

Passion for Innovation.  
Compassion for Patients.™



# **FY2018 R&D Day**

## **DAIICHI SANKYO CO., LTD**

**George Nakayama**  
Chairman and CEO

**December 12, 2018**

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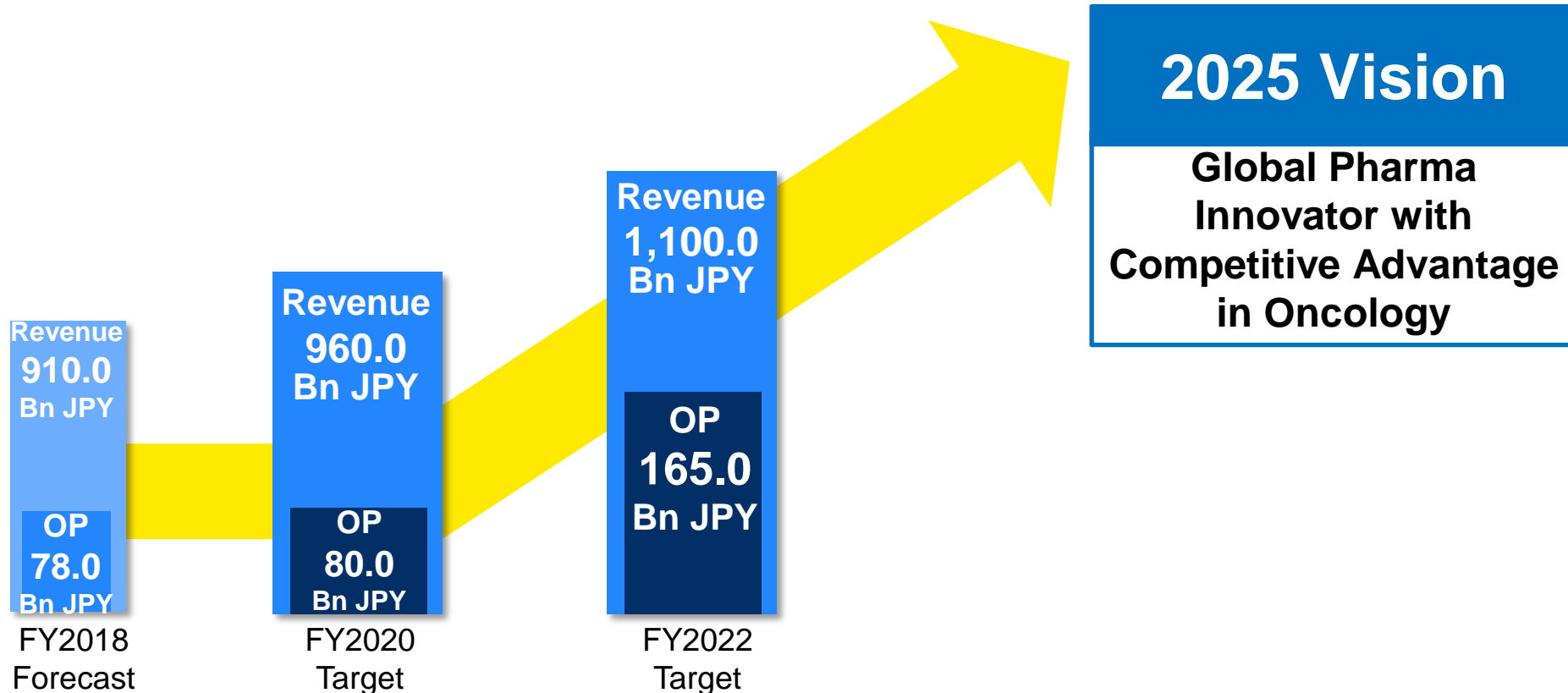
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# Toward 2025 Vision & 5-Year Business Plan



## Establish a Foundation of Sustainable Growth: Six Strategic Targets

Grow  
Edoxaban

Grow as  
No.1  
Company  
in Japan

Expand  
US  
Businesses

Establish  
Oncology  
Business

Continuously  
Generate  
Innovative  
Medicine  
Changing SOC

Enhance  
Profit  
Generation  
Capabilities

### Increase R&D investments

- ✓ **1.1 Tn JPY** ( increased by 200 Bn JPY ) in 5 Years
- ✓ **May consider shifts** of a part of BD funds, 500 Bn JPY, to R&D

### Realize optimal balance between Oncology and SM\*

- ✓ Focus on **LCMs & new products** in SM to generate near-term profits
- ✓ **Continue** discovery activities in SM to see beyond 2025 Vision

SM: Specialty Medicine Area: Cardiovascular-metabolics, pain, central nervous system diseases, heart and kidney diseases, and rare diseases

## CE 2025 Vision

**ADC Franchise**

3

**AML Franchise**

3

**Breakthrough Science**

1

**Deliver 7 NMEs in 8 years**

## SM 2025 Vision

**Maximize near-term revenue**

**2 NMEs in 2018-20**

**Grow future franchises**

**3 NMEs 2021-25**

## CE 2025 Vision

R&D Day 2018  
Main Topics

## SM 2025 Vision

Maximize near-term revenue

**2 NMEs** in 2018-20

NDA submissions  
**Mirogabalin**  
**Esaxerenone**

Grow future franchises

**3 NMEs** 2021-25



# Daiichi Sankyo Cancer Enterprise Deliver, Scale Up and Lead in Science

December 12, 2018

**Antoine Yver MD MSc**  
Exec VP & Global Head R&D Oncology

## 1 Cancer Enterprise 2025

- A Delivery Machine
- Scaling up the Enterprise
- Secure World-class Leadership in Science

## 2 DS-8201

- BLA FY2020 (upside 1H FY2019) on track
- Expanding program scope
- ILD well characterized
- Breast cancer: duration of response in Ph 1

## 3 U3-1402

- Breast cancer data at SABCS
- NSCLC EGFRm program progress
- Fast to market strategy and program scope

## 4 Next DXd ADCs

- DS-1062: Ph 1
- Others

## 5 Quizartinib

- Global US EU JP NDA submissions completed
- Biology and differentiation – the key role of QuANTUM First

## 6 Pexidartinib

- Submission status
- ENLIVEN

## 7 Recap

- DS is a science & technology company / future news flows





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7 in 8

**A Delivery Machine:**  
Submissions & Data



**Scale Up  
the Enterprise:**  
Meeting the Challenge



**Secure  
World-class  
Leadership** in  
**Science**

# Cancer Enterprise 2025

## Multiple Opportunities for 7 new drugs

**7** in **8**  
NMEs years

Lead in Smart-Treatment  
with BIC & FIC ADC

3

Establish a Competitive  
Hematology Franchise

3

Lead with Breakthrough  
Science

1

FY2018

2025

Quizartinib

DS-8201

DS-3201

U3-1402

DS-1062

DS-7300

Pexidartinib

DS-1647

DS-3032

DS-1001

Axi-Cel®

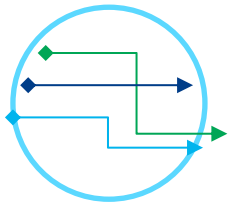
DS-1205

PLX2853



## 3 NDA/BLA within ~12 months

- ◆ Quizartinib US EU JP NDA achieved in less than a month
- ◆ Pexidartinib US NDA submission confirmed for 2H FY2018
- ◆ Potential to submit DS-8201 in 1H FY2019 continues to be present



## Flow of data: delivering evidence of high potential and beating expectations

- ◆ DS-8201 HER2 Low Breast cancer
- ◆ DS-8201 Duration of Response in HER2 positive Breast cancer post trastuzumab, T-DM1 ± pertuzumab
- ◆ DS-8201 activity in NSCLC and CRC
- ◆ U3-1402 (HER3 ADC) activity
- ◆ DS-1062 (TROP2 ADC) in lung cancer



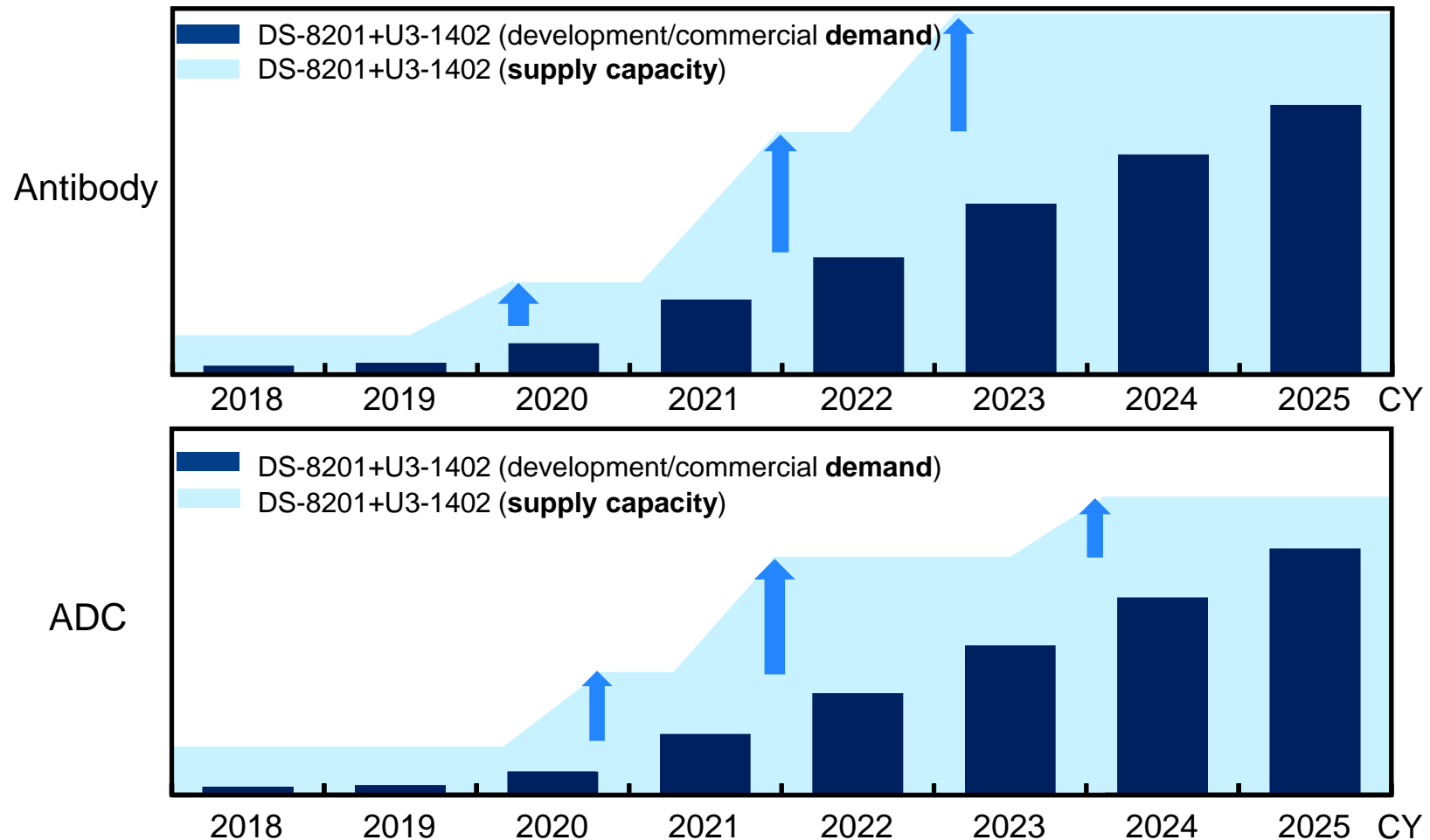
## Manufacturing of development and commercial supplies

- ◆ Massive acceleration and scaling up is underway

# ADC Manufacturing

## Meeting Massive Increase in Demand

Ready for possible FY2019 submission of DS-8201 and for ADC programs scale-up



*Each action includes in particular adding sites, tech transfer and network use of CMO, etc.*



*CE operates now at a resource level that was, in October 2016, predicted to be required for success*

***CE expects further increase due to better than anticipated portfolio scope***

- ◆ ~ 70 to 80% of R&D, Pharmaceutical Technology and Global Medical Affairs resources are now CE focus
- ◆ Supported by the revision in 5-year Business Plan of R&D spend to 1,100 B JPY over 5 years
- ◆ Makes the case to consider R&D collaboration, especially for large scale operations, to maximize value

# Daiichi Sankyo | A Traditional Japanese Company Transforming into a Global Power



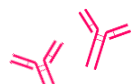
## New global operating model in place

- ◆ **Japanese leadership** in critical domains, e.g.: Research, Protein engineering and production processes, Translational research, Development
- ◆ **West-based leadership** for translational and global development
  - Over the past 2 years, ~15 new senior leaders have joined DS from numerous top-tier global pharmaceutical companies
  - Collectively, these professionals represent over 250 years of oncology R&D experience, including more than 50 separate NDA / BLA submissions
- ◆ **Matrix-function organization led** by Global Teams, **from US or JP**
  - Innovative delivery (e.g. Sarah Cannon Research Institute collaboration)

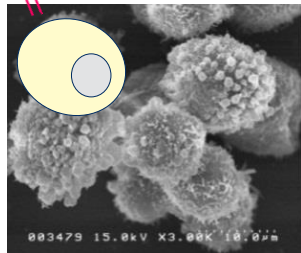
- ◆ Healthy flow of **new drug candidates**, in ADC beyond DXd, in Hematology and in Breakthrough Science
- ◆ Establishing clinical analysis function in RD Novare to strengthen **translational science capability**
- ◆ Establishing a **state-of-the-art Bio-IT Omics platform**
- ◆ **CMC process and scale** mastery including business continuity planning
  - Enhanced ADC Technology







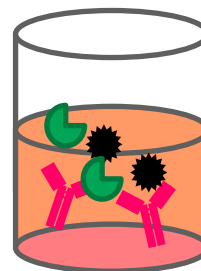
## cell substrate



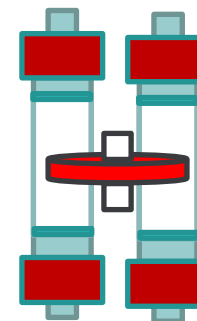
DS expression system  
Cell cloning technology for high-producing cell isolation



## cultivation



High performance medium  
Scale-up technology



## purification

High-performance flow-through purification


Original cell-vector system









Manufacturing efficiency  
Productivity Improvement

Labor-saving / efficient continuous process  
Cost reduction of raw materials

Cost and time efficient, security of process by utilizing antibody manufacturing platform developed on DS proprietary technologies

## ADC Franchise

 Clinical stage

	Project (Target)	Potential Indications	Discovery	Pre-Clinical	Ph 1	Pivotal
1	DS-8201 (HER2)	Breast, Gastric, CRC, NSCLC				
2	U3-1402 (HER3)	Breast, NSCLC				
3	DS-1062 (TROP2)	NSCLC				
4	DS-7300 (B7-H3)	Solid tumors				
5	DS-6157 (GPR20)	GIST				
6	DS-6000 (undisclosed)	Renal, Ovarian				
7	(TA-MUC1)	Solid tumors				

CRC: colorectal cancer, NSCLC: non-small cell lung cancer, GIST: gastrointestinal stromal tumor

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## DS-8201 Flagship Asset

**FDA Breakthrough Therapy Designation (BTD)**



**Sakigake Designation**



### Ongoing pivotal development

- DESTINY-Breast01
- DESTINY-Gastric01
- Breast HER2 positive post T-DM1
- Breast HER2 positive vs T-DM1
- Breast HER2 Low

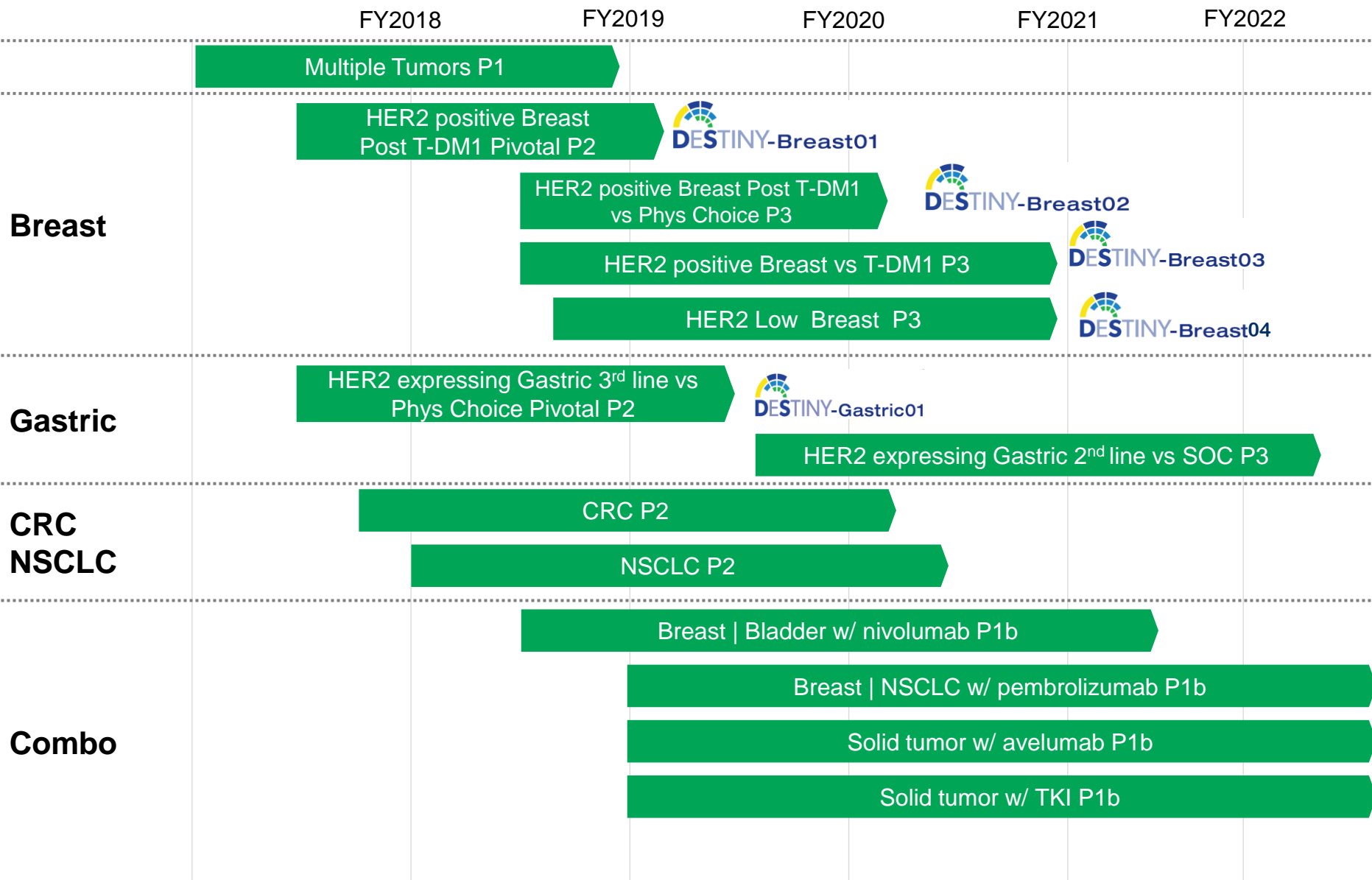
### Planned further development

- Earlier lines, Lung, colorectal, combinations (TKI, CDK4/6i, hormonal therapy, PARPi, IO)



## Focus

- ✓ **HER2 positive Breast Cancer: Duration of Response in Ph 1 Study J101**
- ✓ **HER2 Low Breast Cancer**
- ✓ **Tracking to plan for 2020 submissions - Contemplating BLA in 1H FY2019**  
Will not be confirmed before end 4Q FY2018
- ✓ **Expand program**
- ✓ **Continue drastic scaling up of production**



## Current/future trials for further data-gated development

## Directions (Ph 1-3)

### New plans

#### Breast

Move to 1<sup>st</sup> Line Metastatic

Early Breast Cancer

- Neo-adjuvant
- Adjuvant
- Ph 3 in 1<sup>st</sup> Line HER2 positive
- IO combinations
- Hormonal therapy combinations
- CDK4/6i combinations
- PARPi combinations
- Dual anti-HER2 combinations

#### Gastric

West HER2 expressing Gastric 2<sup>nd</sup> Line P2

- VEGFi combinations
- Chemo combinations
- IO combinations
- HER2 Low
- Early disease Gastric cancer

#### CRC NSCLC

CRC P2

NSCLC P2

- VEGFi combinations
- Chemo combinations
- IO combinations
- HER2 Low

#### Other Combo

Other Tumor Types P2

- HER2 gene amplified basket
- HER2 mutant basket
- Ovarian
- Uterine
- Salivary
- Bladder
- Novel IO combos

- ◆ More than 380 medications known to induce respiratory disease, mostly ILD<sup>1</sup>
- ◆ Probability remains largely **unpredictable and idiosyncratic**
- ◆ **Diagnosis made on signs/symptoms** (e.g., fever, cough, shortness breath) and **excluding other causes**
- ◆ **Treatment is high dose steroids and withdrawal of causing agent**
- ◆ Benchmark example: TAGRISSO [US Label]
  - ILD in 3.9% of 1,142 cases
  - 0.4% fatal

## Investigator-Reported and Adjudicated Cases of ILD

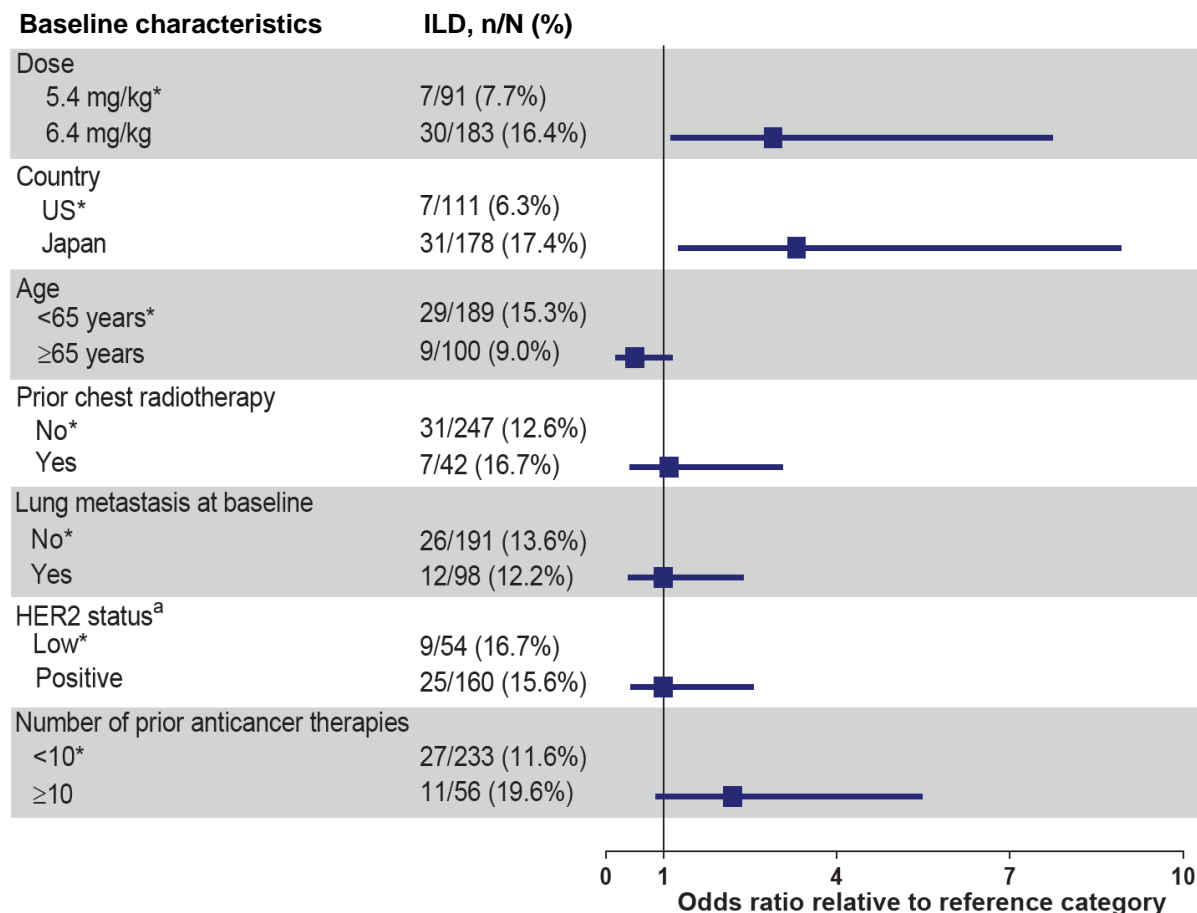
Population	Adjudication status	Grade					Total
		1	2	3	4	5	
<b>All subjects All doses, N = 665</b>	Investigator reported, n (%)	30 (4.5)	23 (3.5)	6 (0.9)	2 (0.3)	5 (0.8)	66 (9.9)
	Cases adjudicated, n	16	13	4	0	5	38
	Adjudicated as drug-related ILD, n	11	12	3	0	4	30

Data cutoff: October 15, 2018

- ◆ Median duration of treatment 108 days
- ◆ 29.5% subjects on treatment for  $\geq 180$  days
  - Median time to onset of ILD 149 days
- ◆ **Feb-March 2018: ILD recognized as DS-8201 risk: key actions implemented:**
  - Proactive awareness of subjects thru consent, to report signs or symptoms of possible ILD
  - Active training of investigational sites on monitoring for, evaluation and treatment of suspected ILD cases



## Odds Ratio (95% CI) for Association of Characteristics with Developing ILD (study J101)



*A higher dose and Japanese origin associated with higher likelihood of developing ILD after adjusting for the other factors*

Odd ratios and 95% confidence intervals were computed using a multivariate logistic regression model that included all variables shown.

\*Reference category.

<sup>a</sup>HER2 status was only available for breast and gastric cancer.

- ◆ Based on safety, efficacy and exposure data, 5.4 mg/kg was selected as the dose for pivotal development in breast cancer
- ◆ At 5.4mg/kg in breast cancer, ILD appears as a well characterized risk

ILD experience in breast cancer at 5.4 mg/kg							
Population	Adjudication status	ILD Severity Grade					Total
		1	2	3	4	5	
Breast Cancer 5.4 mg/kg N = 269	Investigator reported, n (%)	8 (3.0)	4 (1.5)	2 (0.7)	0	1 (0.4)	15 (5.6)
	Cases adjudicated, n	3	3	0	0	1	7
	Adjudicated as drug-related ILD, n	2	2	0	0	1	5

### Efficacy Outcomes in Subjects with HER2 Positive Breast Cancer in the Ongoing Ph 1 Trial (Aug 10, 2018 data cutoff)<sup>1</sup>

#### HER2 Positive (IHC 3+ or IHC 2+/ISH+) Breast Cancer

Confirmed Overall Response Rate  
(66/111)<sup>a</sup>

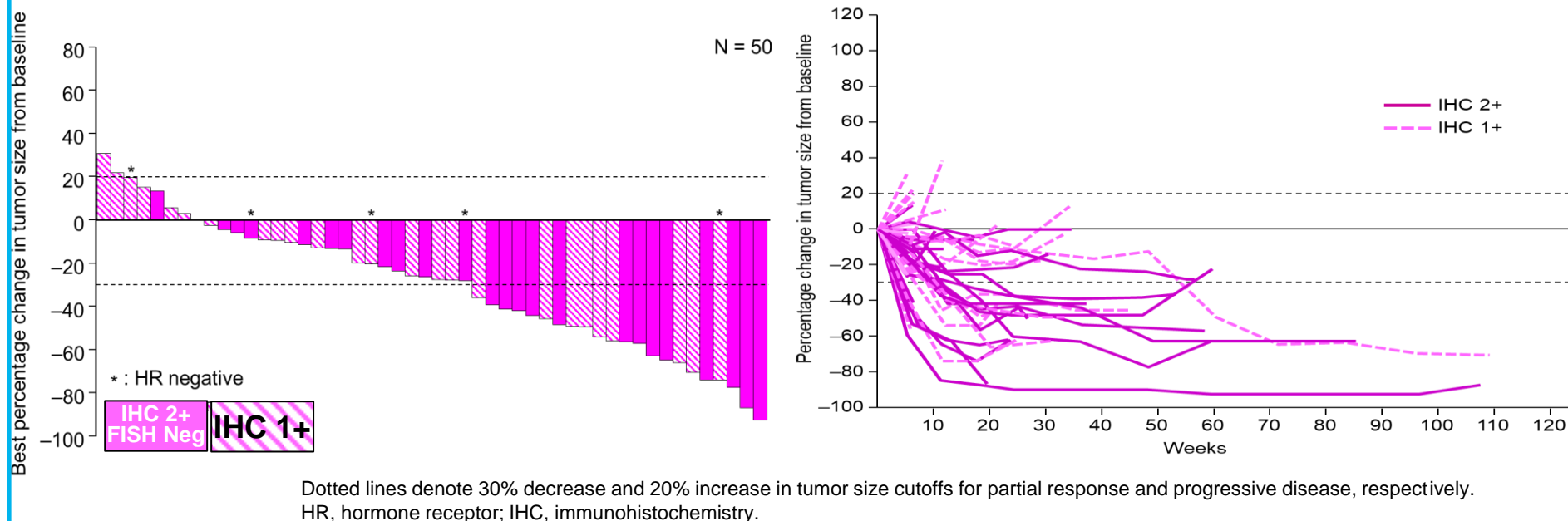
59.5% (95% CI 49.7, 68.7)

**Median duration of response**

**20.7 months** (range 0.0+, 21.8+)

<sup>a</sup>Subjects who received 5.4 or 6.4 mg/kg with  $\geq 2$  postbaseline scans, or who had progressive disease or discontinued treatment for any reason before second postbaseline scan.

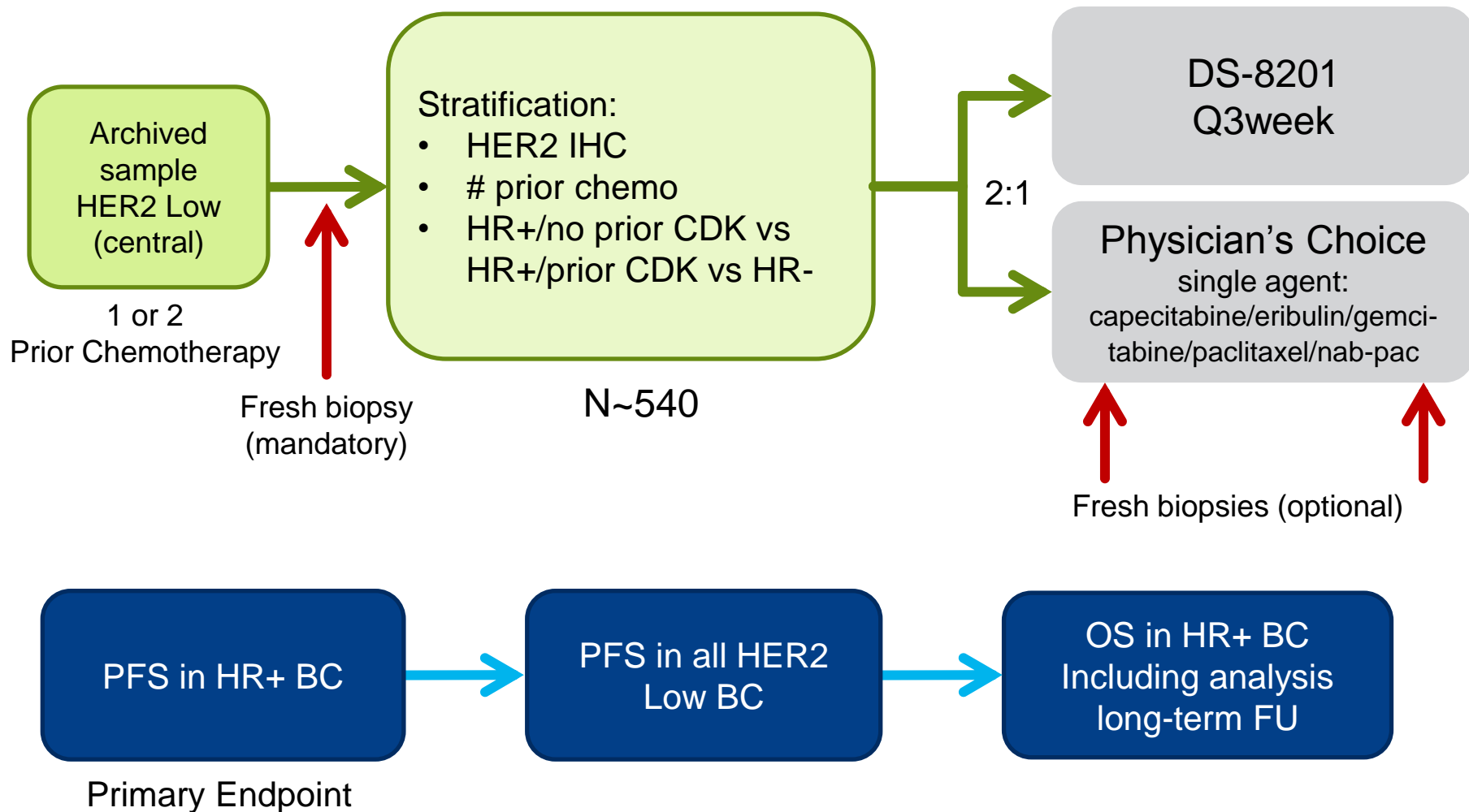
DCR, disease control rate; HER2, human epidermal growth factor receptor 2; IHC, immunohistochemistry; ISH, in situ hybridization; ORR, objective response rate.

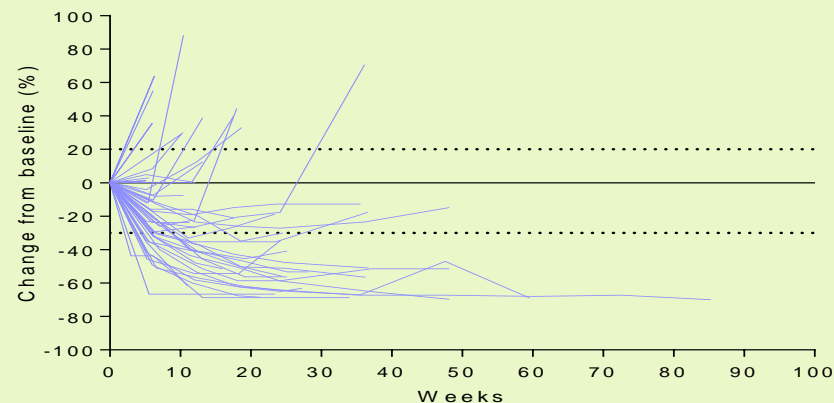
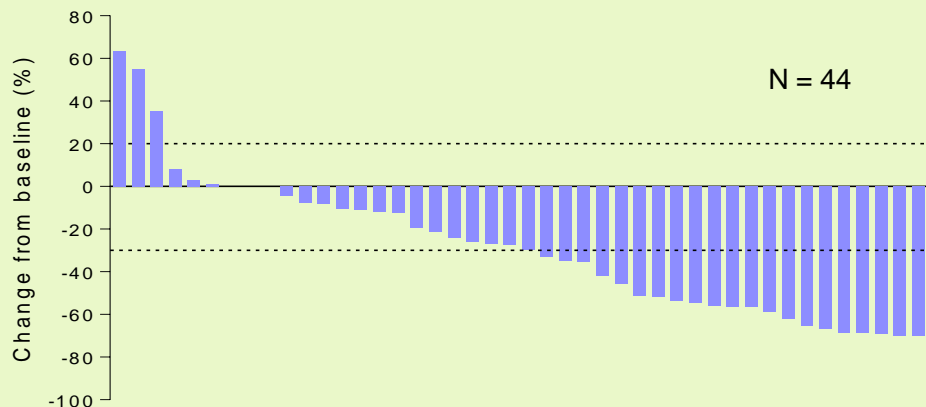


	Confirmed ORR, n/N (%)	Confirmed DCR, n/N (%)	Duration of Response, median (range), mo	PFS, median (95% CI), mo
<b>All (N = 51)</b>	<b>19/43 (44.2)</b>	<b>34/43 (79.1)</b>	<b>9.4 (1.5+, 23.6+)</b>	<b>7.6 (4.9, 13.7)</b>
<b>Subgroups</b>				
IHC 1+ (n = 27)	7/21 (33.3)	14/21 (66.7)	7.9 (2.1+, 11.3)	5.7 (1.4, 7.9)
IHC 2+ (n = 24)	12/22 (54.5)	20/22 (90.9)	11.0 (1.5+, 23.6+)	13.6 (NA)
HR+ (n = 45)	18/38 (47.4)	31/38 (81.6)	11.0 (1.5+, 23.6+)	7.9 (4.4, 13.7)
Prior CDK4/6 inhibitor (n = 15)	4/12 (33.3)	9/12 (75.0)	NR	7.1 (NA)

# DS-8201 | HER2 Low Breast Cancer P3 Study Design

CT.gov: NCT03734029/JapicCTI-184223

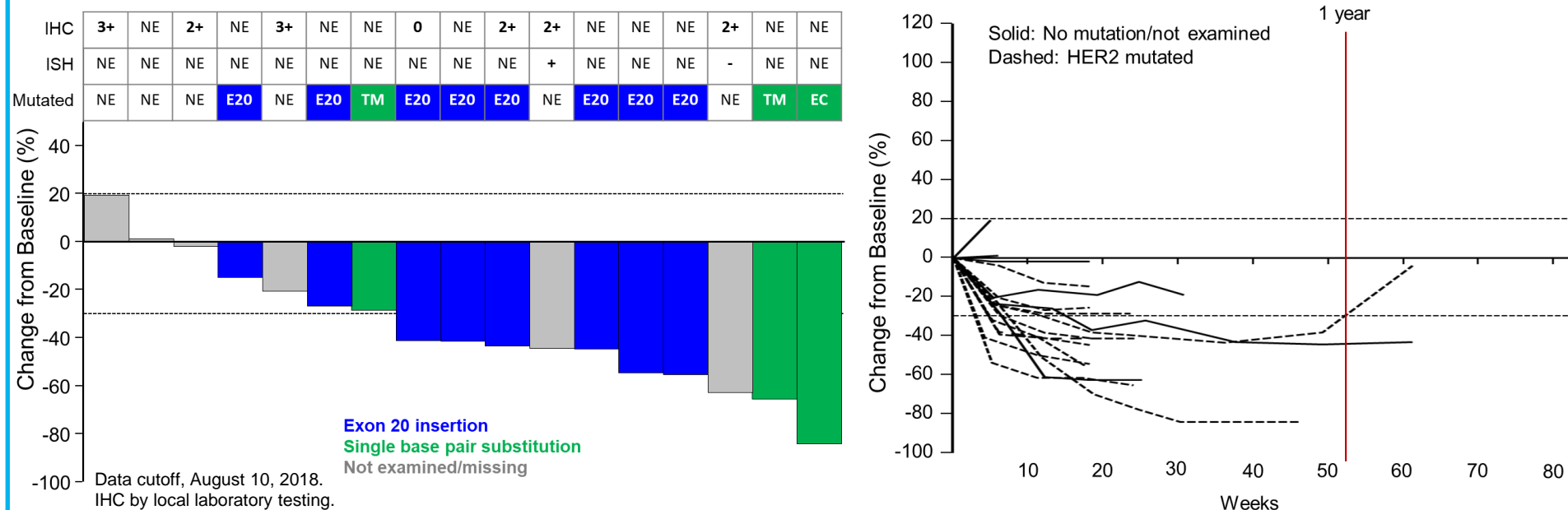




Includes subjects who had  $\geq 1$  postbaseline scan. Dotted lines denote 20% increase and 30% reduction in tumor size, respectively.

\*Confirmed response includes subjects who had  $\geq 2$  postbaseline scans, progressive disease, or discontinued treatment for any reason prior to second postbaseline scan. Data cutoff is April 18, 2018.

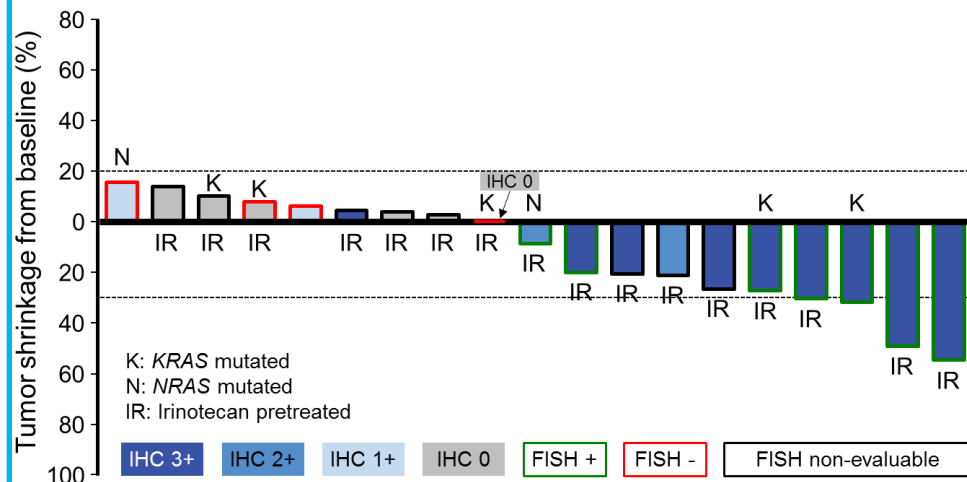
	Confirmed ORR (n/N) (95% CI)	DCR % (n/N)	DOR, Median (95% CI), months	PFS	
				Median, (95% CI)	Min, max
HER2 Positive Gastric Cancer N = 44	43.2% (19/44) (28.3, 59.0)	79.5% (35/44)	7.0 (NA)	5.6 months (3.0, 8.3)	1.2, 19.6+



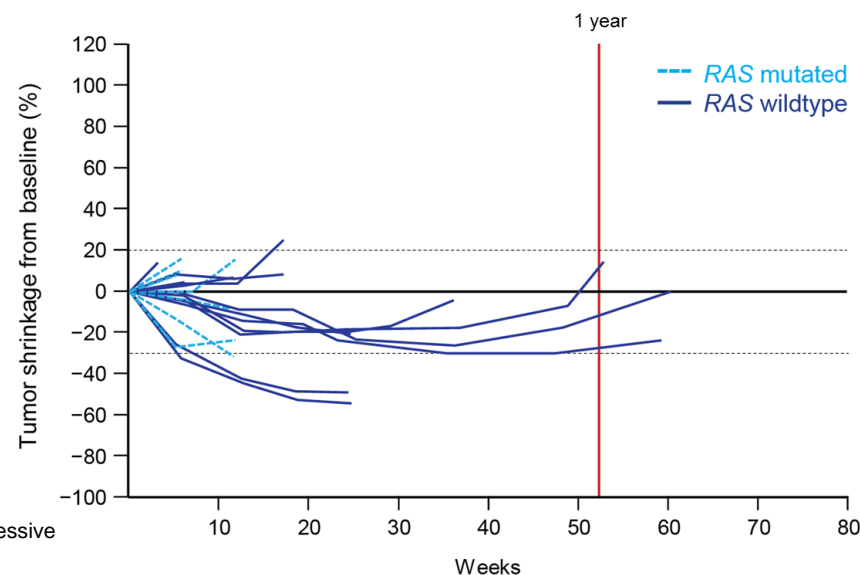
Data cutoff, August 10, 2018.  
 IHC by local laboratory testing.  
 E20, exon 20 insertion; EC, single base pair substitution at extracellular domain; IHC, immunohistochemistry; ISH, in situ hybridization; NSCLC, non-small cell lung cancer; NE, not examined or missing; TM, single base pair substitution in transmembrane domain.

	Confirmed ORR, % (n/N)	Confirmed DCR, % (n/N)	DOR, median (range), months	PFS, median (range), months
HER2-expressing or HER2-mutated NSCLC N = 18	58.8% (10/17)	88.2% (15/17)	9.9 (0.0+, 11.5)	14.1 (0.9, 14.1)
<b>HER2-mutated NSCLC N = 11</b>	<b>72.7% (8/11)</b>	<b>100% (11/11)</b>	<b>11.5 (0.03+, 11.5)</b>	<b>14.1 (4.0+, 14.1)</b>

## ORR 27.3% (3/11) in HER2 (IHC 2+, 3+)



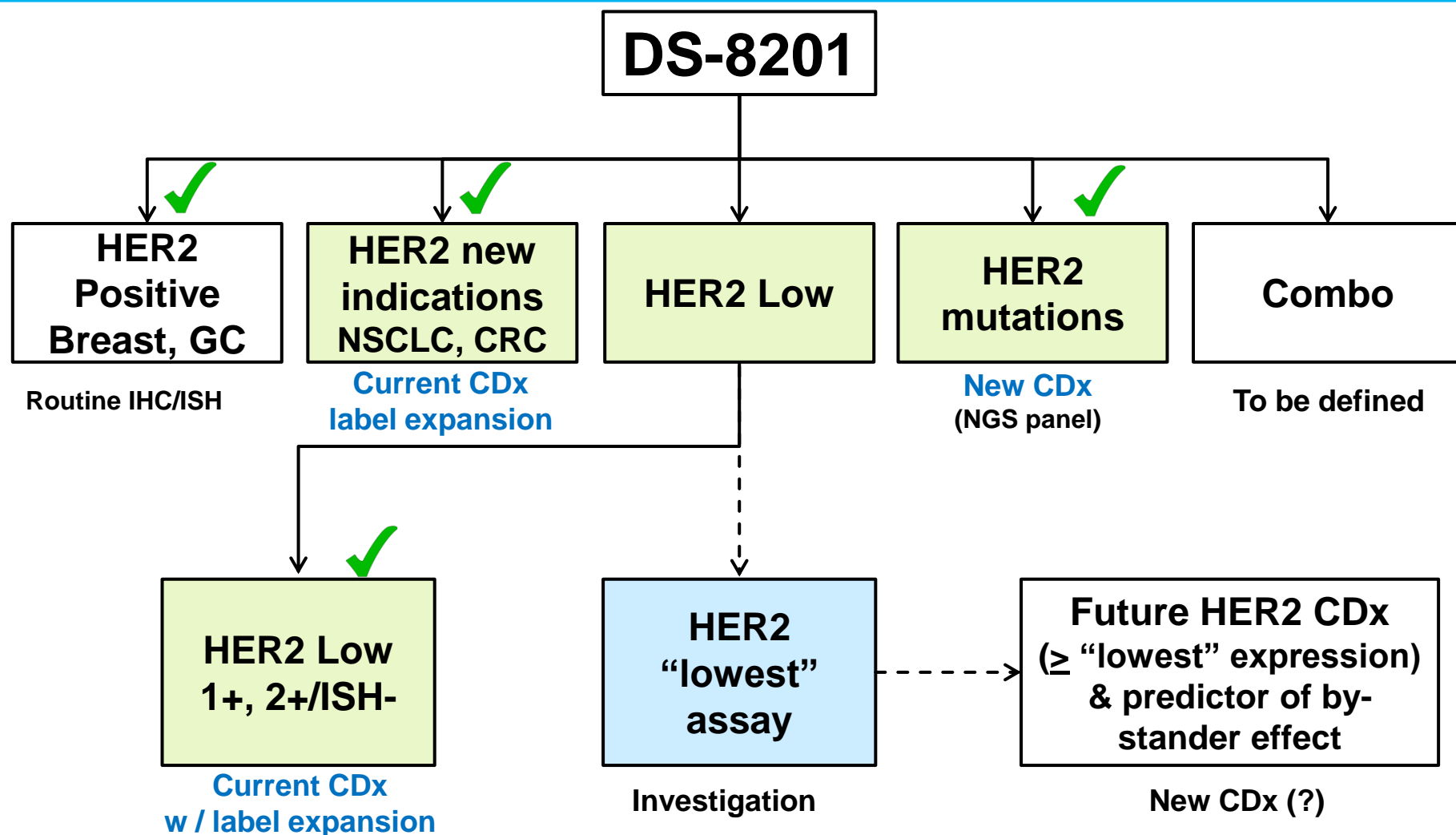
HER2 status based on centrally assessed retrospective analysis of archival samples. Dotted lines denote 30% decrease and 20% increase in tumor size cutoffs for partial response and progressive disease, respectively. FISH, fluorescence in situ hybridization; HER2, human epidermal growth factor receptor 2; IHC, immunohistochemistry; IR, irinotecan pretreated; K, *KRAS* mutation; N, *NRAS* mutation.



	Confirmed ORR, % (n/N)	Confirmed DCR, % (n/N)	DOR, median (range), months	PFS, median (range), months	OS, median (range), months
CRC N=19*	15.8% (3/19)	84.2% (16/19)	NR (0.0+, 5.5+)	3.9 (2.1,8.3)	NR (1.0+, 17.9+)

\* Evaluable patients (one IHC 0 patient was not evaluable out of 20 enrolled)
















Biology of HER2 receptor varies: IHC is not fully portable  
Developing new CDx Assays lead to select the right patients for DS-8201

# DS-8201 is Leading the Second Generation HER2 ADC Race with the Most Ongoing Trials

## HER2 ADCs

	Project (Payload)	Potential Indication	Pivotal stage		
			Pre-Clinical	Ph1	Pivotal
	<b>DS-8201</b> Topoisomerase I inhibitor	Breast, Gastric, CRC, NSCLC	P3, P2, P1		
	<b>SYD985</b> DNA alkylator (Duocarmycin)	Breast, Gastric	P3, P1		
	<b>BAT8001</b> Maytansine derivative	Breast, Gastric	P3		
	<b>RC-48</b> (MMAE) Tubulin Inhibitor	Breast, Gastric, Bladder	P2		
	<b>XMT-1522</b> Tubulin inhibitor	Breast, Gastric, NSCLC	P1		
	<b>ARX-788</b> Tubulin inhibitor	Breast, Gastric	P1		
	<b>PF-06804103</b> (MMAE) Tubulin inhibitor	Breast, NSCLC, Gastric, GEJ	P1		
	<b>DHES-0815A</b> PBD-MA	Breast	P1		
	<b>ALT-P7</b> Tubulin inhibitor	Breast	P1		
	<b>A166</b> Unknown	Solid Tumor	P1/2		

CRC: colorectal cancer, NSCLC: non-small cell lung cancer, GEJ: gastroesophageal junction

Sources: clinicaltrials.gov, BioThera Press release

- ◆ FY2019 first BLA remains an upside possibility
- ◆ Vast majority of breast cancers are in scope
- ◆ Earlier lines and critical combos (CDK4/6i, hormonal therapy, pertuzumab) are key to unlock the full potential of the drug in BC
- ◆ ILD at 5.4 mg/kg in Breast cancer appears as a well characterized risk
- ◆ Duration of Response in HER2 positive Breast cancer Ph 1 is > 20 months
- ◆ Biology of HER2 receptor varies: IHC is not fully portable

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# U3-1402 (HER3 ADC)

First Time in Human Safety Profile to Date (Nov. 06, 2018)

Characteristics	Dose Escalation + Dose Finding (N = 42)
TEAEs regardless of causality	42 (100.0)
Serious TEAEs regardless of causality	14 (33.3)
Drug-related	7 (16.7)
TEAEs leading to drug withdrawal/ discontinuation	1 (2.4)
TEAEs leading to dose reduction	8 (19.0)
TEAEs leading to dose interruption	19 (45.2)
TEAEs associated with death as outcome	0

TEAEs, treatment-emergent adverse events

- ◆ Median **drug exposure 7.6 months** for 42 subjects, all breast cancer
- ◆ In Dose Escalation (n=34), **DLT** in 4 subjects: transient, reversible thrombocytopenia (grade 4) and AST and ALT increased (grade 3); none required discontinuation
- ◆ **A single subject had a TEAE leading to drug discontinuation** (grade 2 pneumonitis)
- ◆ **Pulmonary adverse events of special interest**, observed in 1 patient each:
  - grade 1 radiation fibrosis and grade 3 radiation pneumonitis, not drug related and recovered, treatment resumed
  - grade 2 pneumonitis, drug related, recovered after treatment discontinued
  - grade 2 interstitial pneumonitis, drug related, recovering after treatment withdrawn
- ◆ All cases are being adjudicated

## Efficacy Assessed by Investigators

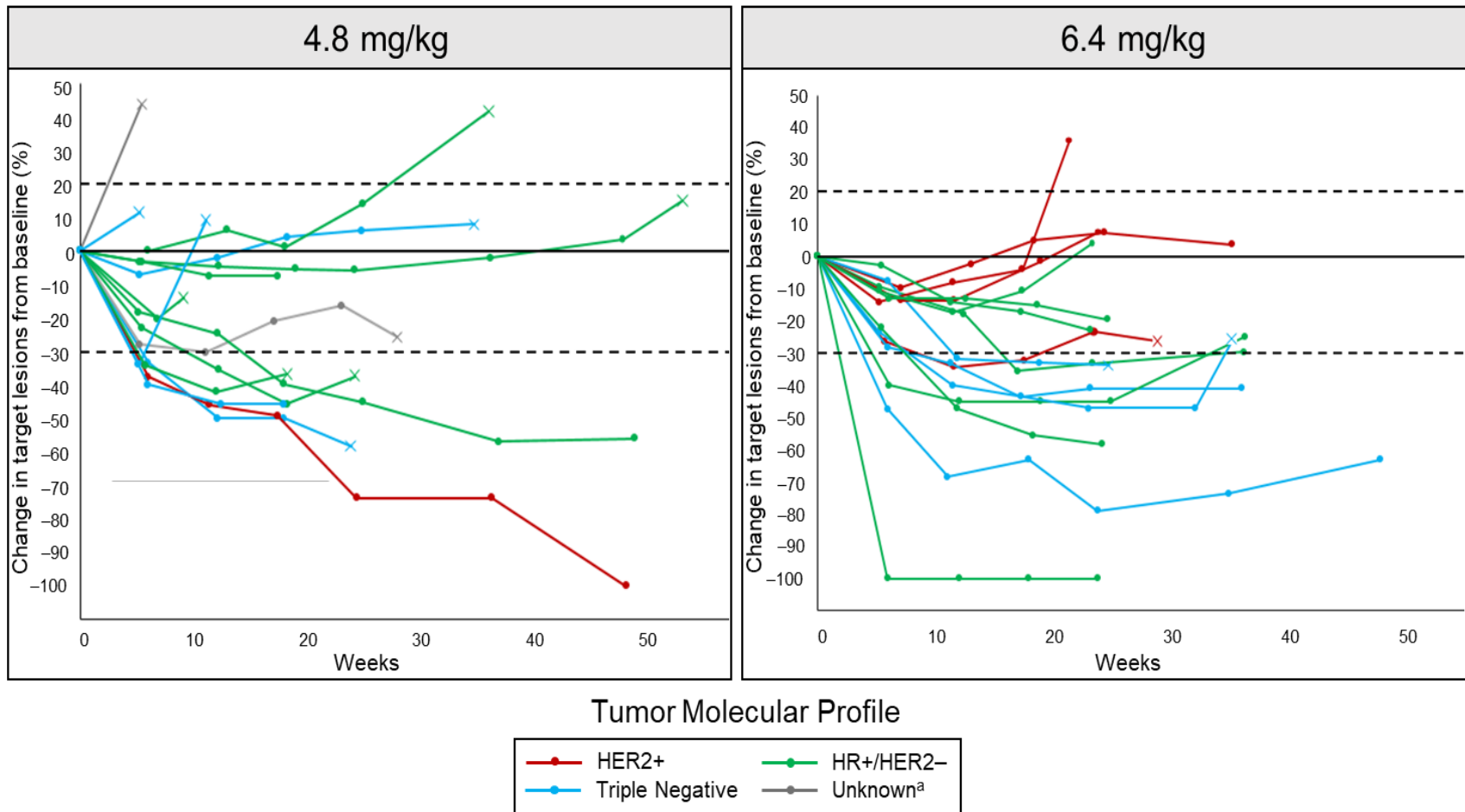
Efficacy Measures	Dose Escalation and Dose Finding		
	4.8 mg/kg (N = 15)	6.4 mg/kg (N = 15)	All dose levels (N = 42)
<b>Overall Response Rate</b> n/N (%)	6/15 ( <b>40.0%</b> )	9/15 ( <b>60.0%</b> )	18/42 ( <b>42.9%</b> )
Duration of Response median (range), months	Not Reached (2.8, 9.8+)	Not Reached (2.9+, 9.8+)	Not Reached (2.8, 13.8+)
Time to Response median (95% CI), months	2.1 (1.3, 4.1)	2.7 (1.4, 2.8)	2.6 (1.4, 2.8)
<b>Disease Control Rate</b> n/N (%)	13/15 ( <b>86.7%</b> )	15/15 ( <b>100.0%</b> )	38/42 ( <b>90.5%</b> )
PFS median (range), months	8.0 (1.2, 12.3+)	Not Reached (5.0, 11.1+)	8.3 (1.2, 16.8+)

Efficacy evaluable set for confirmed response based on RECIST version 1.1 includes subjects who had  $\geq 2$  postbaseline scans, progressive disease at the first scan, or discontinued treatment for any reason.

Data cutoff: November 6, 2018

# U3-1402 | Efficacy by Dose Level in Ph 1 BC Study

## Percentage Change in Target Lesions from Baseline



Data cutoff date of November 6, 2018. X indicates patients who discontinued treatment.

<sup>a</sup>Unknown includes 2 patients with HR+ and HER2 IHC/FISH unknown; 1 patient with HR- and HER2 IHC/FISH unknown; and 1 patient HR+ and HER2 IHC 2+/FISH unknown.

Dotted lines denote 30% decrease and 20% increase in tumor size threshold for partial response and progressive disease, respectively.

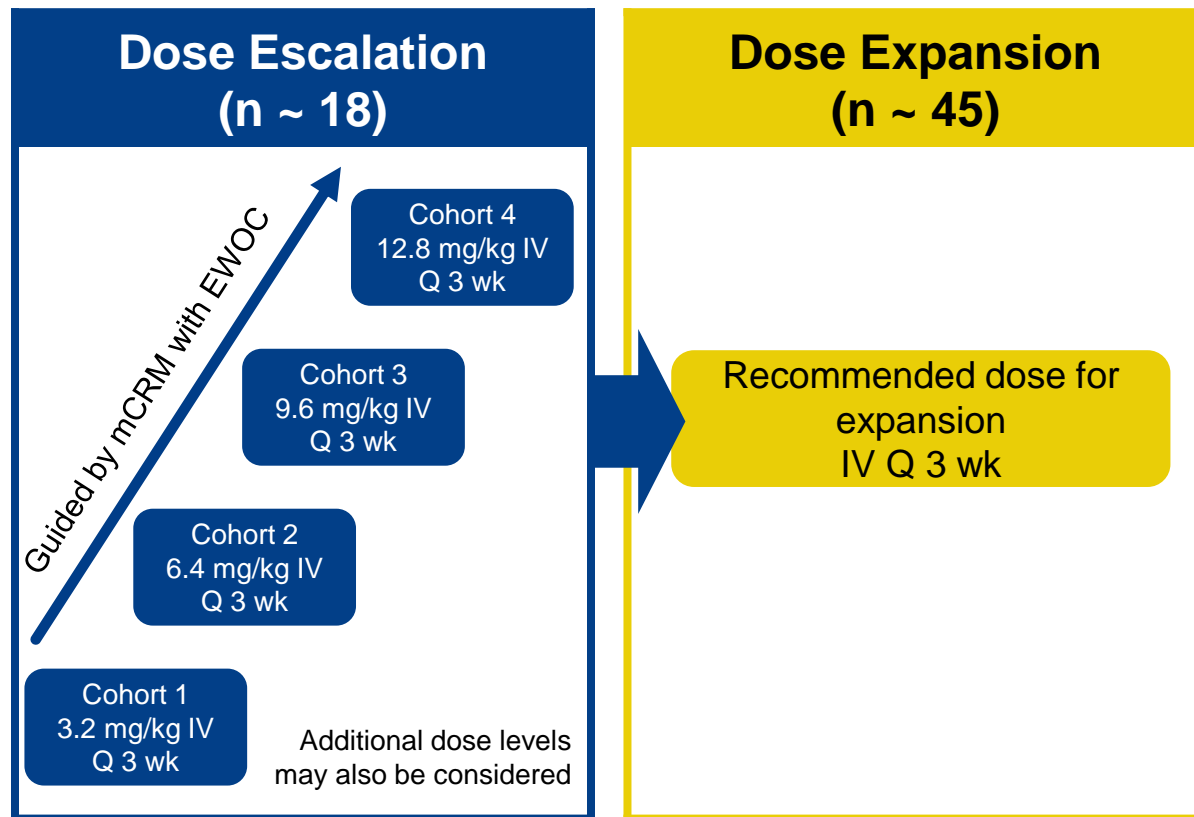
Analysis set: efficacy-evaluable patients with at least 1 postbaseline tumor assessment.

FISH, fluorescent in situ hybridization; HER2, human epidermal growth factor receptor 2; HR, hormone receptor; IHC, immunohistochemistry.

## Ph 1, Multicenter, Open-label, Dose Escalation and Dose Expansion Study in NSCLC

- ◆ Metastatic or unresectable **EGFR-mutant NSCLC** with
  - T790M mutation-negative tumor after progression with erlotinib, gefitinib, or afatinib
  - or**
  - Progression on osimertinib
- ◆ Clinically inactive CNS metastases allowed
- ◆ ECOG PS 0 or 1

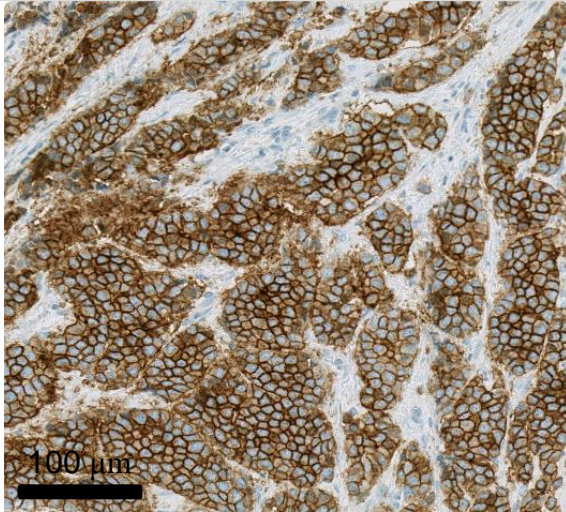
No selection based on HER3 expression. HER3 (IHC) is examined retrospectively.



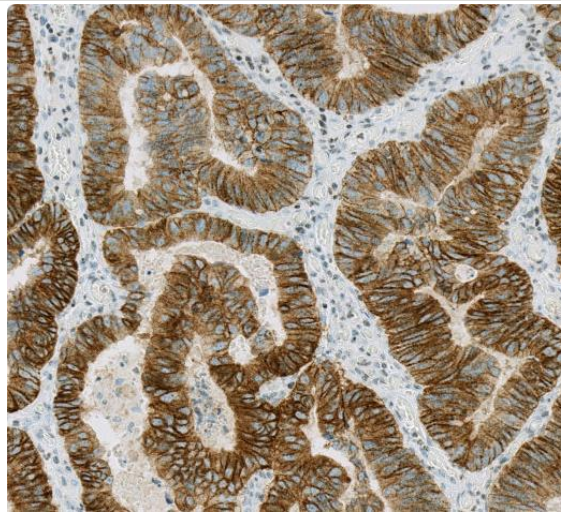
Dose escalation data to be presented at ASCO 2019



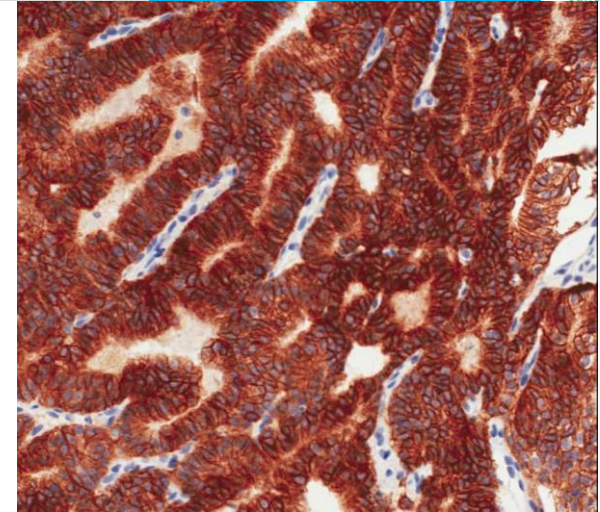
# U3-1402 | HER3 Expression in Cancer (IHC)



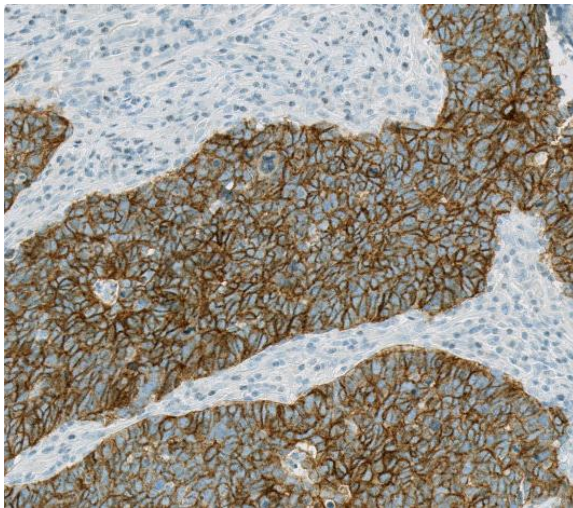
Breast cancer



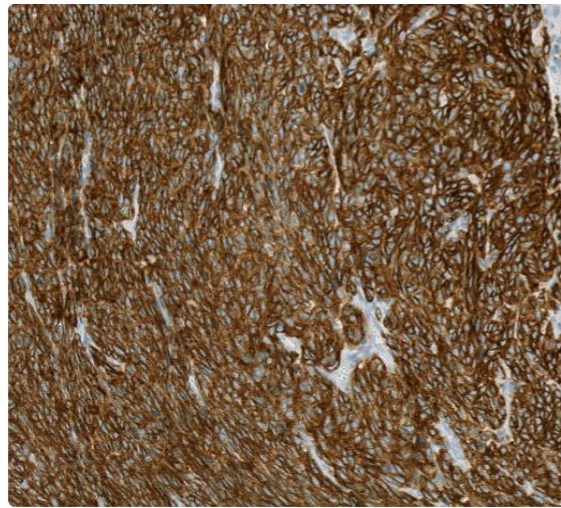
Colorectal cancer



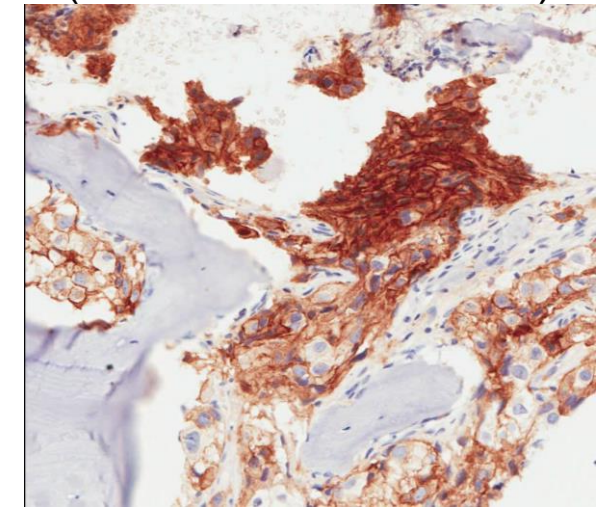
Prostate cancer  
(soft tissue metastasis)



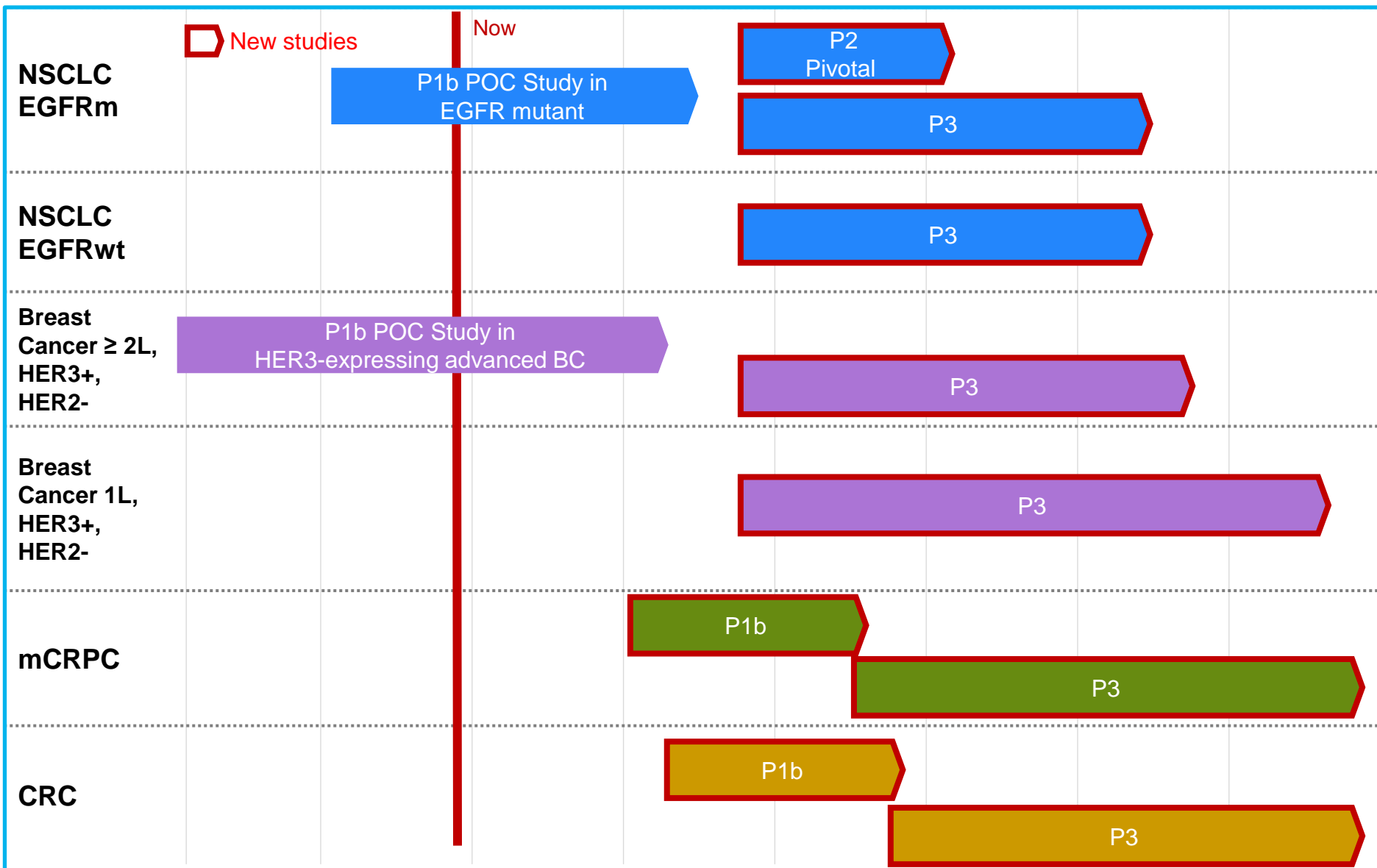
NSCLC



Malignant melanoma



Prostate cancer  
(Bone marrow metastasis)





# HER2 and HER3 ADCs' Overlap

New and Enhanced Biomarkers will Drive Precision Treatment of Metastatic Breast Cancer

## Historical State: HR and HER2 as oncogenic drivers

Decision matrix driven by HR status and conventional HER2 (tissue derived IHC/ISH)

All Patients  
n=288,550

HR-/HER2+ 6.8% n=19,730	HR+/HER2+ 13.5% n=38,835
HR-/HER2- 12.5% n=36,125	HR+/HER2- 67.2% n=193,860

## Emerging Addition of New Standard of Practice

Enhanced understanding of disease biology leading to more advanced patient segmentation to predict the role of ADCs & other agents

Liquid Biopsy

Advanced HER2 measurement (eg mRNA / predicting DXd by-stander effect, etc.)

PI3K mutations

BRCA mutations

PDL1 Status

Role of HER3

Role of TROP2

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- ENLIVEN

## 7 Recap

- DS is a science & technology company / future news flows



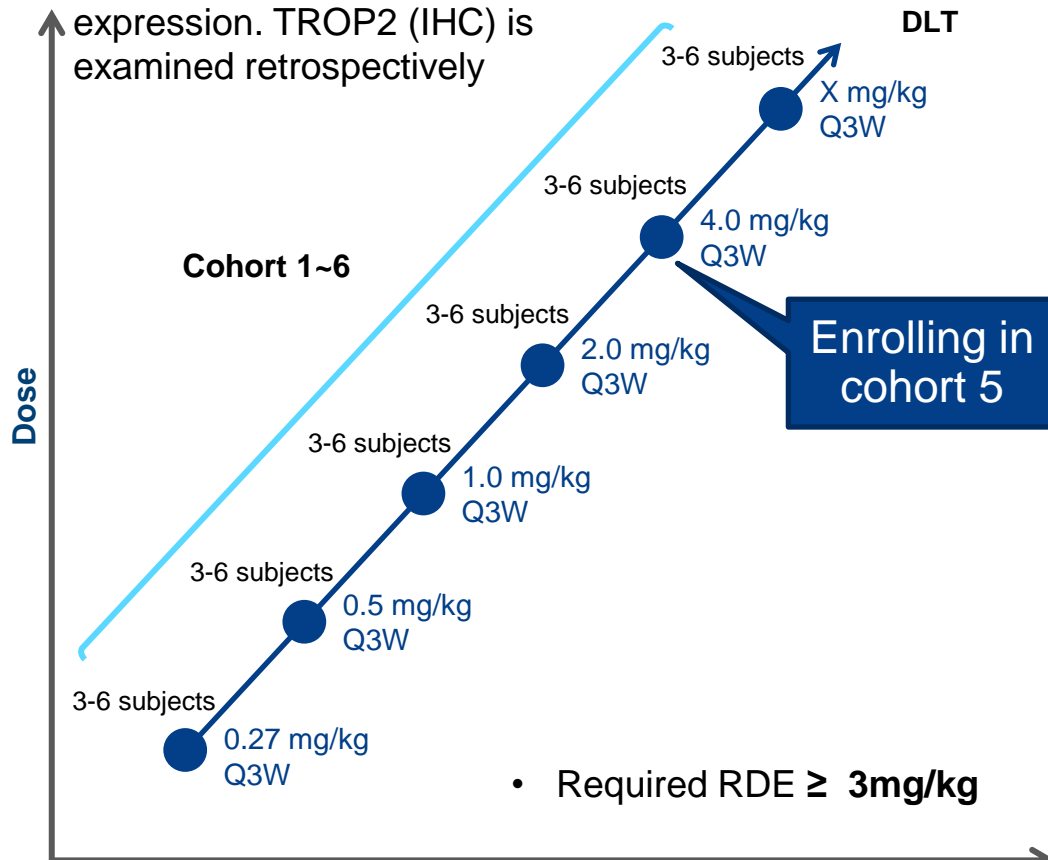
NSCLC  $\geq 3^{\text{rd}}$  line

**Dose Escalation**

**Dose Expansion**

No selection based on TROP2 expression. TROP2 (IHC) is examined retrospectively

DLT



• Required RDE  $\geq 3\text{mg/kg}$

n=40 in RDE

POC

Assess efficacy and safety for GO/NO-GO decision

**Following NSCLC POC**

- Open 2 other expansion cohorts for other TROP2 positive tumors

POC

**Expansion Indication A**  
n=40

**Expansion Indication B**  
n=40

Total number of subjects for escalation and expansion is approximately 160 maximum

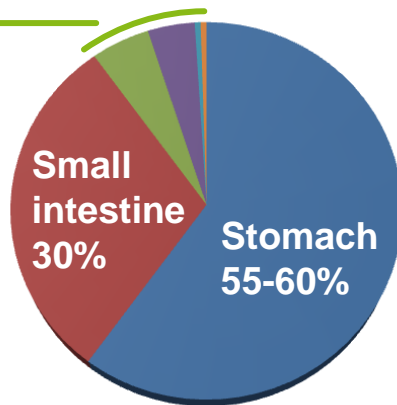
**Dose escalation data to be presented at ASCO 2019**

FTIH study for DS-7300 planned through Sarah Cannon Research Institute with Japan collaboration – FY2019

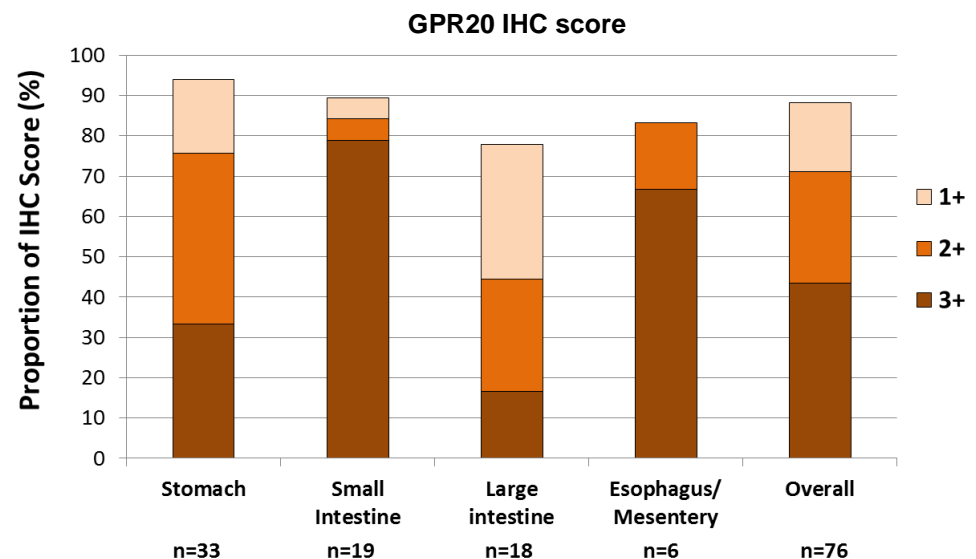
Condition		
Target	High expression	B7-H3 is overexpressed frequently in various tumors (more than HER2 in breast cancer)
	Tumor selectivity	B7-H3 is overexpressed in tumors with low expression in normal tissues
mAb	Internalization	Anti-B7-H3 ADC antibody internalization rate 19-27%/3hr, comparable to trastuzumab

- ◆ **Concept:** treatment of GPR20 positive GIST, regardless of TKI-resistance mutation
- ◆ **Fast-to-market:** Imatinib-resistant GIST (2<sup>nd</sup> line, salvage line)

duodenum (5%)  
colorectum (<5%)  
esophagus (<1%)  
appendix (<1%)



IHC in GIST (US Biomax GIST801 tissue microarray)



- ◆ 88% of primary GIST is GPR20 positive (score >1+)
- ◆ GPR20 is highly expressed in more aggressive small intestinal GIST
- ◆ GPR20 expression was also observed in PDGFRA D842V GIST and wild type GIST

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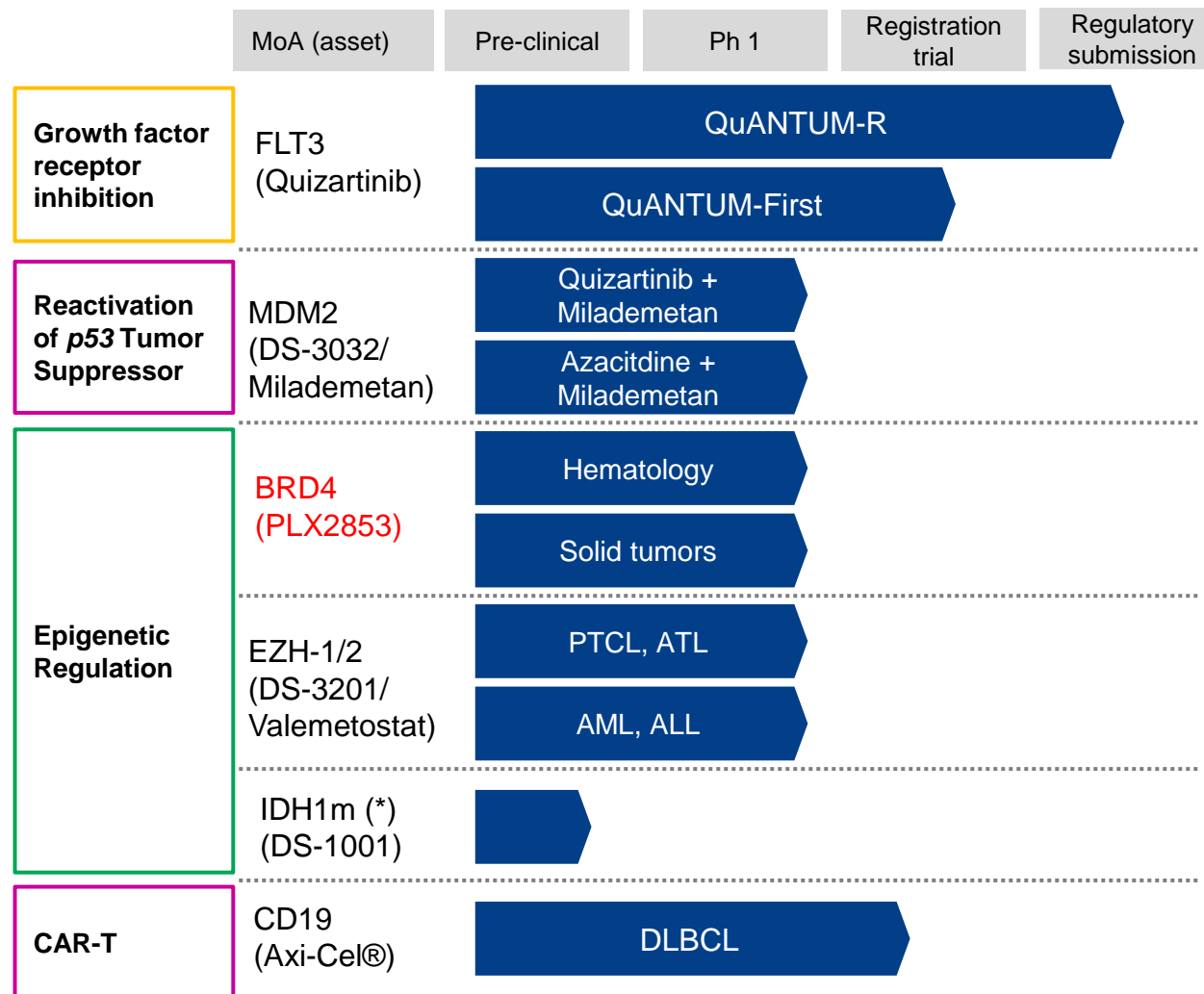
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## AML/Hematology Franchise

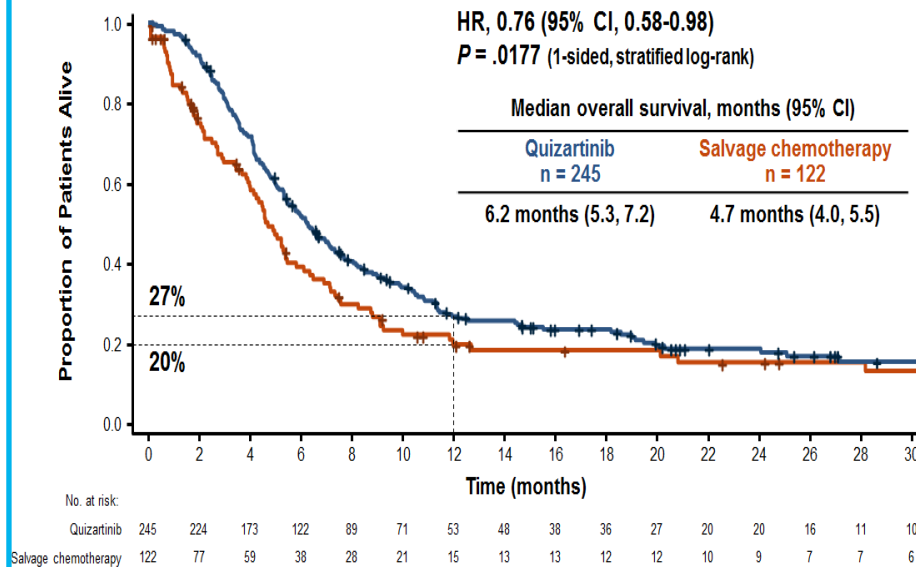


- ◆ Quicker development of combinations
- ◆ Address emergence of resistance

(\*): Ph1 in glioma. Preclinical development in AML.

ALL: acute lymphoblastic leukemia, AML: acute myeloid leukemia, ATL/L: adult T-cell leukemia/lymphoma, DLBCL: diffuse large B-cell lymphoma, PTCL: peripheral T-cell lymphoma

# Quizartinib | Refractory / Relapsed FLT3-ITD AML



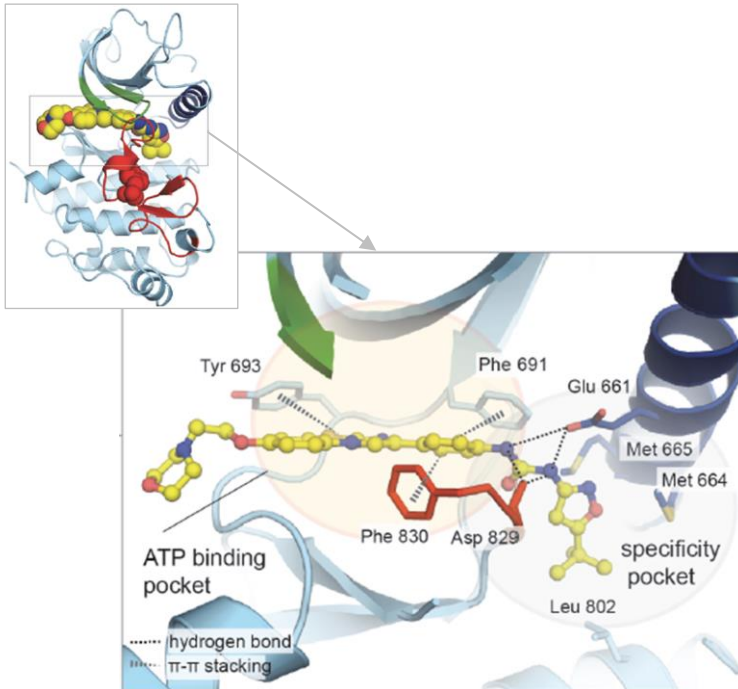
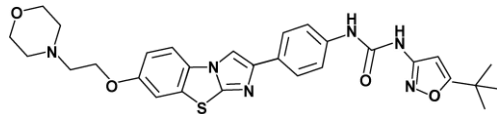
• Median follow-up: 23.5 months

- ◆ Positive Ph 3 with 24% reduction in the risk of death; early separation of survival curves
- ◆ Global simultaneous submission in US, EU and JP (achieved in less than a month)
  - US: BTDD and Orphan Drug designations; PDUFA date May 25, 2019
  - EU: Accelerated assessment and Orphan Drug designations
  - JP: Orphan Drug designation
- ◆ CDx submission on-track
- ◆ Preparing for global launch 1H FY2019

# Quizartinib

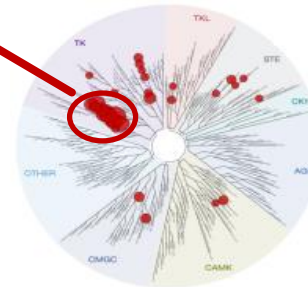
## Highly Potent and Selective Type II Kinase Inhibitor

Type II kinase inhibitor: binds outside the ATP binding pocket



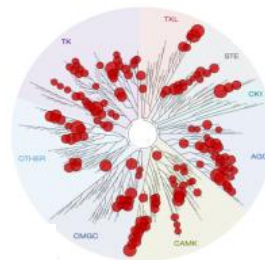
### Quizartinib<sup>1</sup>

FLT3  
C-KIT

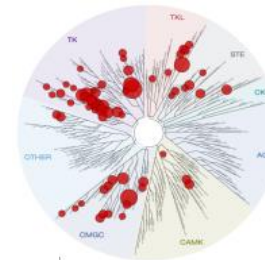


$K_d < 1 \text{ nM}$   
 $1 \text{ nM} \leq K_d < 10 \text{ nM}$   
 $10 \text{ nM} \leq K_d < 100 \text{ nM}$   
 $100 \text{ nM} \leq K_d < 1000 \text{ nM}$

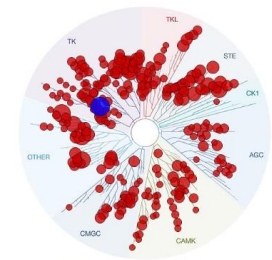
### Midostaurin<sup>1</sup>



### Sorafenib<sup>1</sup>



### Gilteritinib<sup>2</sup>



# Quizartinib | Clarification of the Mechanism of Action

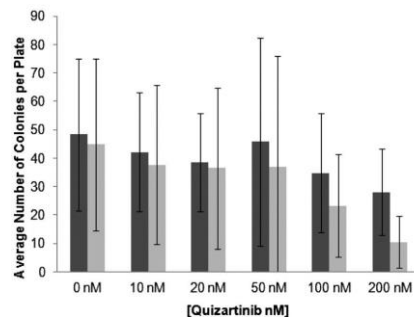
- ◆ Quizartinib is a potent and selective type II FLT3 inhibitor (and partial c-kit inhibitor)
- ◆ “CR with incomplete count recovery” is fast and most common response

Quizartinib

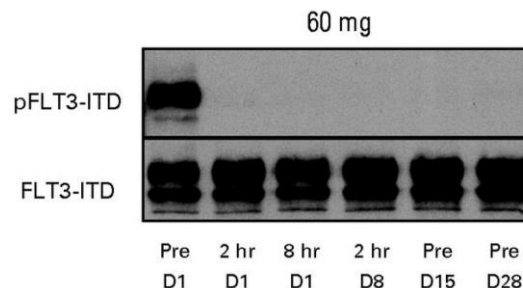
Sustained Inhibition of FLT3-ITD Autophosphorylation<sup>1,2</sup>

Rapid clearance of blasts from peripheral blood and terminal differentiation of bone marrow blasts<sup>5</sup>

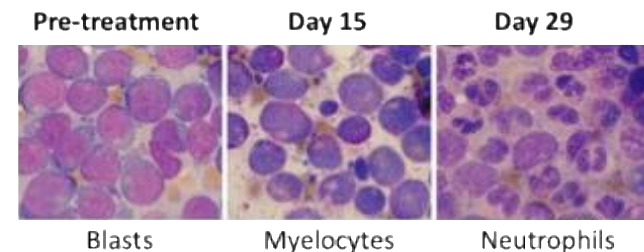
Partial, selective inhibition of c-Kit<sup>3,4</sup>



Delayed hematologic recovery



Quizartinib (μM in plasma)



Complete remission with incomplete count recovery

GM-CFU, colony forming unit, granulocyte, monocyte; BFU-E, Erythropoietin, erythroid burst-forming unit

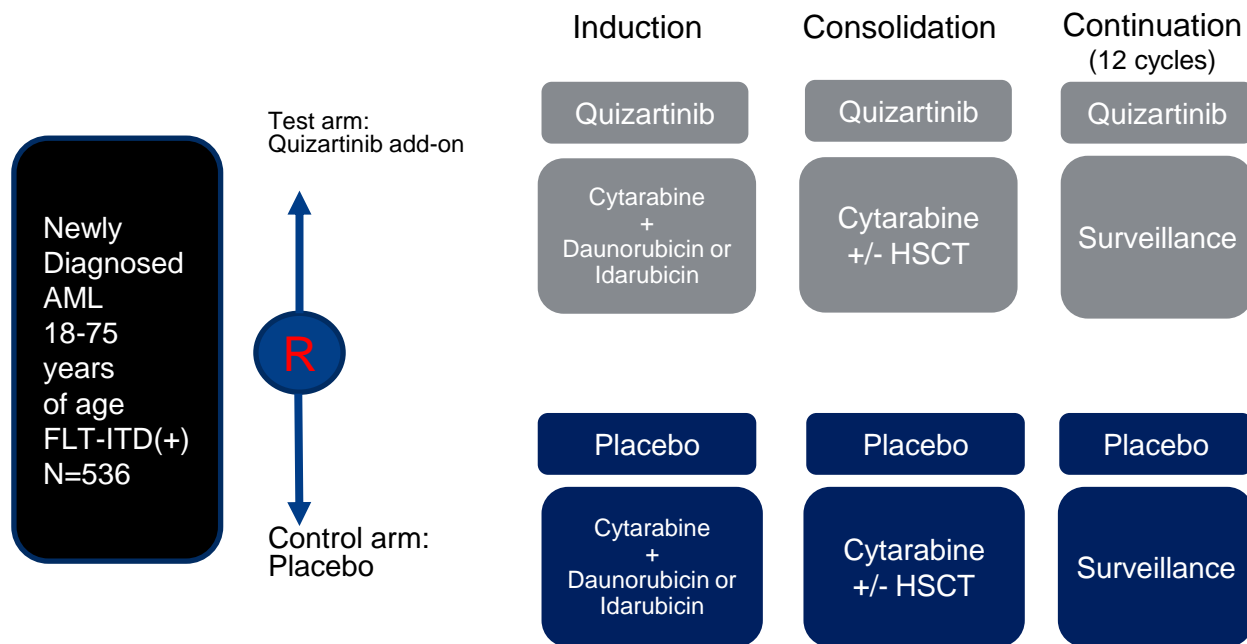
\*Other kinases with  $K_d$  within 10-fold that of FLT3 were closely related RTKs, eg, KIT

<sup>1</sup>Zarrinkar P, et al. *Blood*. 2009;114(14):2984-2992; <sup>2</sup>Cortes JE, et al. *J Clin Oncol*. 2013;31(29):3681-3687; <sup>3</sup>Galanis A, et al. 2014. *Blood*. 123(1):94-100; <sup>4</sup>Galanis A & Levis M, 2015. *Haematologica*. 100(3):e77-9; <sup>5</sup>Sexauer et al. 2012 *Blood*. 120:4205-4214

Early leukemic blast clearance in blood and differentiation in bone marrow

Hypothesis: Synergistic anti-leukemic effect, when added to chemotherapy, to:

- ◆ Increase remission rate
- ◆ Delay relapse



Primary endpoint: Event-free survival

Competitive advantage: ahead of competition; mostly enrolled

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## 7 Recap

- DS is a science & technology company / future news flows



# TGCT is Rare, Non-malignant Disease with Large Pool of Prevalent Patients

## Incidence

### Localized TGCT (extremities)

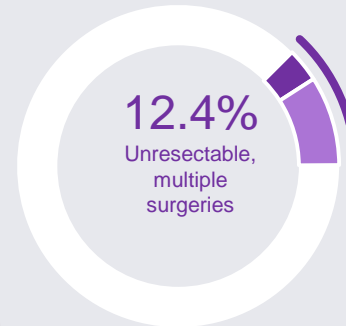
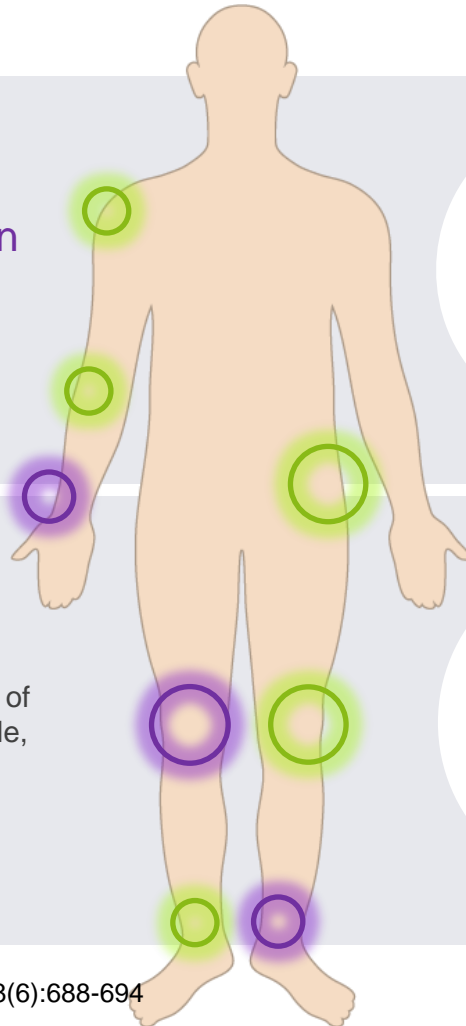
WW: 10.2 cases per million

frequently affects the knee joint, other locations include the wrist and ankle

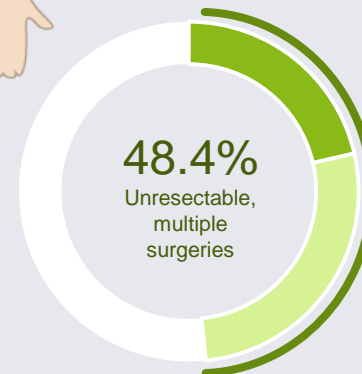
### Diffuse TGCT

WW: 4.1 cases per million

most commonly affects the knee (75% of cases), followed by the hip (15%), ankle, elbow, and shoulder



Over 30  
years  
**10,501 US**  
**10,476 EU**



Over 30  
years  
**14,800 US**  
**14,770 EU**

■ Multiple Surgeries  
■ Unresectable  
■ Cure/Managed

Source: Mastboom et al. *Acta Orthop.* 2017; 88(6):688-694

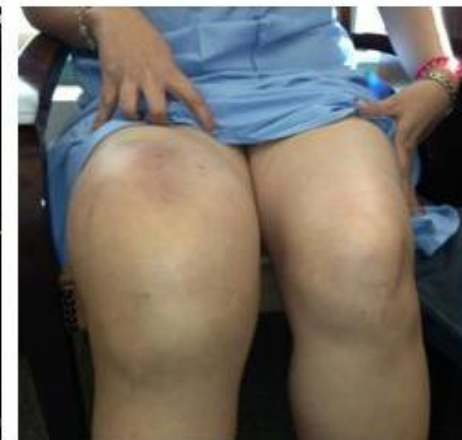
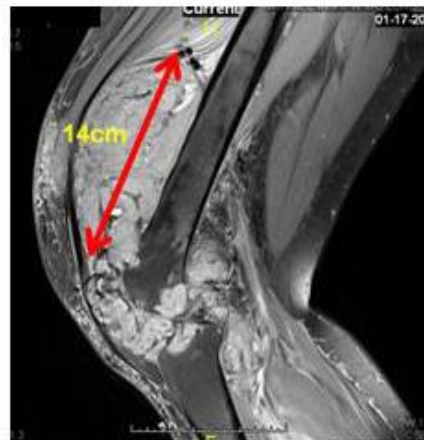
\*Unresectable prevalent patient population

TGCT: tenosynovial giant cell tumor



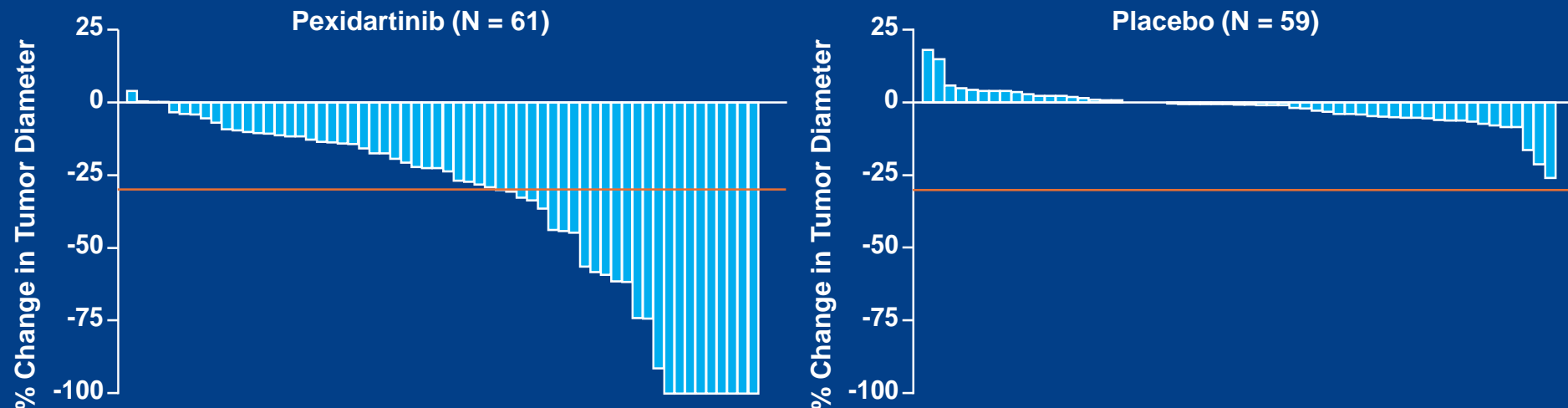
“Pexidartinib” is indicated for treatment of adult patients with symptomatic tenosynovial giant cell tumor (TGCT), which is associated with severe morbidity or functional limitations, and which is not amenable to improvement with surgery.

◆ **US NDA submission in 2H FY2018**



- ◆ TGCT: non-malignant tumor associated with pain, stiffness, and functional impairment
  - Analgesic use is common and may include opioids
- ◆ Large, diffuse disease is not amenable to surgical resection due to risk of morbidity or high risk of recurrence





- ◆ TGCT: 4 non-fatal hepatic SAEs increased bilirubin, one lasting ~7 months
- ◆ Serious liver toxicity also observed in non-TGCT (N = 637), 1 case required liver transplant (breast cancer, in combination with paclitaxel) and 1 case associated with death (monotherapy in metastatic mucosal melanoma)
- ◆ Other AEs as previously reported

Liver Function, N (%)	Pexidartinib Part 1 N = 61	Placebo Part 1 N = 59	Pexidartinib Crossover 800 mg/d N = 30
AST or ALT $\geq 3 \times$ ULN	20 (33)	0	4 (13)
TBili $\geq 2 \times$ ULN	3 (5)	0	0
TBili $\geq 2 \times$ ULN and AST or ALT $\geq 3 \times$ ULN	3* (5)	0	0

All had ALP  $\geq 2.5 \times$  ULN.

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# Cancer Enterprise | Major Clinical Pipeline

As of Dec 2018

Franchise	Project Code	Potential Indications	Preclinical	Ph 1	Pivotal	Designation
ADC	DS-8201 (HER2)	Breast, Gastric IO combo, other HER2+				BTD, Fast Track (BC) SAKIGAKE (GC)
	U3-1402 (HER3)	Breast, NSCLC				
	DS-1062 (TROP2)	NSCLC				
AML/Hematology	Quizartinib (FLT3)	AML 1 <sup>st</sup> / Relapsed/Refractory				BTD, Priority, Fast Track, ODD (US); Accel Assess, ODD (EU); ODD (JP) (NDA under review)
	DS-3032 (MDM2)	AML, Solid				
	DS-3201 (EZH1/2)	AML, ALL, ATL, PTCL				
	PLX2853 (BRD4)	AML				
	DS-1001 (IDH1m)	AML, Glioma				
	Axi-Cel <sup>®</sup> (CD19 CAR-T)	BCL (Japan)				ODD (JP)
Breakthrough	Pexidartinib (CSF-1R)	TGCT				BTD (active submission)
	DS-1205 (AXL)	NSCLC				
	DS-1647 (Oncolytic virus)	GBM (Japan)				SAKIGAKE, ODD (JP)

ALL: acute lymphoblastic leukemia, AML: acute myeloid leukemia, ATL/L: adult T-cell leukemia/lymphoma, BCL: B-cell lymphoma, BTD: Breakthrough Therapy Designation, GBM: glioblastoma multiforme, NSCLC: non-small cell lung cancer, ODD: Orphan Drug Designation, PTCL: peripheral T-cell lymphoma, TGCT: tenosynovial giant cell tumor

# Cancer Enterprise | Upcoming Milestones



## ADC Franchise

- ◆ Topline DS-8201 DESTINY-Breast01 results and update on potential 1H FY2019 upside BLA submission
- ◆ Potential ASCO 2019 disclosures:
  - First disclosures for U3-1402 & DS-1062 in NSCLC
  - Updated U3-1402 breast cancer results



## AML/Hematology Franchise

- ◆ Quizartinib marketing applications under expedited review in US, EU and Japan
  - FDA PDUFA May 25, 2019
  - EU (Accelerated Assessment) and Japan actions anticipated 2H FY2019



## Breakthrough Science

- ◆ Pexidartinib US NDA submission in 2H FY2018



Daiichi-Sankyo  

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cancerenterprise

Care. Compassion. Science.  
It's Our Obligation.

## Contact address regarding this material


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**Corporate Communications Department**

**TEL: +81-3-6225-1126**

**Email: [DaiichiSankyoIR@daiichisankyo.co.jp](mailto:DaiichiSankyoIR@daiichisankyo.co.jp)**

## HER3 ADCs

 Clinical stage



**Project  
(Payload)**

**Potential  
Indication**

**Pre-Clinical**

**Ph 1**

**Pivotal**



**U3-1402**  
Topoisomerase I  
inhibitor

**Breast,  
NSCLC**









**MP-HER3-ADC**  
Monomethyl  
Auristatin F

**HER2+ BC  
post T-DM1**



## TROP2 ADCs


 Clinical stage

	Project (Payload)	Potential Indication	Pre-Clinical	Ph 1	Pivotal
	<b>DS-1062</b> Topoisomerase I inhibitor	<b>NSCLC</b>			
	<b>IMMU-132</b> SN38 (Topoisomerase I inhibitor)	<b>metastatic TNBC</b>		<b>P3</b>	

TNBC: triple-negative breast cancer



## B7-H3 ADCs

 Clinical stage



**Project  
(Payload)**

**Potential  
Indication**

**Pre-Clinical**

**Ph 1**

**Pivotal**



**DS-7300**  
Topoisomerase I  
inhibitor

**Solid tumor**




**MGC018**  
Duocarmycin  
hydroxyBenzamide  
Azaidole

**Advanced  
Solid  
Tumors**



## GPR20 ADCs

 Clinical stage



**Project  
(Payload)**

**Potential  
Indication**

**Pre-Clinical**

**Ph 1**

**Pivotal**



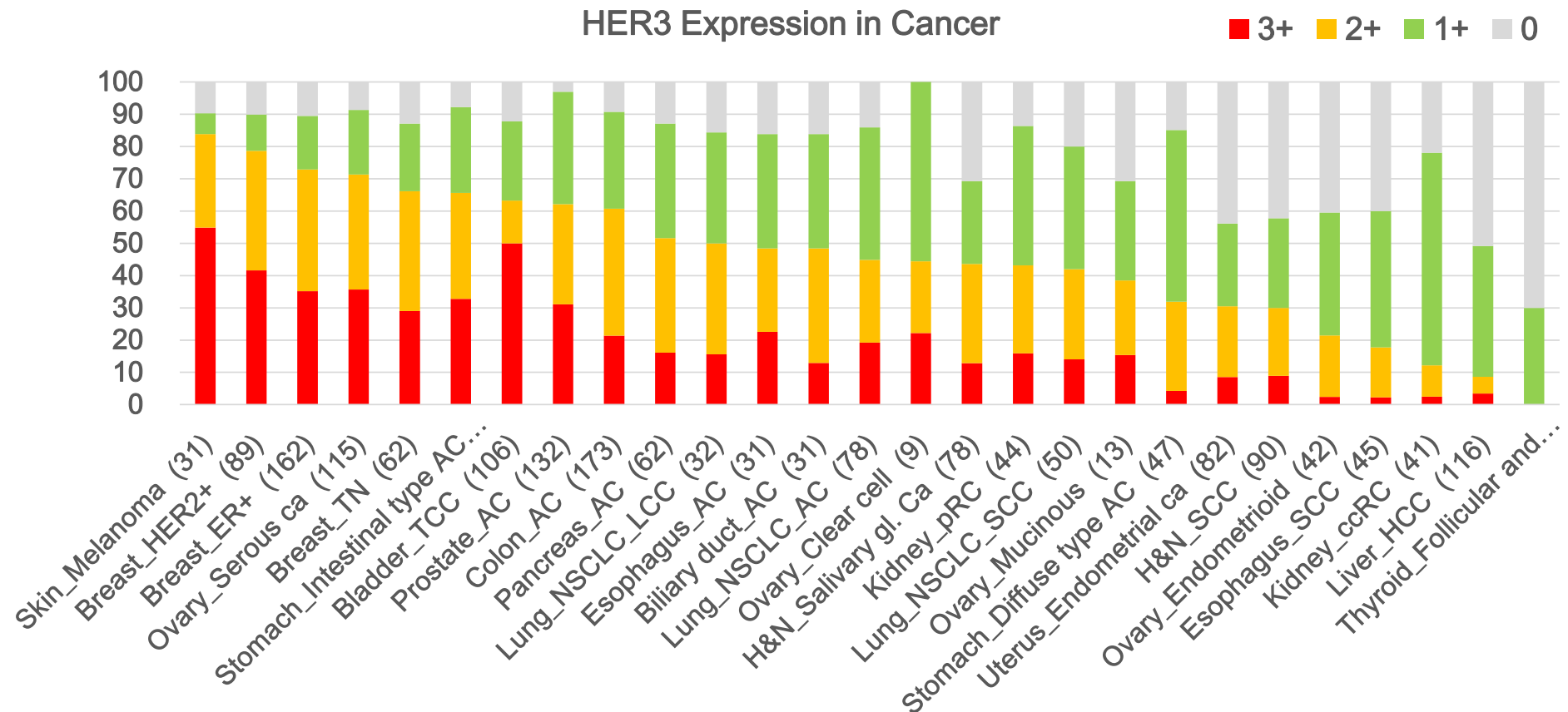
**DS-6157**  
Topoisomerase I  
inhibitor

**GIST**



GIST: Gastrointestinal stromal tumor

# HER3 Protein Expression Across Cancers

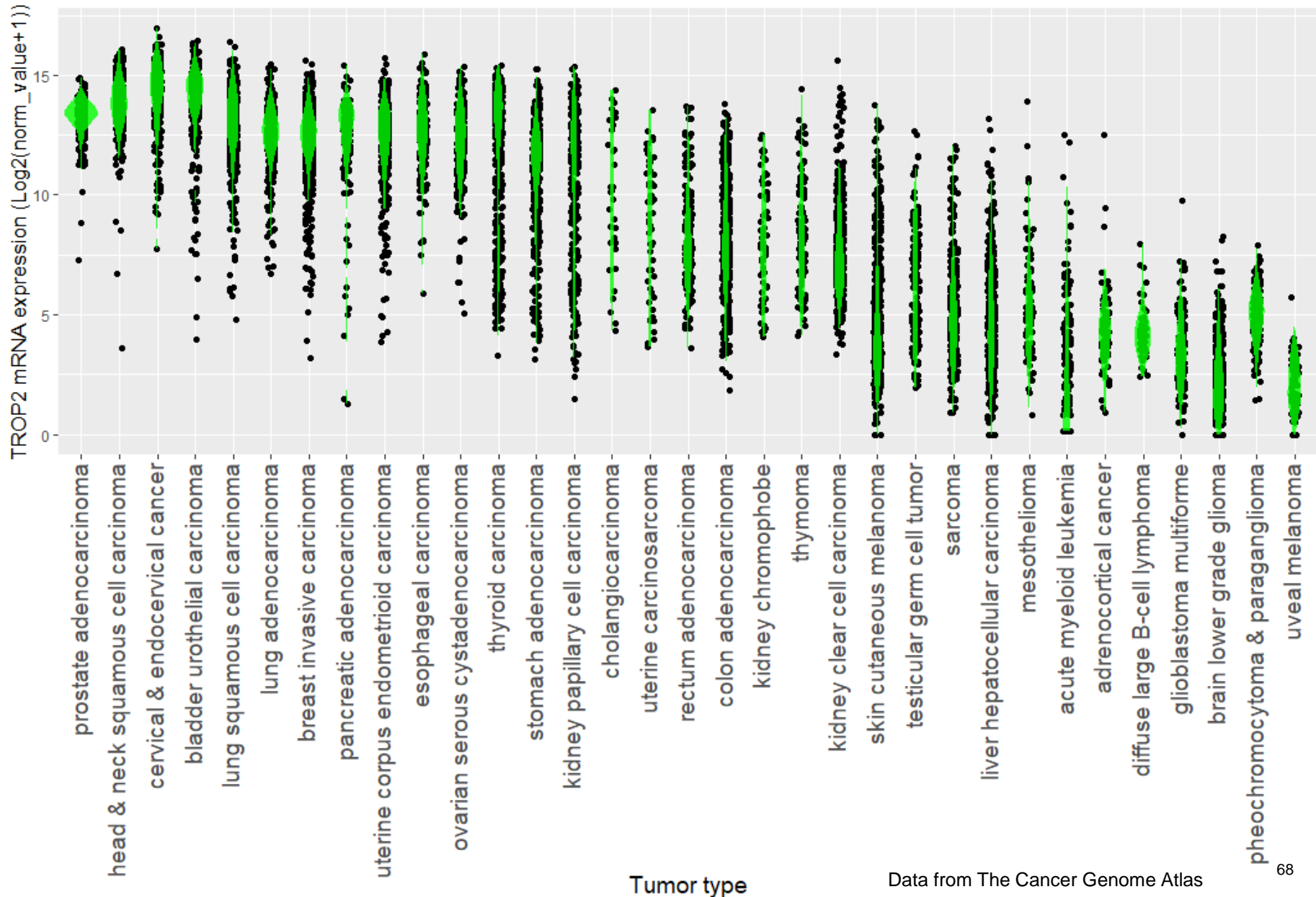


Data from internal analysis using in-house IHC assay of cancer tissue samples (TMA samples). Majority of tissue from primary tumor. Internal pathologist scored following internal HER3 scoring criteria.

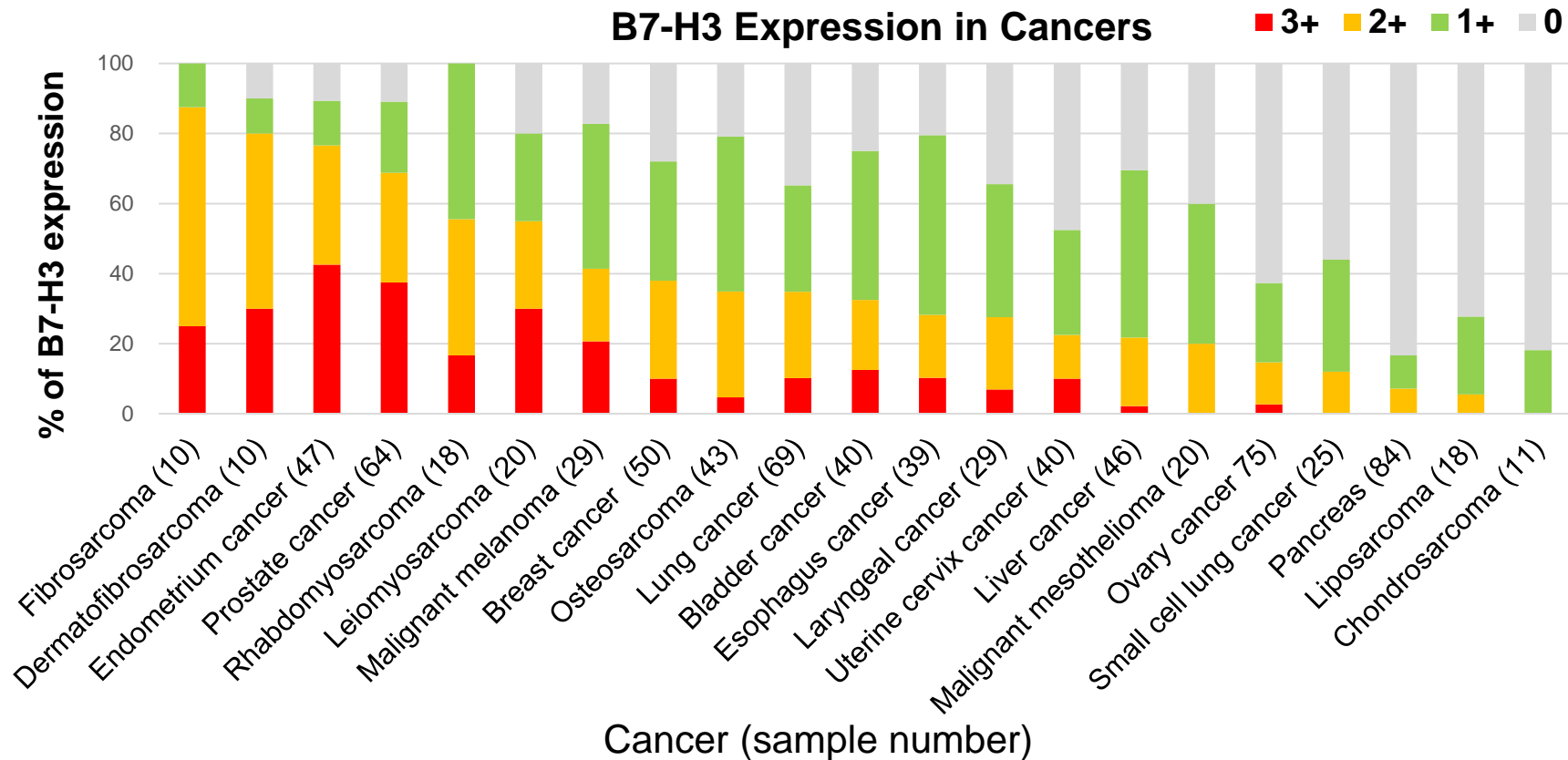
HER3-expression observed in many tumor types:

*Breast, Lung, Prostate, Colorectal  
Ovarian, Bladder, Melanoma, etc.*

# TROP2 Expression in Various Cancers



# B7-H3 Protein Expression in Various Cancers



Data from internal analysis using in-house IHC assay of cancer tissue samples (purchased TMA samples). Majority of tissue from primary tumor. Internal pathologist scored following internal B7-H3 scoring criteria.

B7-H3-expression observed in several tumor types:  
*Sarcoma, Endometrium, Melanoma, Prostate, Breast, Lung cancer, etc.*

# Abbreviations

Abbreviation	
BTD	Breakthrough therapy designation
CR	Complete response
DCR	Disease control rate
DLT	Dose limiting toxicity
DOR	Duration of response
EGFR	Epidermal growth factor receptor
MTD	Maximum tolerated dose
NSCLC	Non-small-cell lung cancer
ORR	Overall response rate Objective response rate
OS	Overall survival
PD	Progress disease
PFS	Progression-free survival
PR	Partial response
RDE	Recommended dose for expansion
TTR	Time to response