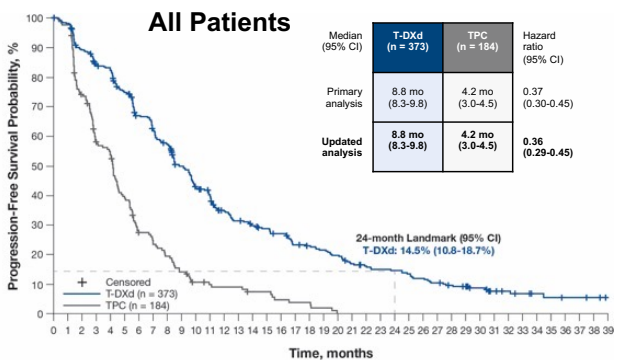
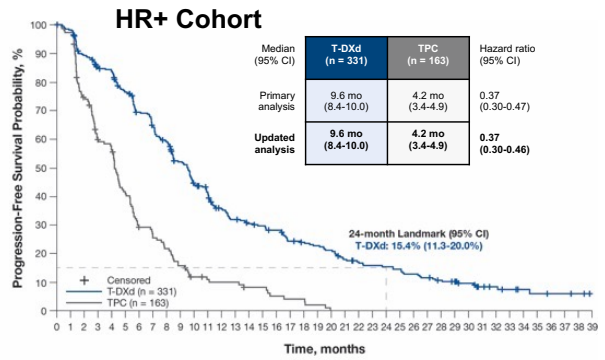
Primary Analysis (BICR)

OS	HR+		HR-		All Patients	
	T-DXd (n=331)	TPC (n=163)	T-DXd (n=40)	TPC (n=18)	T-DXd (n=373)	TPC (n=184)
Median OS, months	23.9	17.5	18.2	8.3	23.4	16.8
HR (95% CI); P value	HR 0.64 (0.48-0.86); 0.0028		0.48 (0.24-0.95)		HR 0.64 (0.49-0.84); 0.0010	

Patients still at risk:
T-DXd (n = 331) 331 320 303 317 313 307 302 292 284 276 270 264 258 253 243 233 225 212 202 189 183 176 168 155 147 138 124 109 94 81 72 66 54 46 42 34 23 17 14 7 5 4 3 2 1 1 0
TPC (n = 163) 163 150 144 142 138 134 129 123 114 109 103 97 96 92 87 82 76 71 68 64 59 56 50 47 43 42 35 31 29 16 13 11 9 7 5 2 2 1 0

Patients still at risk:
T-DXd (n = 373) 373 366 360 355 349 342 337 328 314 308 298 276 269 257 244 240 231 217 206 199 191 182 168 160 148 137 122 107 94 81 76 62 52 48 39 38 21 18 11 7 6 5 3 1 1 0
TPC (n = 184) 184 163 157 151 145 139 133 127 121 115 109 103 97 91 85 79 73 67 61 55 49 43 37 31 25 19 13 7 6 5 3 2 1 0

DB04: Updated PFS (Investigator Assessed)

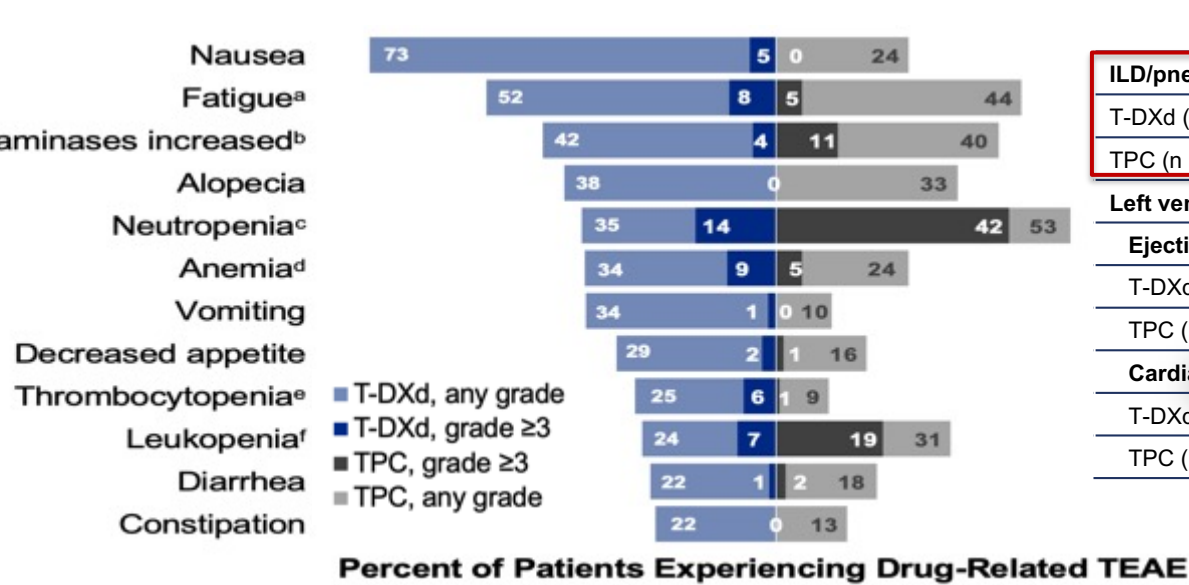


PFS	HR+		HR-		All Patients	
	T-DXd (n=331)	TPC (n=163)	T-DXd (n=40)	TPC (n=18)	T-DXd (n=373)	TPC (n=184)
Median PFS, months	10.1	5.4	8.5	2.9	9.9	5.1
HR (95% CI); P value	0.51 (0.40-0.64); <0.0001		0.46 (0.24-0.89)		HR 0.50 (0.40-0.63); <0.0001	

Patients still at risk:
T-DXd (n = 331) 331 320 290 272 267 241 235 181 154 139 119 88 80 74 63 60 55 44 40 37 36 34 30 27 23 21 16 11 9 7 5 4 3 2 0
TPC (n = 163) 163 142 137 83 76 56 34 29 21 14 12 11 8 8 5 4 4 2 0

Patients still at risk:
T-DXd (n = 373) 373 364 327 324 297 267 224 166 166 143 120 107 97 90 85 79 67 64 60 50 48 42 38 35 31 27 23 21 18 11 9 7 5 4 3 2 0
TPC (n = 184) 184 163 157 85 61 35 29 21 14 12 11 8 8 5 4 4 2 0

Adverse Events



	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Any Grade
ILD/pneumonitis (adjudicated, drug-related), n (%)						
T-DXd (n = 371)	13 (3.5)	24 (6.5)	4 (1.1) ^a	0	4 (1.1) ^a	45 (12.1)
TPC (n = 172)	1 (0.6)	0	0	0	0	1 (0.6)
Left ventricular dysfunction						
Ejection fraction decreased, n (%)						
T-DXd (n = 371)	2 (0.5)	15 (4.0)	1 (0.3)	0	0	18 (4.9)
TPC (n = 172)	0	0	0	0	0	0
Cardiac failure, n (%)						
T-DXd (n = 371)	0	1 (0.3)	1 (0.3)	0	0	2 (0.5)
TPC (n = 172)	0	0	0	0	0	0

For T-DXd: 8.2% discontinued for ILD/pneumonitis;
4.6% dose reduced for N/V

n (%)	Nausea		Vomiting	
	T-DXd n = 371	TPC n = 172	T-DXd n = 371	TPC n = 172
Dose reduction associated with N/V	17 (4.6)	4 (2.3)	3 (0.8)	1 (0.6)
Drug interruption associated with N/V	5 (1.3)	4 (2.3)	0	0
Drug discontinuation associated with N/V	1 (0.3)	0	1 (0.3)	0

Three Classes of Anti-Emetic Premedication is Recommended
This can be individualized to patient symptoms

1 5-HT₃ receptor antagonists

- Palonosetron: 0.25 mg IV; 0.5 mg oral
- Granisetron: 1 mg IV; 2 mg oral
- Dolasetron: 100 mg oral
- Tropisetron: 5mg IV; 5mg oral
- Ondansetron: 8 mg IV; 16 mg oral

2 NK-1 receptor antagonists

- Aprepitant: 125 mg (acute); 80 mg daily for 2 days (delayed)
- Fosaprepitant: 150 mg IV
- Netupitant: 300 mg

3 Corticosteroids

Dexamethasone:

- Acute emesis: 8 mg once
- Delayed emesis: 8 mg daily / 4 mg twice a day for 2–3 days

Targeting 'low' and 'ultralow' HER2-expressing tumors in mBC

HER2 IHC categories within HR+, HER2- mBC (per ASCO/CAP guidelines¹)

DESTINY-Breast06
patient population:

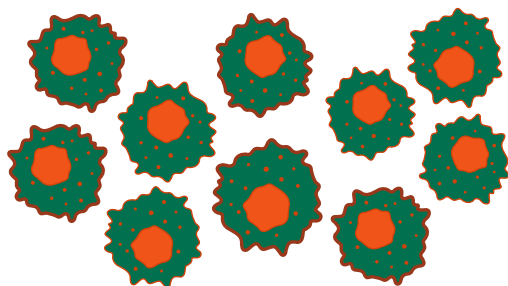
~85% of HR+, HER2- mBC

HER2-low

~60–65%^{2,3}

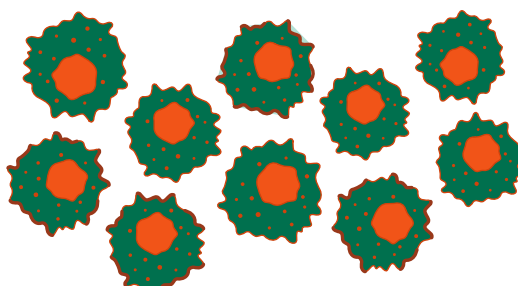
HER2-ultralow

~20–25%^{2,3}



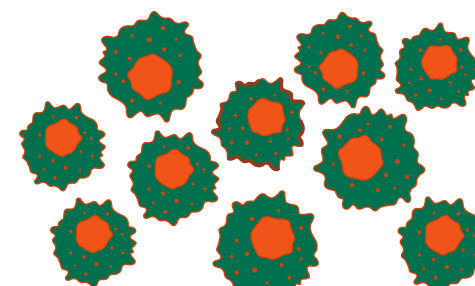
IHC 2+/ISH-

Weak-to-moderate complete membrane staining in >10% tumor cells

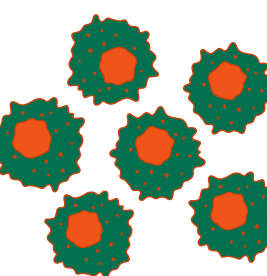


IHC 1+

Faint, incomplete membrane staining in >10% tumor cells

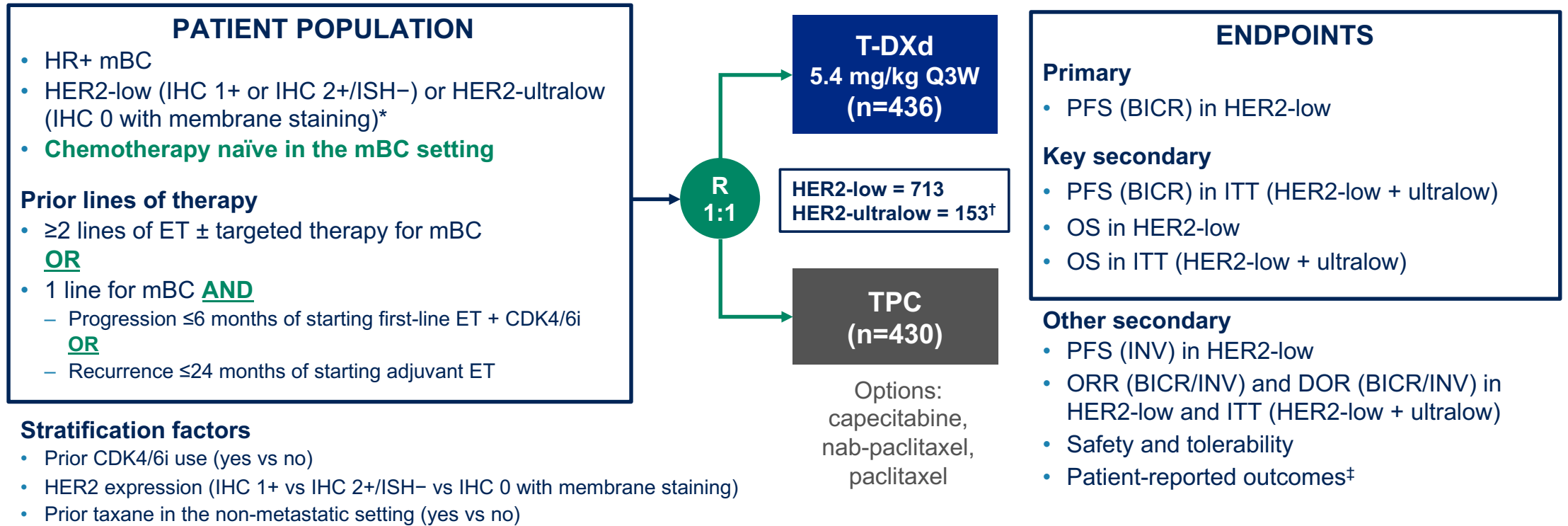


IHC 0



Absent / no observable membrane staining

DESTINY-Breast06: a Phase 3, randomized, multicenter, open-label study (NCT04494425)



At DCO, 119 patients (14.0%) remained on treatment: 89 (20.5%) T-DXd and 30 (7.2%) TPC

Median duration of follow up: 18.2 mo (ITT)

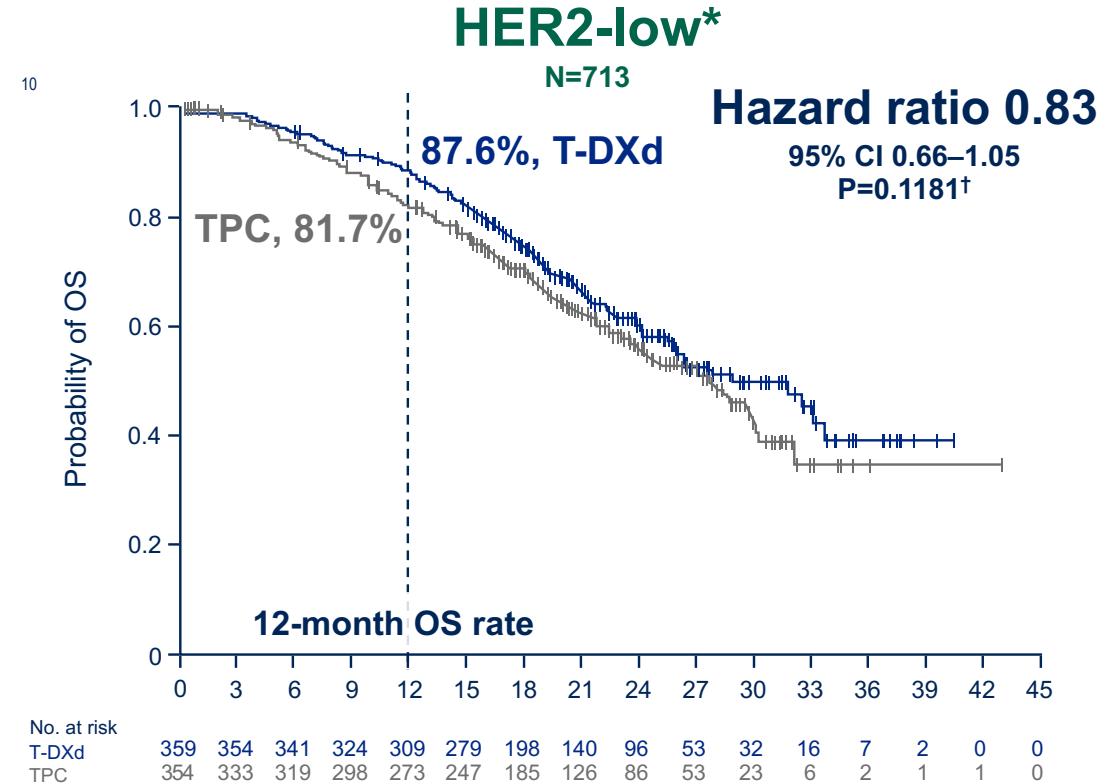
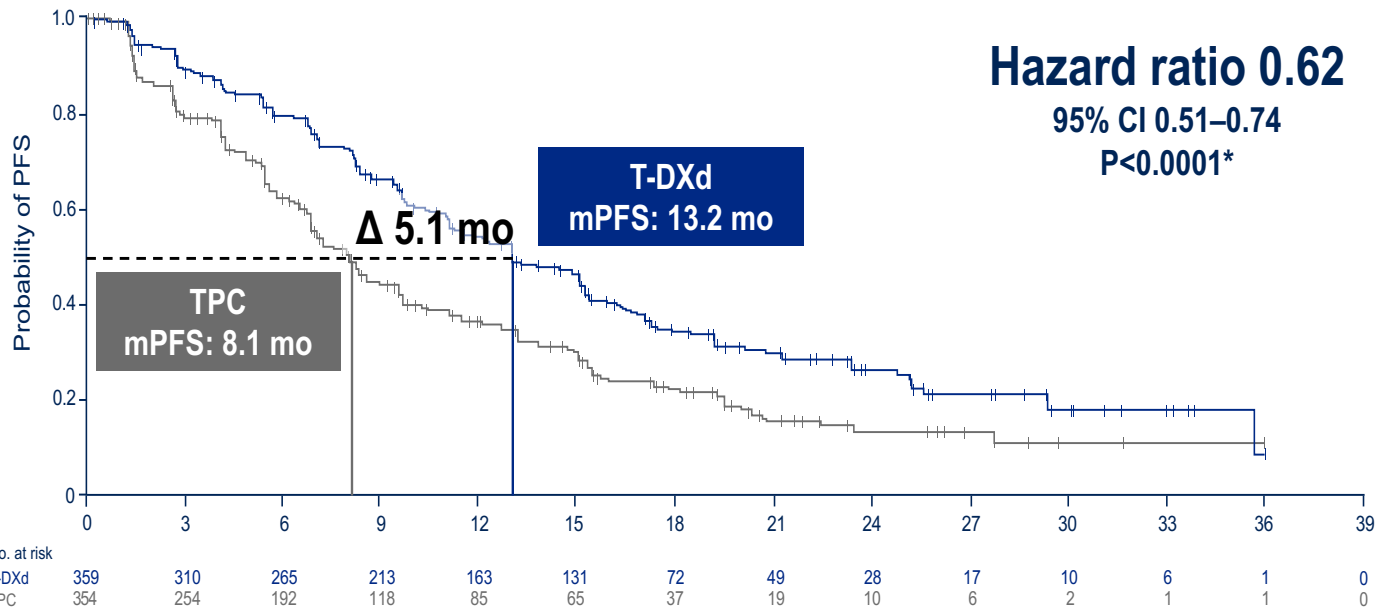
Patient population

- ~30% primary endocrine resistance
- ~30% de novo metastatic disease
- 3% bone only disease
- ~66% liver metastases
- HER2 ultra-low similar to HER2 low population
- Median 2 prior lines of ET
- 89% prior CDKi (9% < 6 mo), ~30% other targeted agents
- ~54% chemotherapy for early-stage disease

TPC	n (%)
Capecitabine	257 (59.8)
Nab-paclitaxel	105 (24.4)
Paclitaxel	68 (15.8)

Destiny Breast-06: PFS and OS in HER2-Low

PFS (BICR) in HER2-low: primary endpoint



T-DXd demonstrated a statistically significant and clinically meaningful improvement in PFS compared with standard-of-care chemotherapy in HER2-low

20.1% of patients in the TPC group received T-DXd post treatment discontinuation (HER2-low)

Destiny Breast-06: PFS and OS in HER2-ultralow

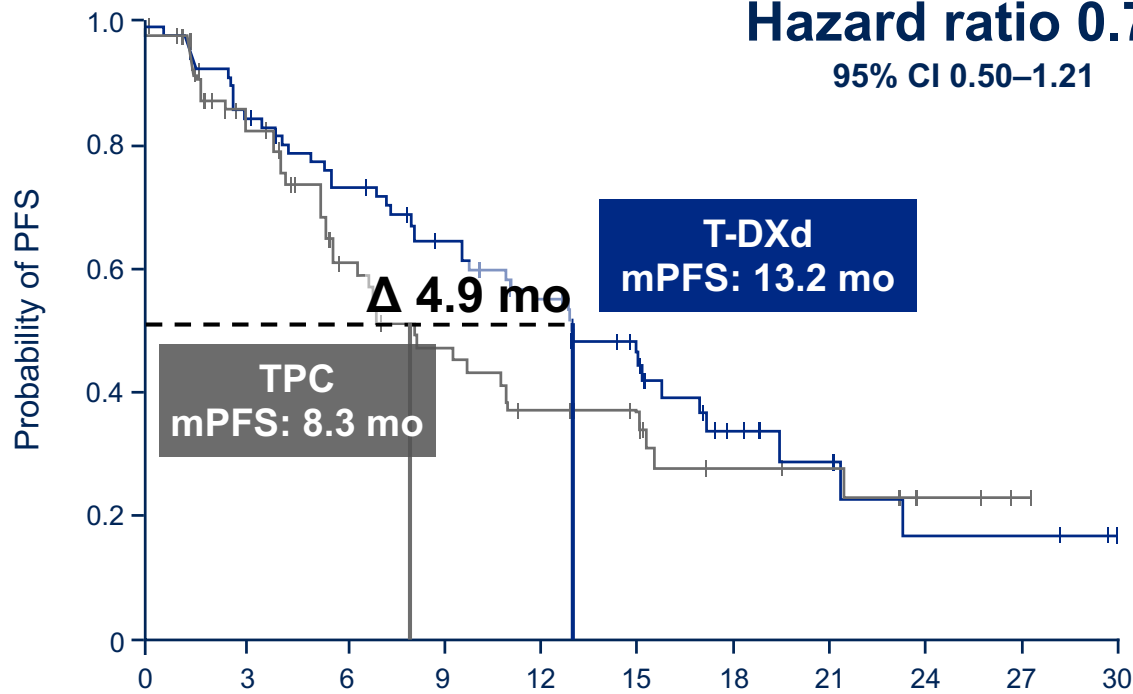
Prespecified Exploratory Analyses

PFS (BICR)

N=152

Hazard ratio 0.78

95% CI 0.50–1.21

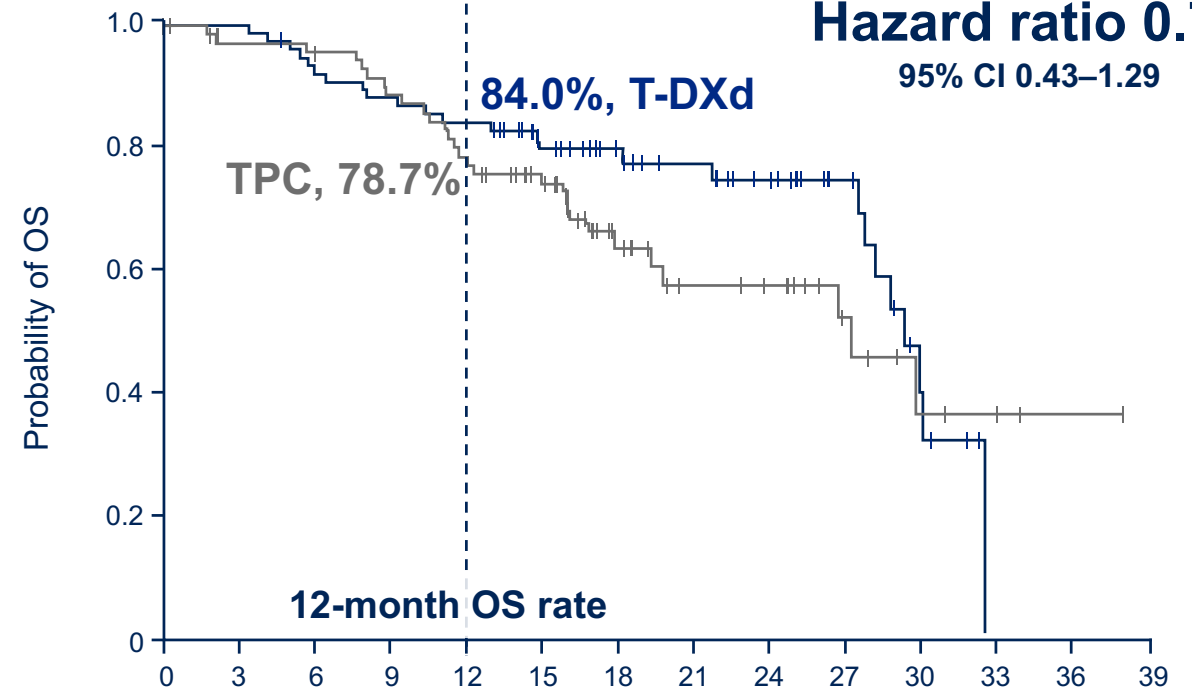


OS*

N=152

Hazard ratio 0.75

95% CI 0.43–1.29

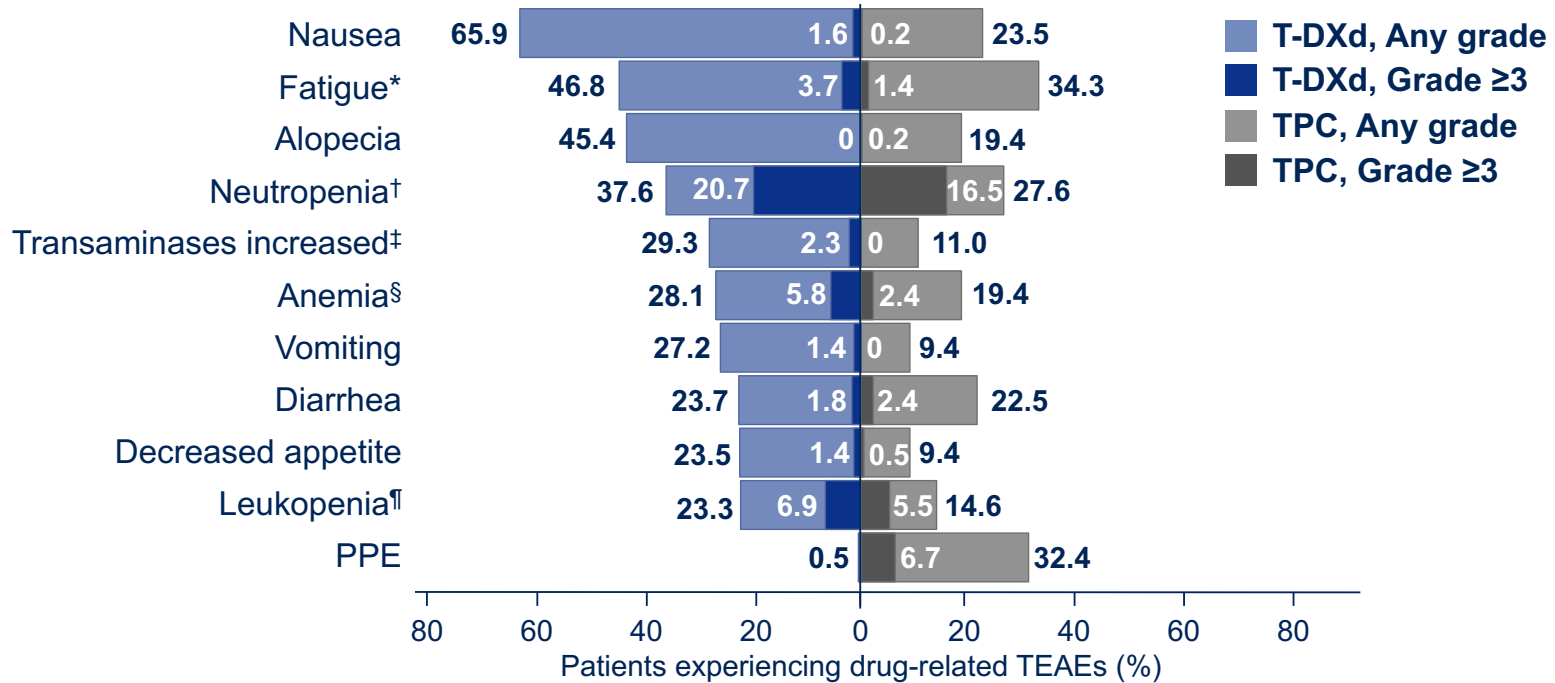


No. at risk	0	3	6	9	12	15	18	21	24	27	30
T-DXd	76	64	53	44	35	24	9	6	3	3	0
TPC	76	52	32	24	18	14	7	6	3	1	0

No. at risk	0	3	6	9	12	15	18	21	24	27	30	33	36	39
T-DXd	76	76	70	66	63	49	36	28	23	15	6	0	0	0
TPC	76	69	68	62	55	45	25	17	15	9	4	3	1	0

PFS improvement with T-DXd vs TPC in HER2-ultralow was consistent with results in HER2-low

Safety



TEAEs leading to death

- 11 (2.4%) vs 6 (1.4%)
- Treatment related: 5 (1.2%) vs 0

Most common TEAE associated with treatment discontinuation

- T-DXd: 5.3%, pneumonitis*
- TPC: 1.4%, peripheral neuropathy

Left ventricular dysfunction

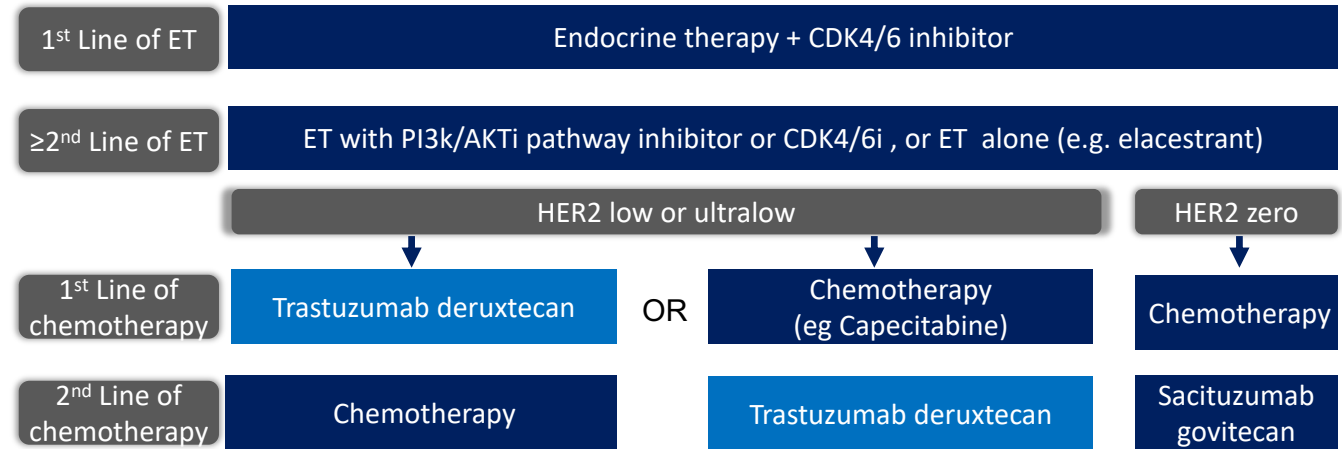
- 8.1% any grade
- 0.7% grade 3

Adjudicated as drug-related interstitial lung disease / pneumonitis*

n (%)	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Any grade
T-DXd (n=434)	7 (1.6)	36 (8.3)	3 (0.7)	0	3 (0.7)	49 (11.3)
TPC (n=417)	0	1 (0.2)	0	0	0	1 (0.2)

Interpretation

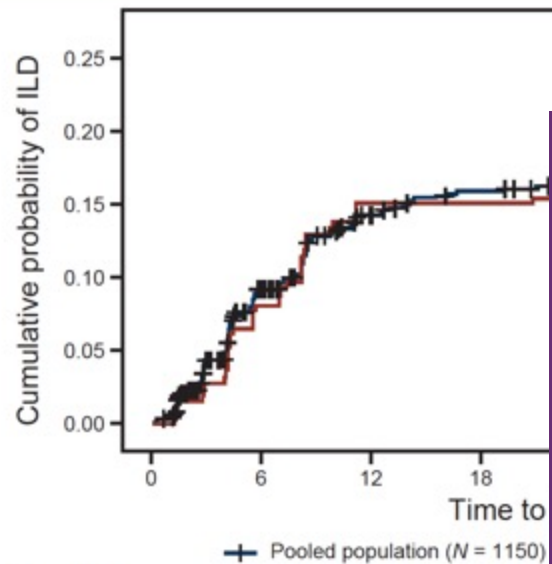
- T-DXd shows a clear efficacy advantage over TPC as first line chemotherapy
 - No OS benefit to date, cross-over may impact this endpoint
 - More toxicity (grade ≥ 3 AEs, fatal AEs)
- Although an exploratory endpoint, similarity of efficacy in ultra-low to HER2 low suggest this is a reasonable and effective option in this subset
- Definition of ultra-low: 0-1+? A challenge for our pathologists
 - Multiple new assays in development
 - Destiny Breast 15 evaluating clinically HER2 0 cancers



Krop, ASCO 2024

- Highly effective option after endocrine therapy, but appropriate sequence (1st or 2nd chemotherapy line) should be determined for individual patients
 - 2nd line: Bone/soft tissue dominant, less symptomatic, long DFI
 - 1st line: Visceral dominant, more symptomatic, short DFI

Pooled Analysis of ILD/Pneumonitis in 9 Trastuzumab deruxtecan Monotherapy Studies



Interrupt trastuzumab deruxtecan and initiate corticosteroid treatment if ILD/pneumonitis is suspected

Promptly Investigate Evidence of ILD

- Evaluate patients with suspected ILD by radiographic imaging
- Consider consultation with a pulmonologist

For Asymptomatic ILD (Grade 1)

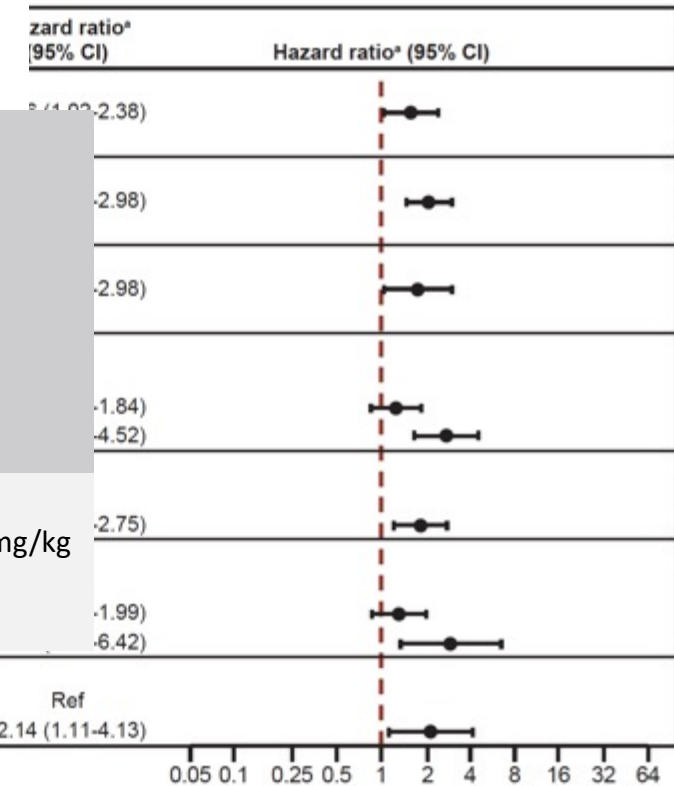
- Consider corticosteroid treatment (eg, ≥ 0.5 mg/kg prednisone or equivalent)
- Withhold trastuzumab deruxtecan until recovery to Grade 0
 - If resolved in ≤ 28 days from date of onset, maintain dose
 - If resolved in > 28 days from date of onset, reduce dose one level

For Symptomatic ILD (Grade ≥ 2)

- Promptly initiate corticosteroid treatment (eg, ≥ 1 mg/kg prednisone or equivalent)
- Permanently discontinue trastuzumab deruxtecan

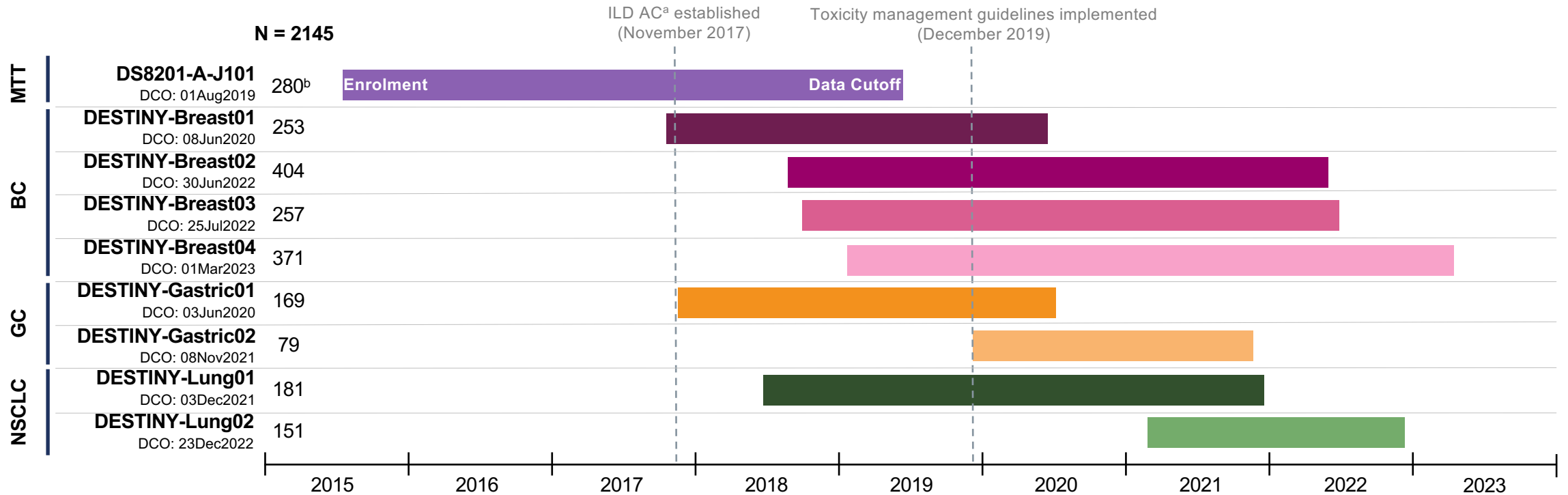
No. at risk (events)		0	6	12	18	24	30	36	42	48
Pooled population	1150 (0)	547 (101)	262 (154)	142 (170)						
HER2+ breast cancer	245 (0)	170 (20)	95 (37)	66 (37)						
ILD rate		0	6	12	18	24	30	36	42	48
Pooled population	0	9.2%	14.3%	16.0%	16.4%	16.6%	16.6%	16.6%	17.5%	17.5%
HER2+ breast cancer	0	8.2%	15.1%	15.1%	15.5%	16.3%	16.3%	16.3%	16.3%	16.3%

Baseline SpO ₂ ^a	No. of patients	Hazard ratio ^a (95% CI)
$\geq 95\%$	1080	Ref
$< 95\%$	57	2.14 (1.11-4.13)



- 1150 pts (44.3% breast cancer) with a median treatment duration 5.8 mo (0.7-56.3)
- Overall incidence: 15.4% (grade 5: 2.2%); grade 1-2: 77.4%
- 87% had their first event within 12 months of their first dose

POOLED ANALYSIS FOR GRADE 1 ILD RECHALLENGE



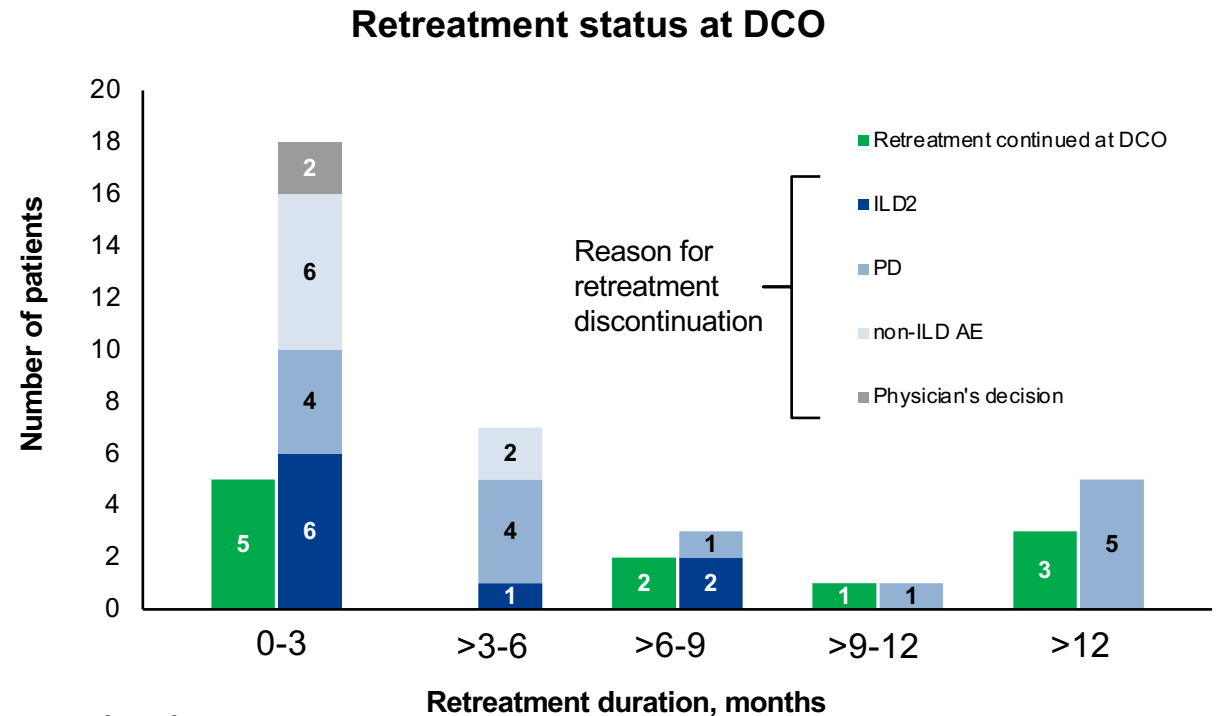
- Data were pooled from 9 clinical trials to identify patients with Gr 1 ILD as assessed by the investigators and confirmed by the adjudication committee (AC) who were retreated with T-DXd
 - All patients received at least 1 dose of T-DXd (5.4-8.0 mg/kg) monotherapy
- T-DXd toxicity management guidelines recommend a dose reduction for retreatment if ILD takes longer than 28 days to resolve. At the time of study inclusions, guidelines recommended discontinuation of T-DXd if ILD had not resolved within 49 days from the last T-DXd dose^c*

AC, adjudication committee; BC, breast cancer; DCO, data cutoff ; GC, gastric cancer; ILD, interstitial lung disease/pneumonitis; MTT, multiple tumor types; NSCLC, non-small cell lung cancer.

^aEach AC session included an oncologist, a radiologist, and a pulmonologist. ^bOnly patients who received at least 1 dose of T-DXd 5.4-8.0 mg/kg are included. The color bar for each study indicates the time from patient enrollment to data cut-off. ^cGuidelines have subsequently been updated to recommend discontinuation of T-DXd if ILD has not resolved within 126 days from the date of last drug dose.

T-DXd Retreatment Characteristics

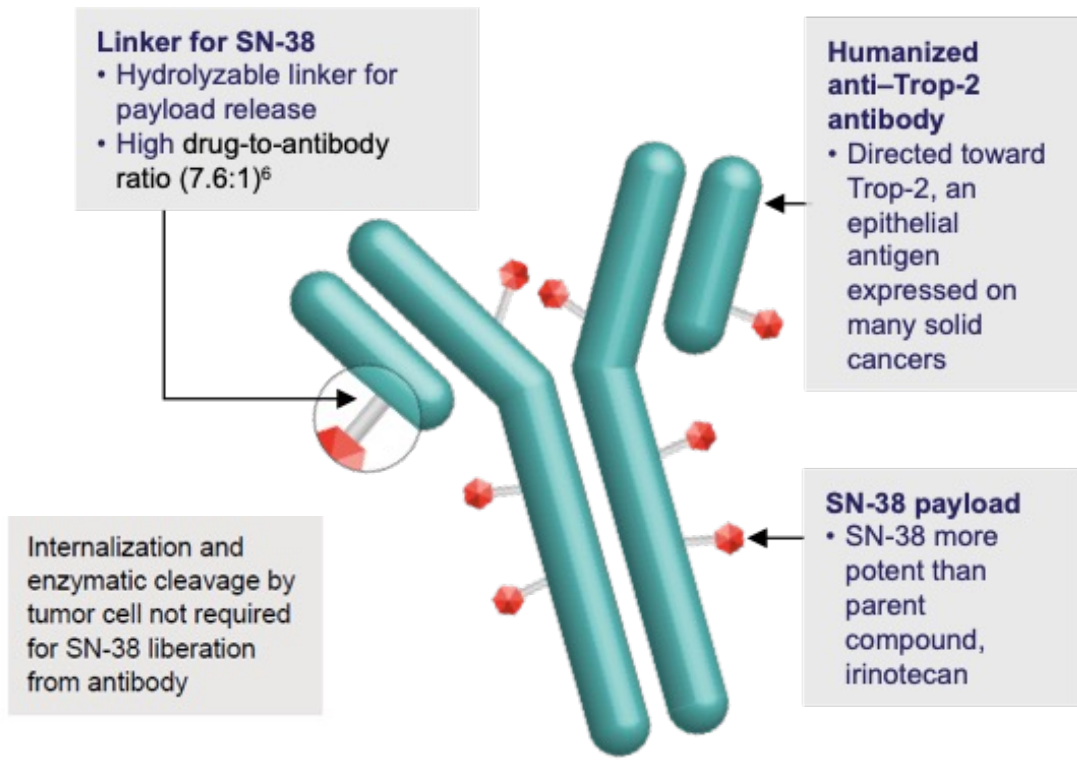
T-DXd retreatment (N = 45)	
Dose level of T-DXd retreatment	
Same dose, n (%)	31 (68.9)
Reduced dose, n (%)	14 (31.1)
Median time to retreatment after ILD1 onset (range), days	28 (8-48)
Median retreatment cycles (range)	5.0 (1-37)
Patients with ILD2 (n = 15)	5.0 (2-23)
Patients without ILD2 (n = 30)	4.5 (1-37)
Median retreatment duration (range), days	85.0 (1-848)
Patients with ILD2 (n = 15)	85.0 (22-648)
Patients without ILD2 (n = 30)	82.5 (1-848)



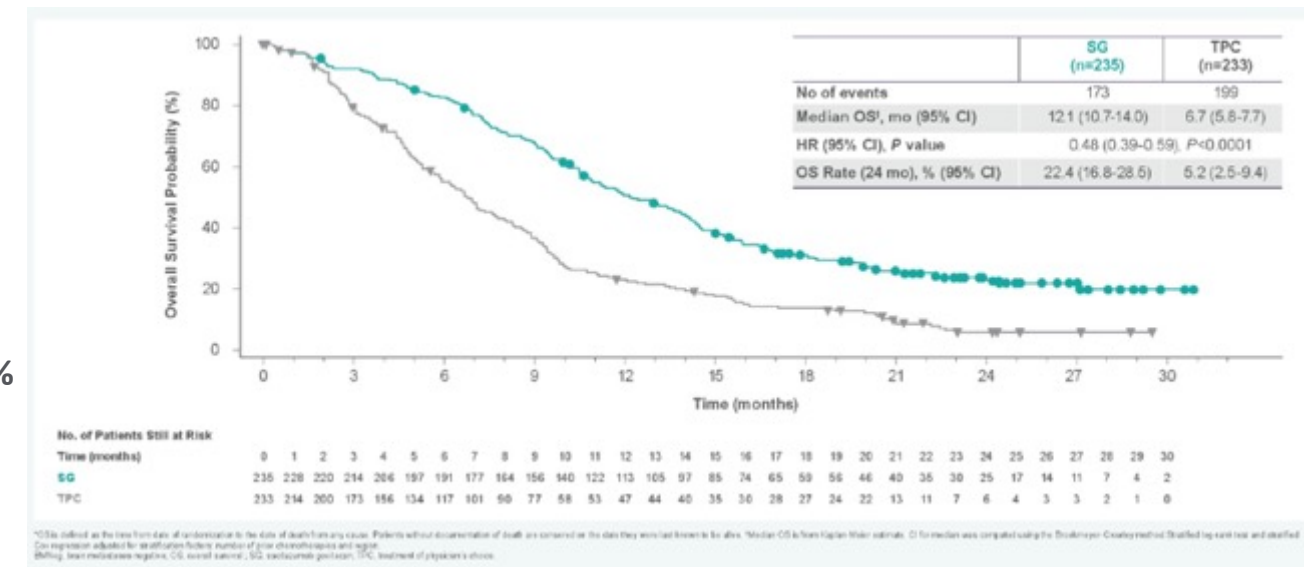
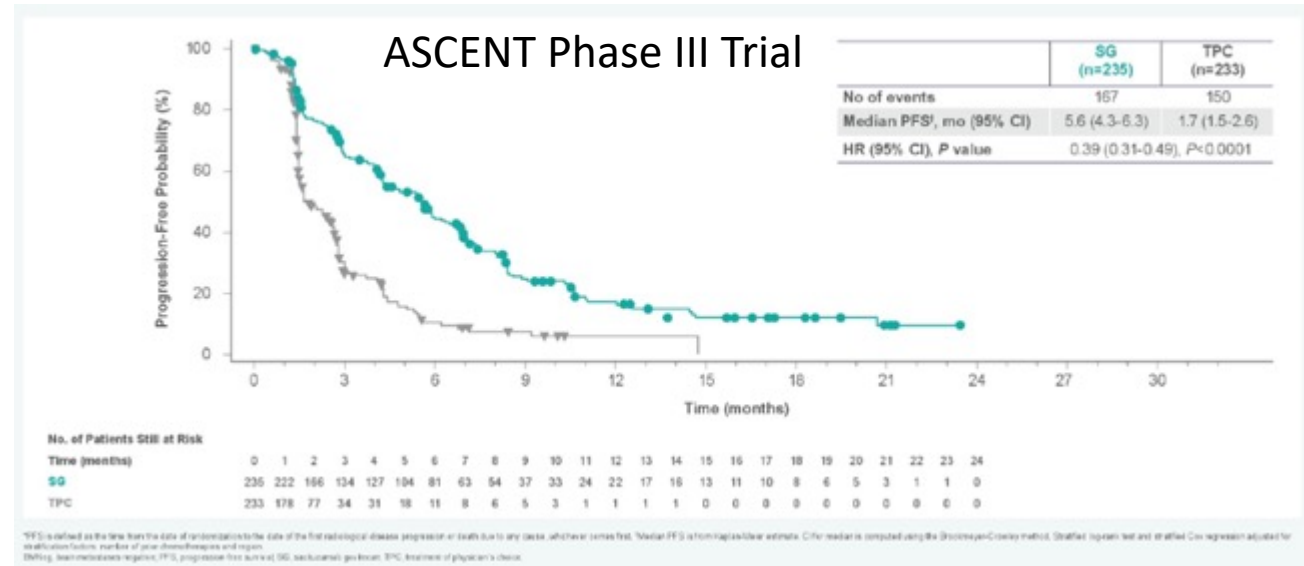
- 68.9% (31/45) of patients were retreated without any dose reductions
- 24.4% (11/45) of patients were still receiving T-DXd retreatment at the DCOs of each respective study
- Progressive disease was the main reason for T-DXd retreatment discontinuation (33.3% [15/45] of patients)
 - 20.0% (9/45) of patients discontinued retreatment due to recurrent ILD (ILD2)
- **33.3% (15/45) of patients were retreated for >6 months and 17.8% (8/45) of patients were retreated for >12 months**

AE, adverse event; DCO, data cutoff; ILD, interstitial lung disease/pneumonitis; ILD1; first Gr 1 ILD event; ILD2, any-grade recurrent ILD event; PD, progressive disease; T-DXd, trastuzumab deruxtecan.

Sacituzumab Govitecan (SG): First-in-Class Trop-2–Directed ADC



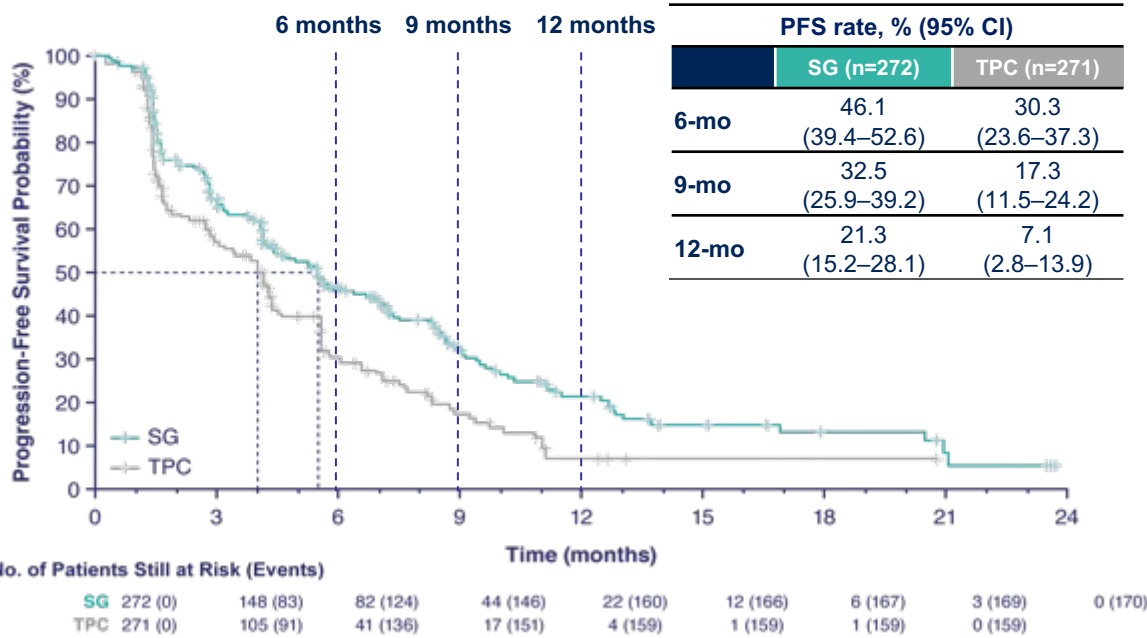
- Trop-2 is expressed in all subtypes of breast cancer and linked to poor prognosis
- Key grade ≥ 3 TRAEs (SG vs TPC): neutropenia (51% vs 33%), diarrhea (10% vs <1%), leukopenia (10% vs 5%), anemia (8% vs 5%), FN (6% vs 2%)
 - G-CSF: 49% in the SG arm vs 23% in the TPC arm
 - Dose reductions due to TRAEs were similar (22% SG vs 26% TPC)
 - No severe CV toxicity, no grade >2 neuropathy or grade >3 ILD with SG



TROPICS 02 for HR+/HER2- Disease: PFS & OS in the ITT Population

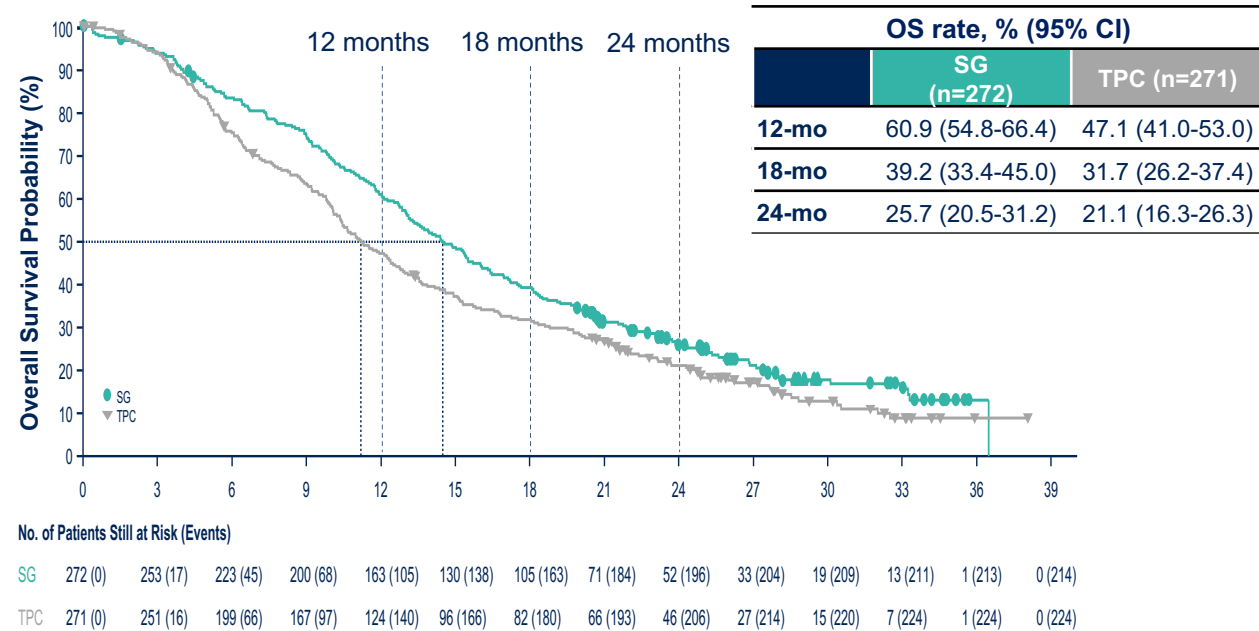
PFS¹

BICR analysis	SG (n=272)	TPC (n=271)
Median PFS, mo (95% CI)	5.5 (4.2–7.0)	4.0 (3.1–4.4)
Stratified HR (95% CI)	0.66 (0.53–0.83)	
Stratified Log Rank P value	P=0.0003	



OS^{2,3}

	SG (n=272)	TPC (n=271)
Median OS, mo (95% CI)	14.5 (13.0–16.0)	11.2 (10.2–12.6)
Stratified HR (95% CI)	0.79 (0.65–0.95)	
Nominal P value	P=0.0133	



SG demonstrated a statistically significant improvement in PFS and OS vs TPC

Median follow-up was 10.2 months.

BICR, blinded independent central review; ITT, intent-to-treat; OS, overall survival; PFS, progression-free survival; SG, sacituzumab govitecan; TPC, treatment of physician's choice.

1. Rugo HS, et al. *J Clin Oncol.* 2022;40:3365-3376. Adapted from Rugo HS, et al. Sacituzumab govitecan in hormone receptor-positive/human epidermal growth factor receptor 2-negative metastatic breast cancer. *J Clin Oncol.* 2022. doi: 10.1200/JCO.22.01002. Reprinted with permission from American Society of Clinical Oncology. 2. Rugo H, et al. ESMO 2022. Oral LBA76. 3. Tolaney et al, ASCO Abstract 1003; Rugo et al, Lancet 2023

No new toxicity signals compared to ASCENT

ASCENT and TROPiCS-02: Safety Outcomes by UGT1A1 Status

UTG1A1

- ✓ Variants affect enzymatic function, causing reduced metabolic capacity
- ✓ Over 50% of individuals may harbor an UGT1A1 polymorphism, dependent on genetic ancestry

Grade ≥3 TEAEs Overall (%)	SG (n=268)
Neutropenia	52
Diarrhea	10
Anemia	8
Febrile neutropenia	6

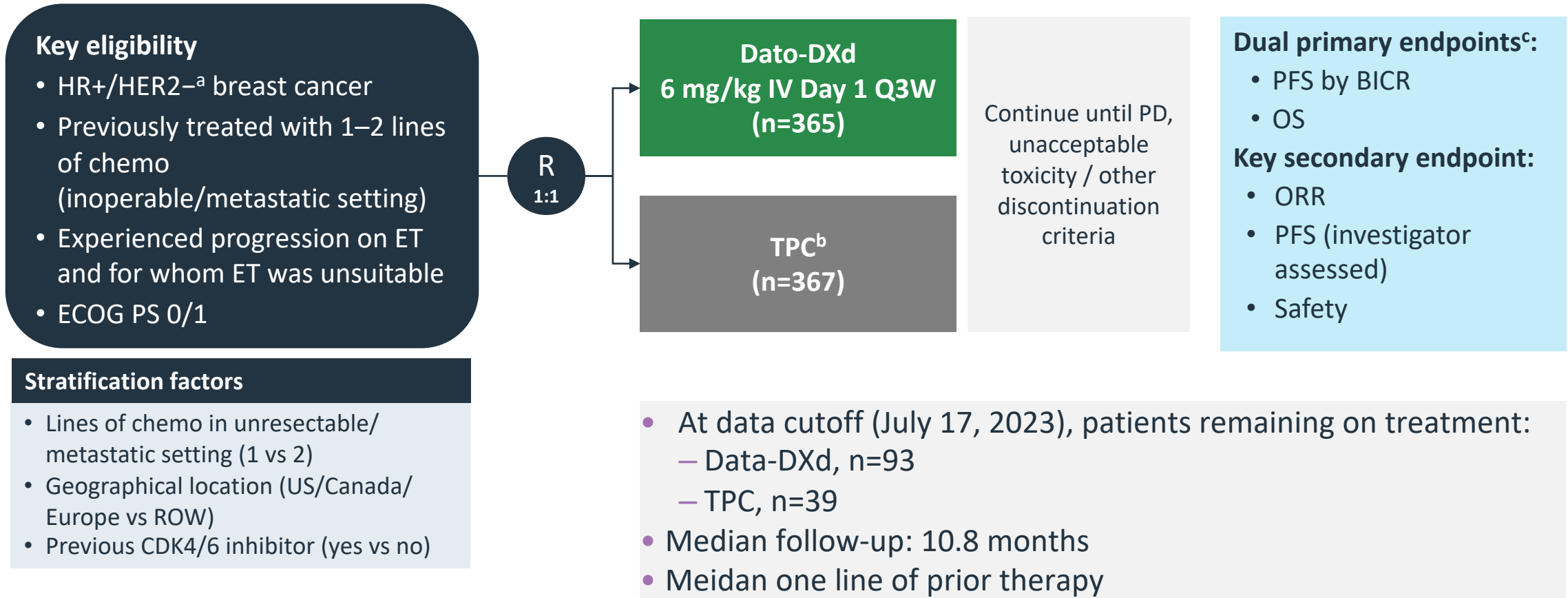
SG patients (n=250)	ASCENT		TROPiCS-02	
	UTG1A1 Status n(%)	Dose Intensity (%)	UTG1A1 Status n(%)	Dose Intensity (%)
*1/*1 (wt)	113 (44)	99.8	104 (38)	99
*1/*28	96 (37)	99.5	119 (44)	98
*28/*28	34 (13)	99.8	25 (9)	94

Grade ≥3 TEAEs By UTG1A1 Status (%)	ASCENT			TROPiCS-02		
	*1/*1 (wt)	*1/*28	*28/*28	*1/*1 (wt)	*1/*28	*28/*28
Neutropenia	53	47	59	45	57	64
Diarrhea	10	9	15	6	13	24
Anemia	4	6	15	6	8	8
Febrile neutropenia	3	5	18	6	7	4
Growth factor for neutropenia (initiated on/after first dose) overall 54%						
				33	49	11

ASCENT: Treatment discontinuation due to TRAEs more common in *28 homozygous genotype

Nelson, RS, et al. *Cancers*. 2021;13:1566.
 Rugo, HS, et al. *npj Breast Cancer*. 2022;8:98.
 Marmé, F, et al. *Annals of Oncol*. 2023;8(1suppl_4):101223-101223.
 Rugo et al, *Lancet* 2023

TROPION-Breast01 (Phase 3): Datopotamab deruxtecan vs chemo for unresectable/inoperable or metastatic HR+, HER2– breast cancer



^aIHC 0/1+/2+; ISH–; ^bInvestigator’s choice of chemotherapy; ^cBy BICR per RECIST v1.1.

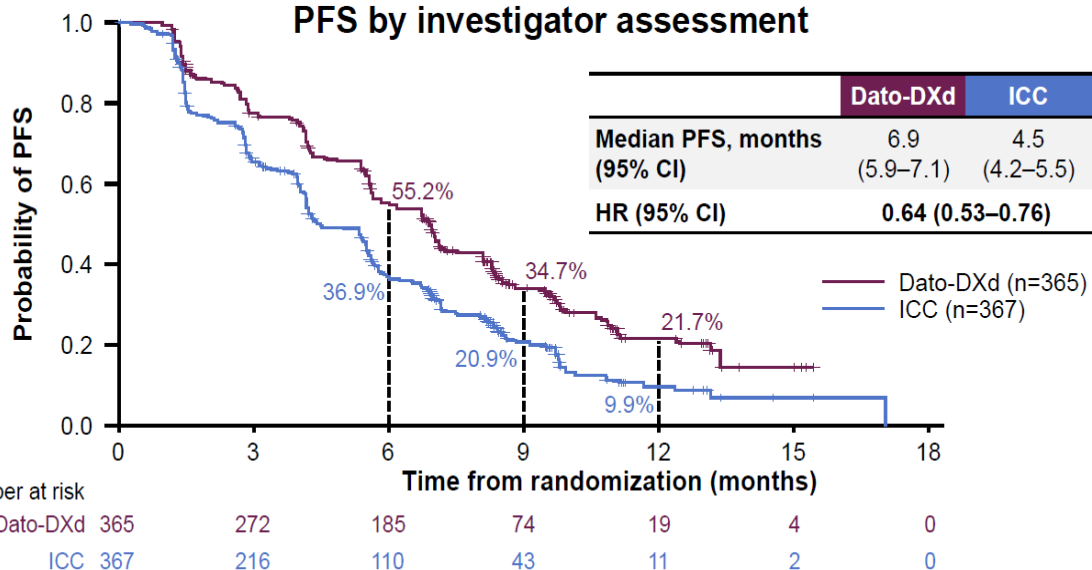
Dato-DXd, datopotamab deruxtecan; TPC, treatment of physician’s choice.

Bardia A, et al. SABCS 2023. Abstract GS02-01

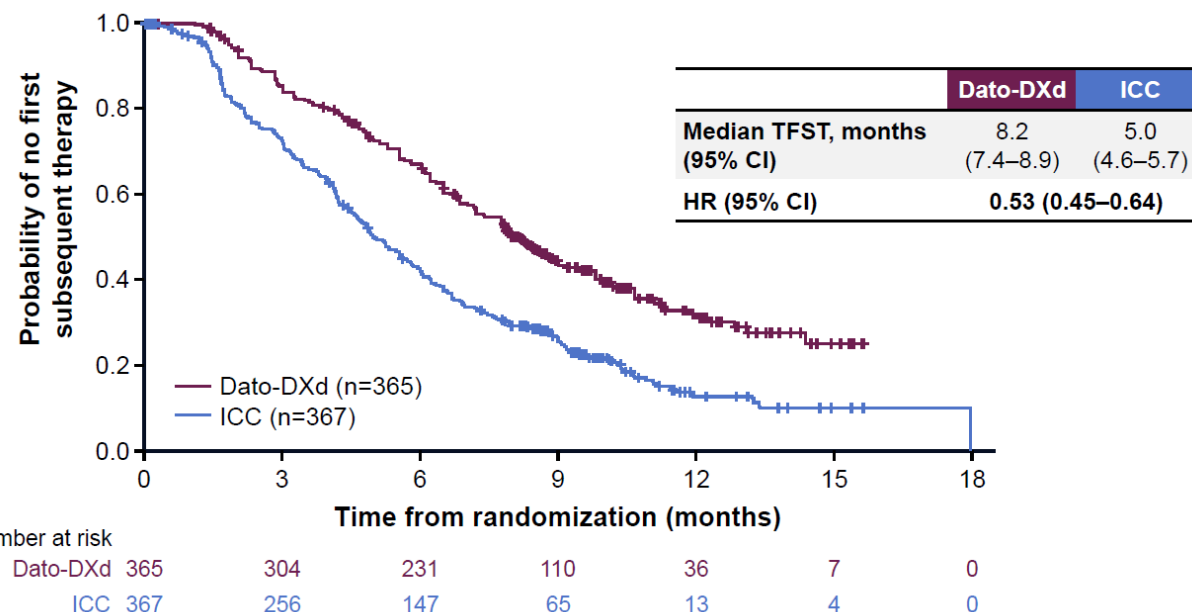
TROPION-Breast01: PFS and time to subsequent therapy

PFS by investigator assessment

PFS by investigator assessment



Time to subsequent therapy



PFS by BICR (primary endpoint)

- Median 6.9 vs 4.9 months
- HR 0.63 (95% CI: 0.52, 0)

Prior duration of CDK4/6i, ≤12 months

	Dato-DXd (n=151)	ICC (n=136)
Median PFS (95% CI), months	6.9 (5.5, 8.1)	4.2 (4.0, 5.5)
HR (95% CI)	0.61 (0.45, 0.81)	

Prior duration of CDK4/6i, >12 months

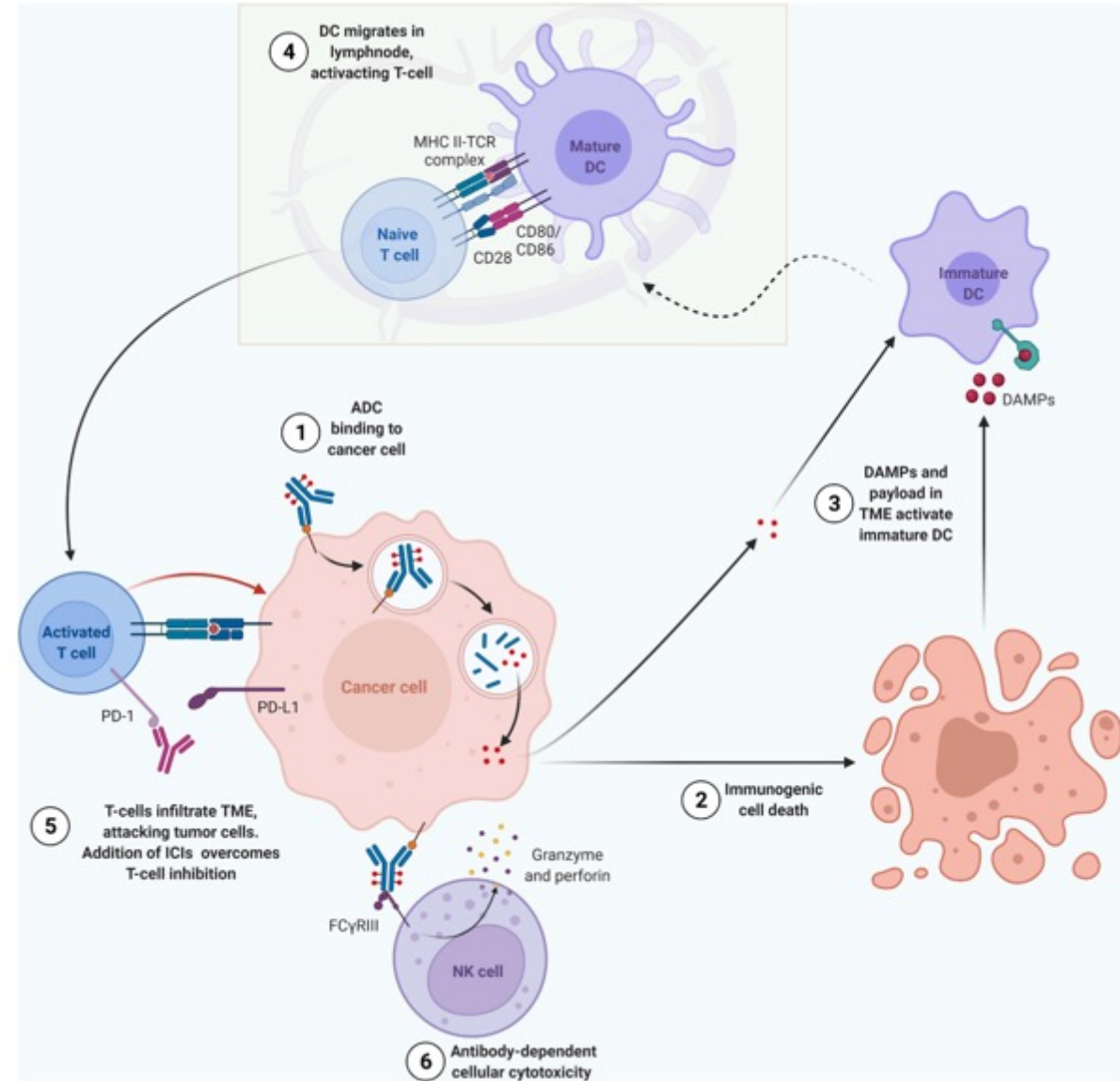
	Dato-DXd (n=153)	ICC (n=164)
Median PFS (95% CI), months	7.1 (5.8, 8.5)	5.0 (4.1, 5.7)
HR (95% CI)	0.61 (0.45, 0.82)	

Tropion-Breast01 Safety

- Compared to ICC, less dose reduction and interruption
- The most common toxicity is low grade nausea (51%)
- Alopecia: 36%
- AEsIs
 - Oral mucositis/stomatitis
 - 56% all grade, 7% grade \geq 3
 - Steroid mouthwash under evaluation
 - Ocular surface events (dry eye, keratitis)
 - 40%, almost all low grade
 - Drug-related ILD
 - 3.3% all grade, 0.8% \geq grade 3
 - One patient with adjudicated grade 5 drug related event

Proposed Mechanism of ADC + IO Synergy

- 1: ADCs bind to the cancer cell
- 2: The ADC is internalized into the cancer cell, causing immunogenic cell death
- 3: Damage-associated molecular patterns (DAMPs) are released in the tumor microenvironment (TME), stimulating the maturation of dendritic cells
- 4: Dendritic cells (DCs) migrate into the lymph nodes, activating T cells
- 5: Activated T cells infiltrate the TME, attacking tumor cells. The addition of immune checkpoint inhibitors (ICIs) overcomes T cell inhibition
- 6: ADCs activate the immune system through antibody-dependent cellular cytotoxicity

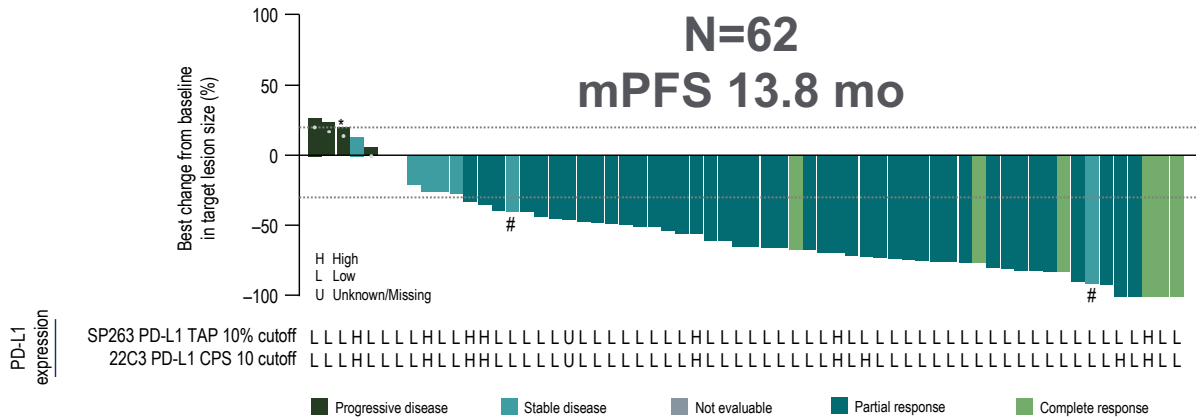


ADCs plus Checkpoint Inhibitors: 1st line mTNBC

Dato-DXd + Durvalumab in the Begonia Trial

Confirmed ORR was **79%** (49/62; 95% CI, 66.8–88.3) with 6 CR and 43 PR

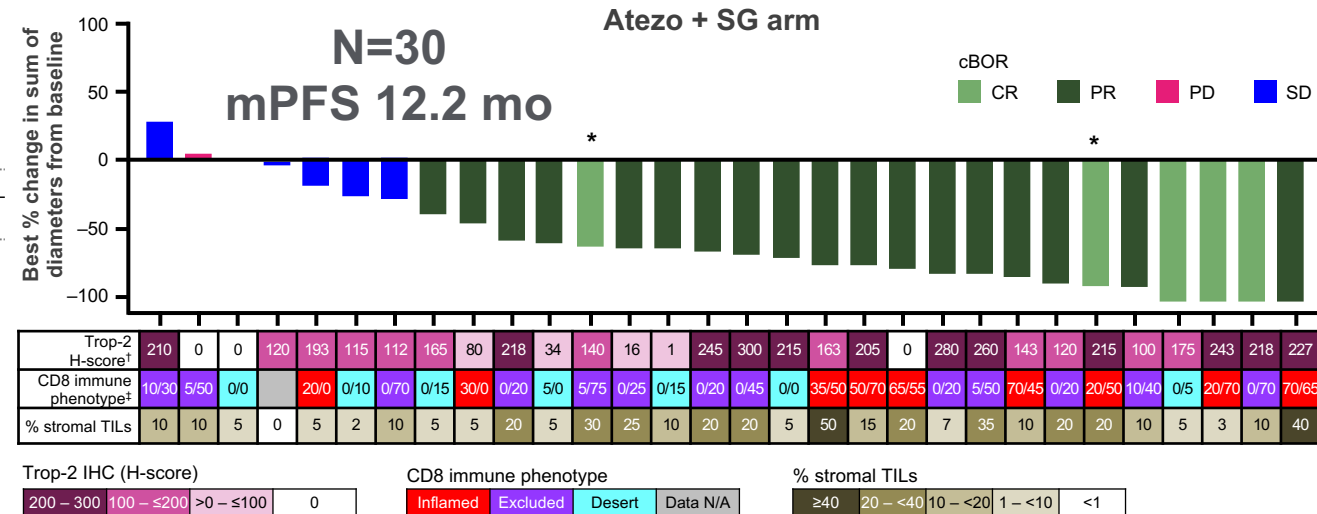
- ◆ Antitumour responses were observed regardless of PD-L1 expression level as assessed by 2 separate PD-L1 assays and scoring methods



Schmid et al, ESMO 2023

Sacituzumab Govitecan + Atezolizumab in the Morpheus-PAN BC Trial (PD-L1+)

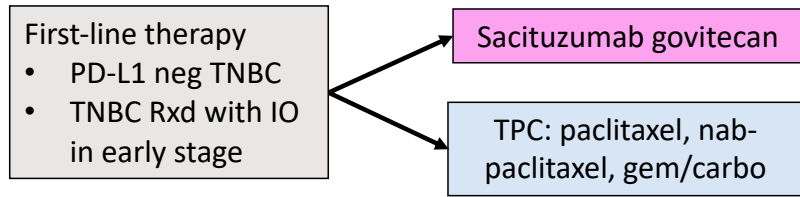
Confirmed ORR 76.7%, 5 CR, 18 PR



Schmid et al, ESMO BC 2024

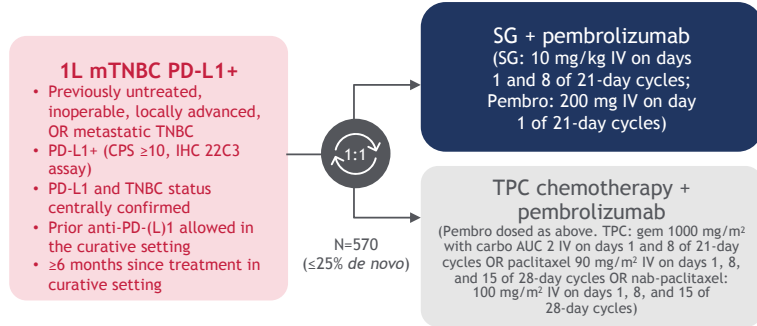
ASCENT-03 (NCT05382299): PD-L1 negative

N=540

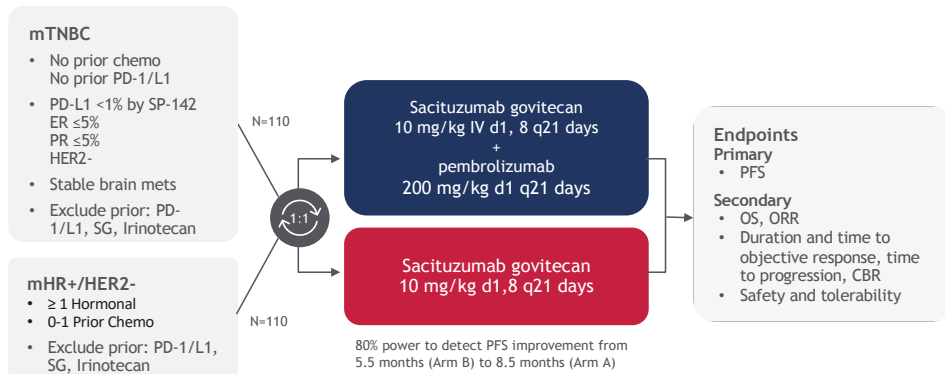


ASCENT-04 (NCT05382286): PD-L1 positive

N=570

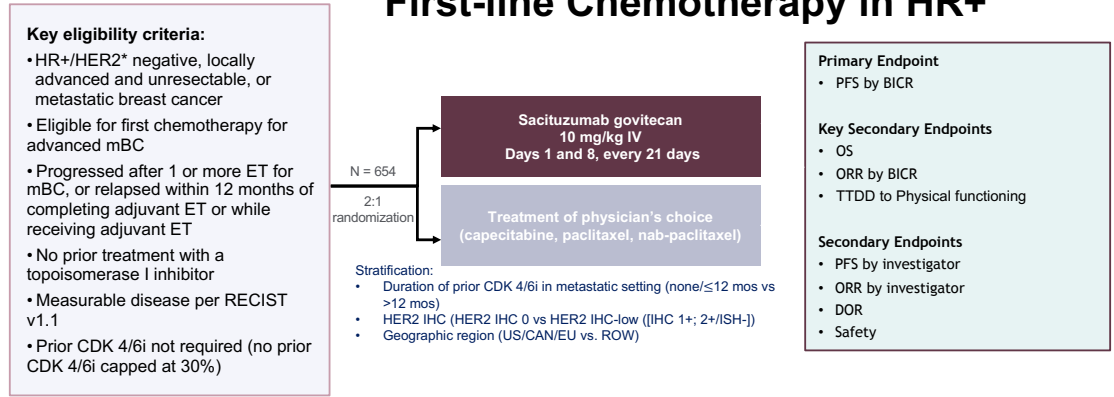


SACI-IO TNBC and HR+: Sacituzumab govitecan +/- pembrolizumab in 1L PD-L1- mTNBC and HR+

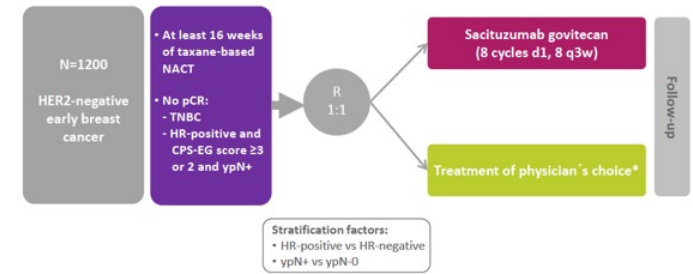


Ascent-07:

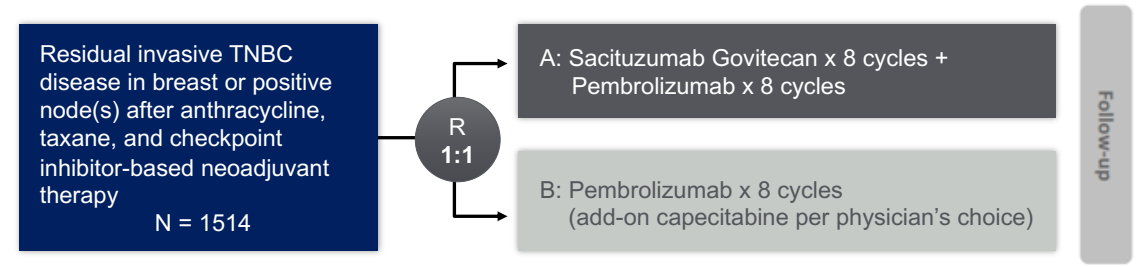
First-line Chemotherapy in HR+



GBG: SASCIA Post-Neoadjuvant Trial NCT04595565



Phase III Trial: Optimice-RD/ASCENT-05 Residual disease in TNBC



PI: Sara Tolaney; Alliance Foundation Trial

TROPION-Breast02 (n=625)

NCT05374512
PD-L1 negative

Key eligibility criteria:

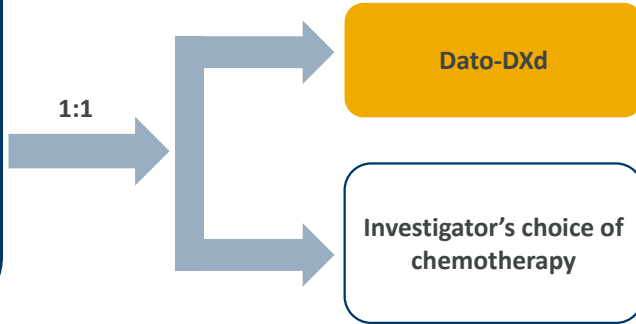
- Locally recurrent inoperable or metastatic TNBC
- No prior chemotherapy or targeted systemic therapy for metastatic breast cancer
- Not a candidate for PD-1 / PD-L1 inhibitor therapy
- Measurable disease as defined by RECIST v1.1
- ECOG PS 0 or 1
- Adequate hematologic and end-organ function

Stratification factors:

- Geographic location
- DFI (*de novo* vs DFI ≤12 months vs DFI >12 months)

Dual primary endpoint:
PFS (BICR) and OS

Secondary endpoints:
PFS (inv), ORR, DoR, safety



- 1st line therapy for TNBC
- PD-L1 negative

TROPION Breast05 (n=625)

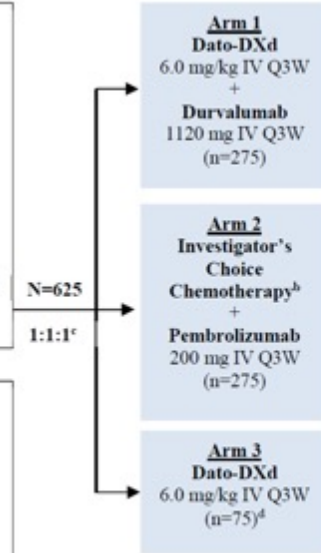
NCT06103864
PD-L1+

Key Eligibility Criteria

- Previously untreated locally recurrent inoperable or metastatic TNBC
- ECOG PS 0 or 1
- Measurable disease as defined by RECIST 1.1
- Adequate haematologic and end-organ function
- PD-L1 centrally confirmed
- PD-L1 positive by 22C3 assay CPS ≥ 10 IHC
- No systemic steroids
- No active autoimmune diseases
- No active brain metastases
- DFI ≥ 6 months since treatment in curative setting
- Prior PD-1/PD-L1 treatment for early stage TNBC allowed

Stratification Factors

- DFI history (de novo versus prior DFI 6 to 12 months^a versus prior DFI > 12 months)
- Geographic location (US/Canada/Europe versus Dato-DXd Monotherapy Enrolling Countries versus Rest of World)
- Prior PD-1/PD-L1 treatment for early stage TNBC (yes versus no)



Primary endpoint:
PFS (BICR)

Key secondary endpoint:
OS

Secondary endpoints including:
PFS (inv), ORR, DoR, CBR, TTD, PRO, Safety, Tolerability, PK, and Immunogenicity

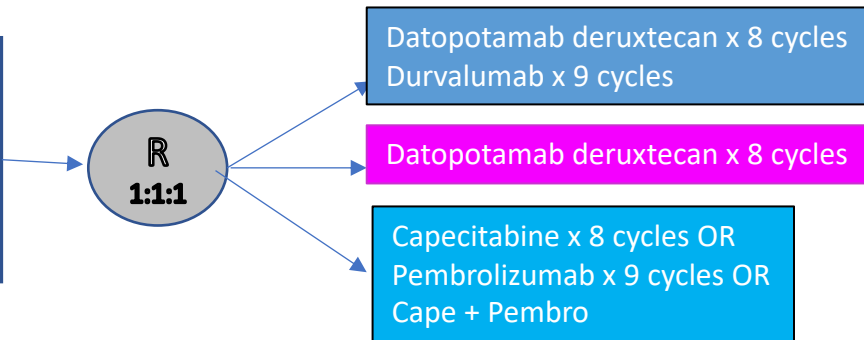
Exploratory endpoints including:
TROP2

- ^a DFI 6 to 12 months capped at 20%.
- ^b Chemotherapy options include paclitaxel (90 mg/m² IV on days 1, 8, and 15, Q4W), nab-paclitaxel (100 mg/m² IV days 1, 8, and 15, Q4W) or gemcitabine 1000 mg/m² IV + carboplatin AUC 2 IV days 1 and 8 Q3W.
- ^c Once approximately 75 participants are randomised to Arm 3, this cohort will close, and all countries will continue with a 1:1 randomisation strategy for Arms 1 and 2.
- ^d In selected countries only.

TROPION Breast03 (n=1075)

NCT05629585

N=1075
Stage I-III TNBC
Residual disease after at least
6 cycles of neoadjuvant
chemotherapy



TROPION Breast04 (n=1728)

NCT06112379

Neoadjuvant therapy for TNBC

- Durvalumab + Dato-DXd x 8 cycles followed by surgery; durva x 9 cycles postop vs KN522

Sacituzumab Tirumotecan (sac-TMT)

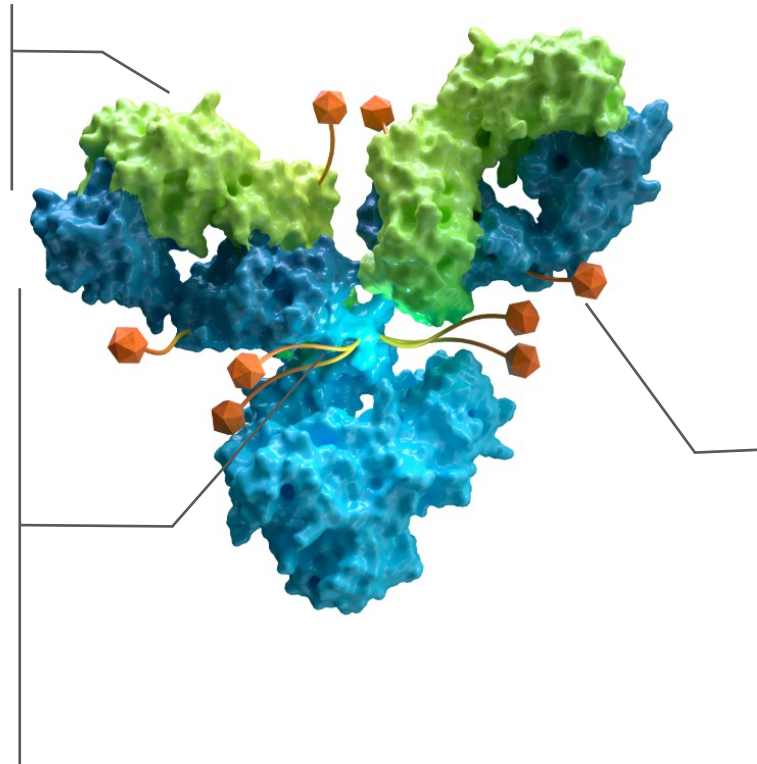
Sac-TMT is a TROP2 ADC developed with a proprietary Kthiol (pyrimidine-thiol) linker conjugated to a novel topoisomerase I inhibitor at DAR 7.4. The features of sac-TMT lead to release of the payload both in the tumor microenvironment (TME) and inside tumor cells, achieving a balance between the safety and efficacy of the ADC.

Antibody

- hRS7, a recombinant humanized anti-TROP2 antibody with high affinity

Linker

- **Kthiol conjugation:** irreversible coupling to improve stability of ADC
- **Payload release:** intracellular enzymatic cleavage and extracellular hydrolysis in TME
- **Balanced stability:** balance between efficacy and safety to expand therapeutic window



Payload

- **Novel topo I inhibitor** (belotecan derivative named T030), highly active
- Average **DAR: 7.4** (range:7–8)
- **Bystander effect**
- Methylsulfonyl derivatization enhances linker stability and toxin permeability

Phase III OptiTROP-Breast01 Study: Sacituzumab Tirumotecan

A randomized, controlled, and open-label phase III study (NCT05347134)

Patients with locally recurrent or metastatic TNBC

- Relapsed or refractory to 2 or more prior chemotherapy regimens for unresectable, locally advanced or metastatic disease
 - For prior therapy, 1 could be in the (neo)adjuvant setting, provided progression occurred during treatment or within 12 months after treatment discontinuation
- Received taxane(s) in any setting

R
1:1

**Sac-TMT,
5 mg/kg IV, days 1 & 15
every 28-day cycle**

**Physician's choice of chemotherapy:
eribulin, capecitabine,
gemcitabine, or vinorelbine
every 21-day cycle**

Treatment until disease progression, unacceptable toxicity or any other reason for discontinuation

Endpoints^a
Primary
 • PFS by BICR
Secondary
 • OS
 • PFS by investigator assessment
 • ORR, DOR
 • Safety

Choice of chemotherapy

- Eribulin: 88 (66.2%)
- Capecitabine: 4 (3.0%)
- Gemcitabine: 20 (15.0%)
- Vinorelbine: 21 (15.8%)

Patient population

- Median 3 vs 2 lines of prior chemotherapy
- 87% visceral mets
 - 35% liver

Safety

- Neutropenia 74%
 - 32% grade 3
- Stomatitis 40%
 - 9% grade 3
- 12% grade 3 thrombocytopenia
- ILD, eye tox rare

Stratification factors

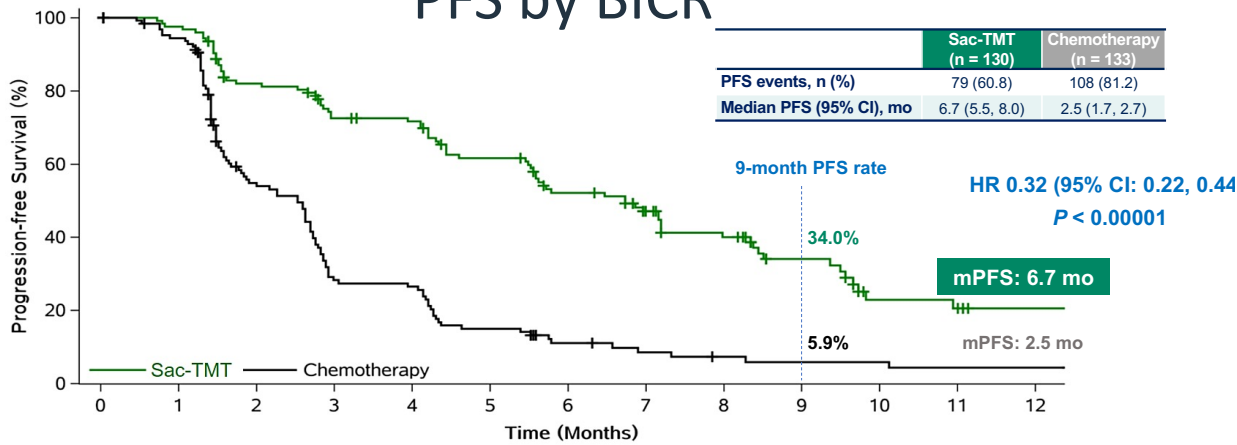
- Line of prior therapy (2-3 vs >3)
- Presence of liver metastases (yes vs. no)

N=263

Tumor assessment

- Every 6 weeks for the first year and every 12 weeks afterward.

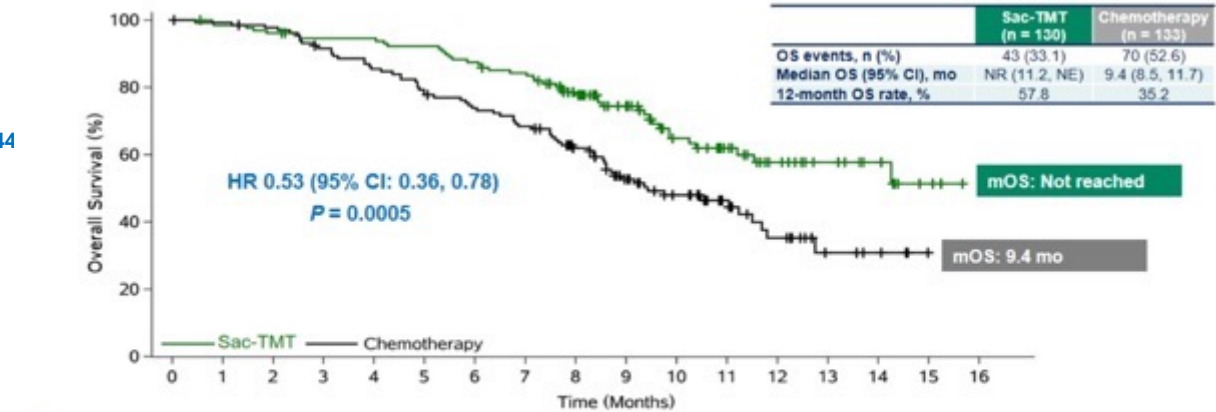
PFS by BICR



No. at Risk	Sac-TMT	130	122	97	83	80	67	54	42	33	20	10	9	6
Chemotherapy	133	119	62	32	30	17	10	7	5	4	4	4	3	3

• PFS by investigator assessment (secondary endpoint): Median 6.5 vs 2.6 mo; HR 0.32 (95% CI: 0.24, 0.44)

OS (interim)



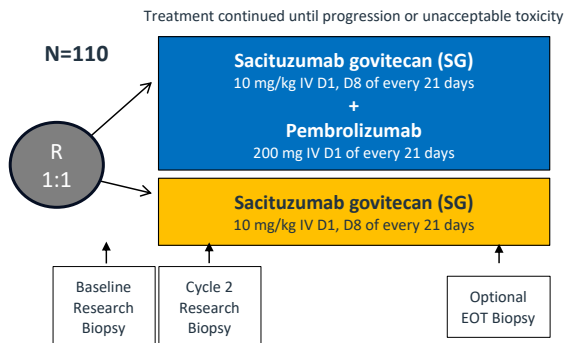
No. at Risk	Sac-TMT	130	127	124	120	120	117	111	106	85	66	44	33	22	15	11	4	0
Chemotherapy	133	131	128	119	111	101	95	88	71	50	37	24	15	6	4	0	0	0

• Efficacy boundary (corresponding to actual OS events of 113): 0.0042. The study crossed OS efficacy boundary.

SACI-IO HR+ (Phase 2): Sacituzumab govitecan with or without pembrolizumab in patients with HR+/HER2

Metastatic or locally advanced unresectable breast cancer

- HR-positive (ER ≥ 1% or PR ≥ 1%), HER2-negative (IHC 0, 1+, or 2+/ISH-)
- No restriction on PD-L1 status
- ≥1 endocrine therapy for mBC or progression on or within 12 months of adjuvant endocrine therapy
- 0-1 prior chemotherapy for mBC



Endpoints

Primary:

- PFS (ITT)

Secondary:

- PFS (PD-L1+)^b
- OS (ITT, PD-L1+)
- ORR, DOR, TTP, CBR (ITT, PD-L1+)
- Safety

Exploratory:

- Correlative
- HRQoL

TROFUSE 010: PD-L1- Sacituzumab tirumotecan in HR+

N=1200

Key inclusion criteria:

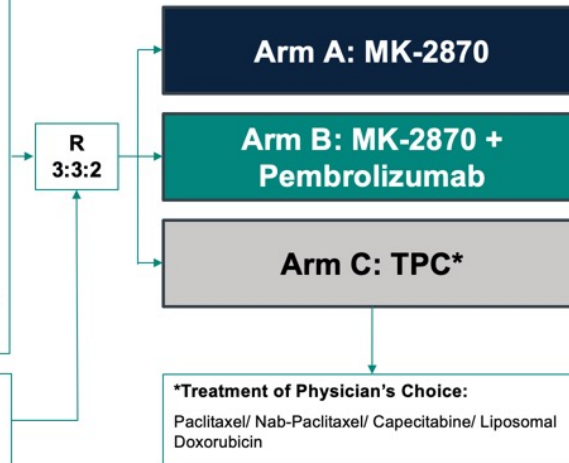
- Unresectable locally advanced or metastatic centrally-confirmed HR+/HER2- breast cancer
- Disease recurrence on/after CDK4/6i (in the early or metastatic setting)

Key exclusion criteria:

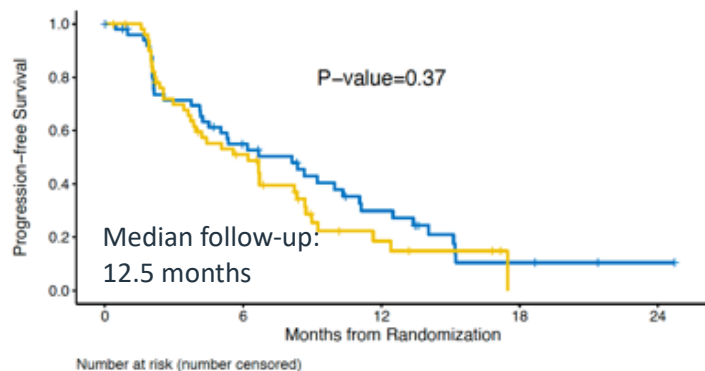
- Previously treated with chemotherapy in metastatic setting
- Disease recurrence within 6 months after completion of adjuvant/neoadjuvant chemotherapy

Stratification Factors:

- PD-L1 status (CPS<1 vs CPS 1-9 vs CPS≥10)
- TROP2 expression (low+medium vs high)
- Geographical Region (WE vs NA vs ROW)



PFS



	SG + pembrolizumab (n=52)	SG (n=52)
N PFS events	38	38
Median PFS, months (95% CI)	8.12 (4.51, 11.12)	6.22 (3.85, 8.68)
HR (95% CI)	0.81 (0.51, 1.28); P=0.37	

	SG + pembrolizumab (n=52)		SG (n=52)	
	n (%)	95% CI	n (%)	95% CI
Confirmed PR	11 (21.2%)	11.1, 34.7%	9 (17.3%)	8.2-30.3%
SD	25 (48.1%)	34, 62.4%	26 (50.0%)	35.8, 64.2%
PD	11 (21.2%)	11.1, 34.7%	14 (26.9%)	15.6, 41%
NE	5 (9.6%)	3.2, 21%	3 (5.8%)	1.2, 15.9%
Objective response rate	11 (21.2%)	11.1-34.7%	9 (17.3%)	8.2-30.3%
PD-L1-positive	3/16 (18.8%)	4.0, 45.6%	5/24 (20.8%)	7.1, 42.2%
PD-L1-negative	8/35 (22.9%)	10.4, 40.1%	4/28 (14.3%)	4.0, 32.7%
Clinical benefit rate	26 (50.0%)	35.8, 64.2%	24 (46.2%)	32.2, 60.5%
Median DOR, mo	12.9	4.4, NA	4.5	4.5, NA
Median TTP, mo	2.3	1.8, 8.7	4.1	2.0, 10.2

Role in PD-L1+ vs negative?

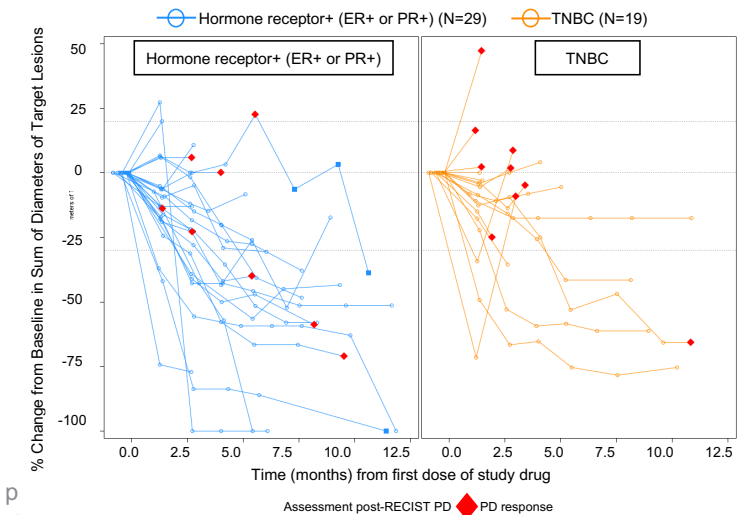
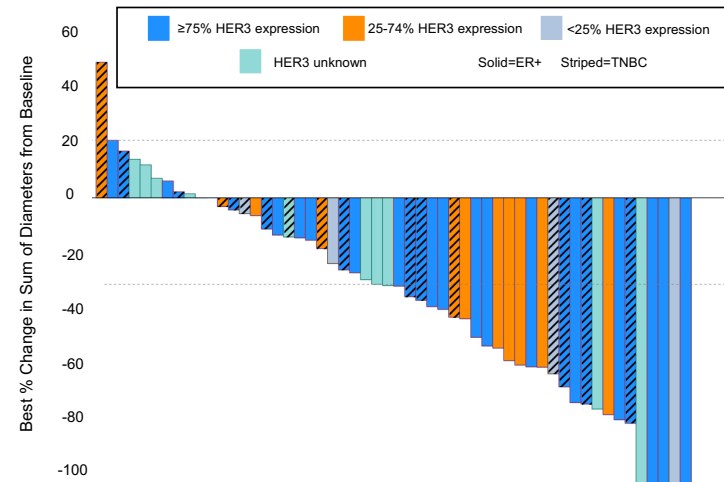
Patritumab Deruxtecan: Phase 2 Study of HER3-DXd in MBC

- 60 pts:
 - HR+: Prior CDKi, 0-2 chemo
 - TN: 1-3 chemo
 - 27 HR+/19 TN (n=48)
 - 64% HER3 \geq 75%; 8% <25% (n=47)
- ORR 35%, CBR 43%,
 - No relationship to HER3 expression
- DOR \geq 6mo: 47.6% in responders (n=10)
- Most common AE:
 - Nausea/diarrhea/fatigue
 - TEAE: 2 ILD, 1 low plt

(N=60) n (%)	
Number of Prior Systemic Regimens in Metastatic Setting	
1-2 prior regimens	24 (40.0)
3 or more prior regimens	36 (60.0)
Median (range)	3 (1, 9)
Type of Prior Regimens in the Metastatic Setting*	
Chemotherapy	54 (90.0)
PARP inhibitors	3 (5.0)
Immunotherapy	12 (20.0)
Sacituzumab govitecan	5 (8.3)

	HR+ (N=29)	TNBC (N=19)
ORR, n (%)	12 (41.4)	4 (21.1)
95% CI	(23.5, 61.1)	(6.1, 45.6)

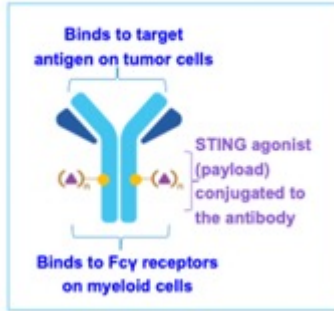
	Any grade (N=60) n (%)	Grade 3/4 (N=60) n (%)
Any Adverse Event (AE)	56 (93.3)	19 (31.7)
Nausea	30 (50.0)	2 (3.3)
Fatigue	27 (45.0)	4 (6.7)
Diarrhea	22 (36.7)	3 (5.0)
Vomiting	19 (31.7)	1 (1.7)
Anemia	18 (30.0)	0
Alopecia	17 (28.3)	N/A
Hypokalemia	9 (15.0)	1 (1.7)
Decreased Appetite	8 (13.3)	0
Neutrophil Count Decreased**	7 (11.7)	3 (5.0)
White Blood Cell Count Decreased**	7 (11.7)	1 (1.7)



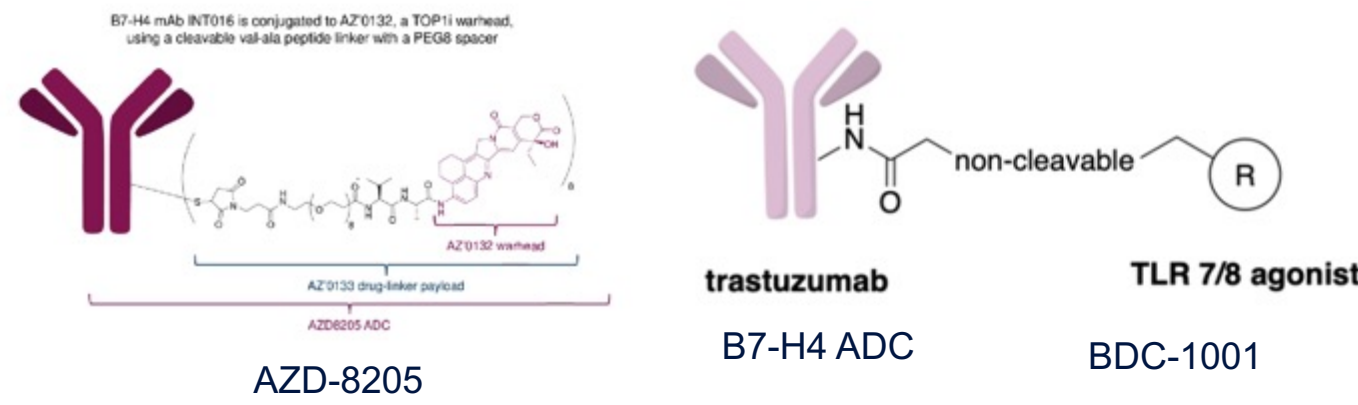
New Directions

- Newer ADCs
 - ADCs (HER2) with immune payload
 - Immune antibody with TOPO1i payload
 - HER2 Ab with eribulin payload: BB1701
- Combination Therapies
 - ADCs plus checkpoint inhibitors to enhance immunotherapy
 - ADCs plus anti-CD47 antibodies
- Understanding mechanisms of resistance
- Sequencing ADCs
 - Change the payload
 - Change the target
 - Why is safety so different?

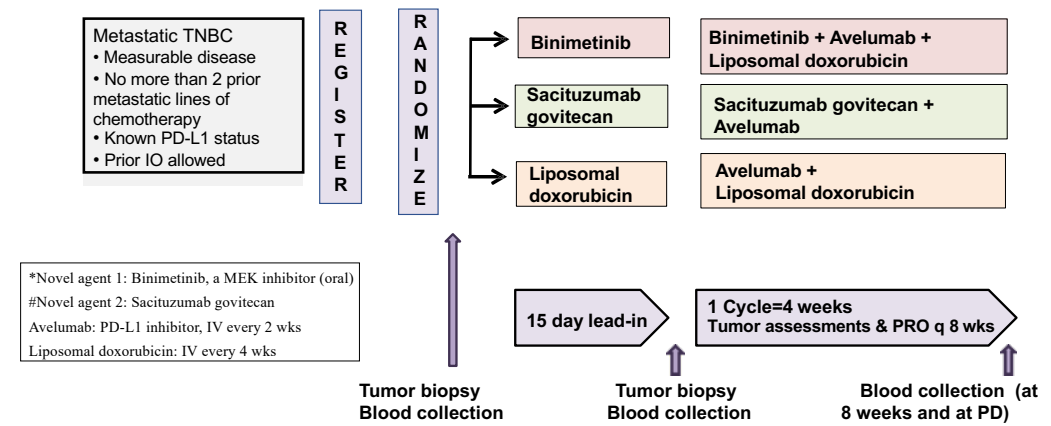
- ◆ Systemically administered
- ◆ Tumor targeted delivery of STING agonist
- ◆ Efficacious at a single dose across multiple tumor models
- ◆ Well-tolerated at multiple doses in multiple non-clinical species
- ◆ Minimal systemic induction of inflammatory cytokines
- ◆ Dramatically greater efficacy compared to a systemically administered free STING agonist



Please refer to our additional poster (AACR 2021 #1738) and www.mersana.com for more information about our Immunosynthen platform



TBCRC 047: InCITe Trial Design



*Novel agent 1: Binimetinib, a MEK inhibitor (oral)
 #Novel agent 2: Sacituzumab govitecan
 Avelumab: PD-L1 inhibitor, IV every 2 wks
 Liposomal doxorubicin: IV every 4 wks

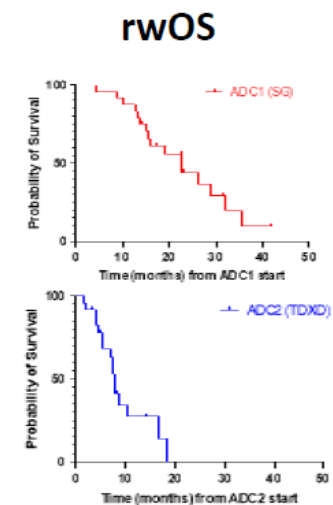
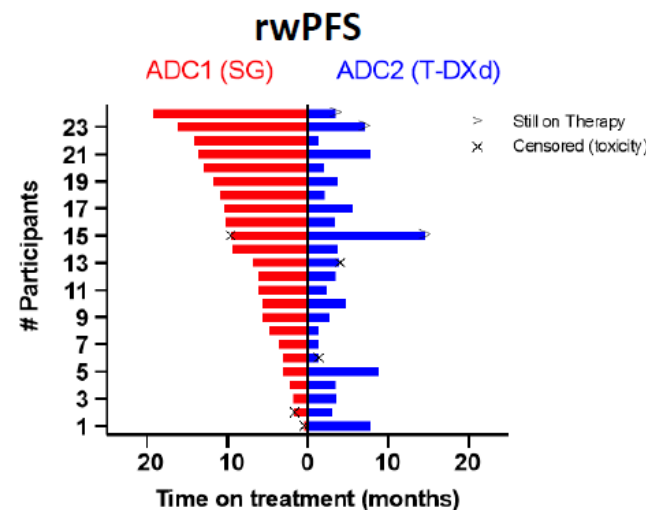
*Safety combination data from MILO trial
 #Safety combination data from several ongoing trials

HR+/HER2-low efficacy data (n=56)

SG → T-DXd
(n=24, 42.9%)

- Median lines of therapy for MBC prior to **SG**:
 - Median lines chemotherapy: 2.0 (range 0-5)
 - Median total lines of therapy: 3.0 (range 0-9)
- Intervening therapies between ADCs: 47.8%

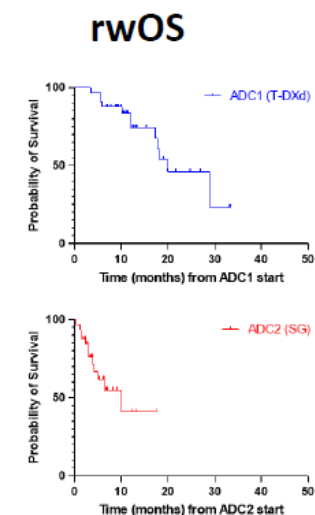
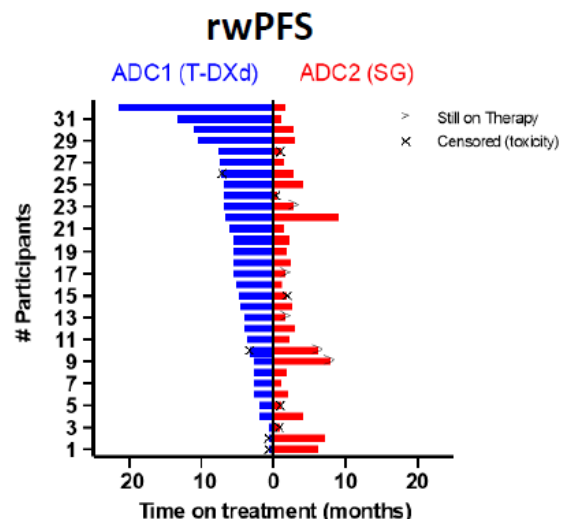
	ADC1 (SG)	ADC2 (T-DXd)
ORR (CR+PR) by investigator assessment, %	77.3%	34.8%
CBR (CR + PR + SD) by investigator assessment, %	86.4%	60.9%
Median rwPFS, months	8.0	3.7
Median rwOS from time of each ADC start, months	22.8	7.8



T-DXd → SG
(n=32, 57.1%)

- Median lines of therapy for MBC prior to **T-DXd**:
 - Median lines chemotherapy: 2.0 (range 0-5)
 - Median total lines of therapy: 4.5 (range 2-10)
- Intervening therapies between ADCs: 42.4%

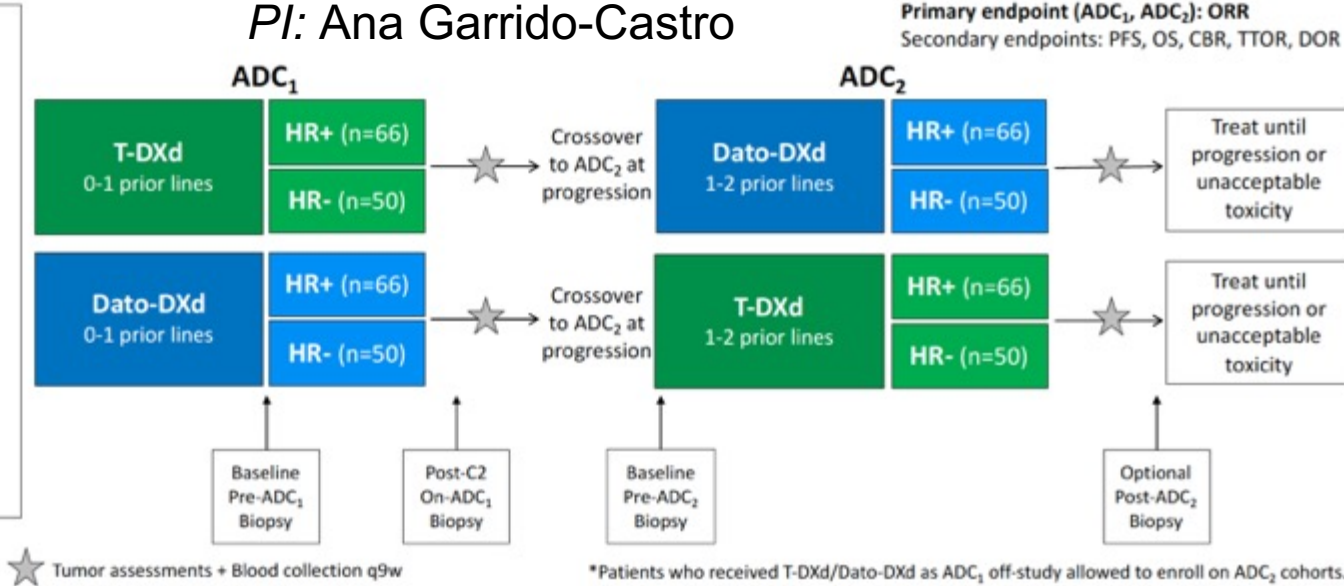
	ADC1 (T-DXd)	ADC2 (SG)
ORR (CR+PR) by investigator assessment, %	46.9%	18.5%
CBR (CR + PR + SD) by investigator assessment, %	78.1%	37.0%
Median rwPFS, months	5.5	2.6
Median rwOS from time of each ADC start, months	19.8	10.1



TBCRC 064: Treatment of ADC-Refractory Breast Cancer with Dato-DXd or T-DXd (TRADE DXd).

PI: Ana Garrido-Castro

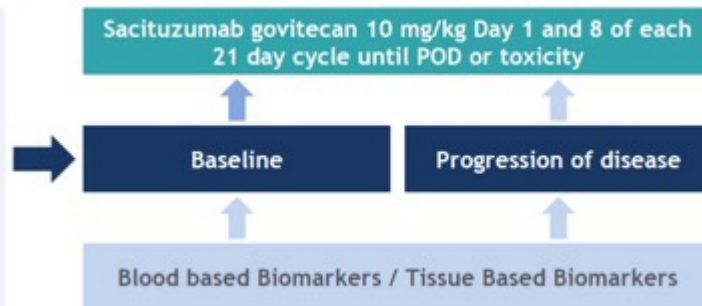
- Eligibility:**
- Confirmed unresectable locally advanced or metastatic disease
 - History of HER2-low BC: IHC 1+ or 2+/ISH- (any sample: primary or met)
 - Measurable disease
 - Prior endocrine therapy and CDK4/6 inhibitor for HR+ MBC
 - Prior topo-I inhibitor allowed only in neo-/adjuvant setting(s) and if $\geq 12m$ elapsed since last dose to metastatic recurrence
- *Randomization 1:1 to T-DXd or Dato-DXd as ADC₁ for allocation purposes.



- Role of SG after T-DXd in HER2 low:
- US Series trial
 - BC Cancer trial (HR+)

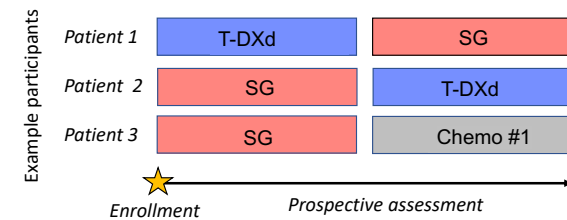
SERIES Study: PI: Reshma Mahtani

- N=75
 HR+/HER2 LOW (IHC 1+/2+ & ISH-) mBC
 Refractory to at least one prior endocrine therapy
 Received >1 ≤ 4 chemotherapies in the metastatic setting
 CDK4/6i (in adjuvant or metastatic setting)
 Trastuzumab deruxtecan*



Registry Sequencing Study: PI: Laura Huppert

Cohorts 1 & 2: Enrollment Prior to ADC #1



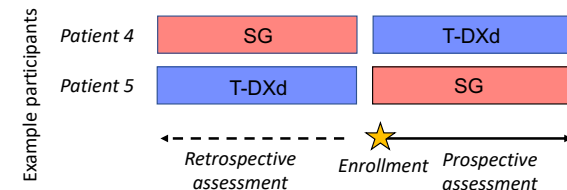
**Cohort 1: HR+/HER2-
HER2 low**
~35 patients

**Cohort 2: TNBC, HER2
low**
~25 patients

- Minimum imaging: CT CAP Q12 wk
- PRO data collection
- Blood collection
- Intervening therapies allowed

- Objectives/considerations:**
- Allows for prospective assessment of ADC #1 and ADC #2 efficacy, including PRO data and collection of blood for translational endpoints
 - Potential barrier: Patient not guaranteed to get ADC #2 (e.g., example patient #3 shown here)

Cohorts 3 & 4: Enrollment Prior to ADC #2



**Cohort 3: HR+/HER2-
~25 patients**

**Cohort 4: TNBC
~15 patients**

- Minimum imaging: CT CAP Q12 wk
- PRO data collection
- Blood collection
- Intervening therapies allowed

- Objectives/considerations:**
- Allows for prospective assessment of ADC #2 safety and efficacy, including PRO data and translational endpoints
 - Allows for retrospective safety and efficacy of ADC #1

Conclusion

- **Antibody Drug Conjugates!**
 - An exciting and effective drug delivery system for the treatment of multiple subtypes of MBC
- **Remarkable efficacy in HER2+ disease**
 - Proven efficacy of sequential HER2 ADC with different payloads
- **Established role in TNBC**
 - SG is a new standard of care for mTNBC
- **Established role in HER2 low and HR+ disease**
 - T-DXd is a new standard of care of HER2 'low' disease
 - Sequencing with standard chemotherapy – best foot forward or individualize for tumor biology/extent of disease?
 - Sacituzumab a treatment option for pre-treated HR+ disease
- **Ongoing trials in earlier lines, early-stage disease, and new ADCs in phase III trials**
- **Many questions remain!**
 - Do we need to define HER2 low?
 - Sequencing of ADCs
 - Understanding resistance.
- **Toxicity management is critical**
 - Combination data with radiation largely lacking



Thank you!