DCC-2618, a novel pan-KIT and PDGFRα Kinase switch control inhibitor demonstrates encouraging activity in patients (pts) with Gastrointestinal Stromal Tumors (GIST)

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Disclosures

- **N. Somaiah**: Research funding from Deciphera
- A. Razak: Research funding from Deciphera
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- D. Flynn, D. Greensmith, J. Jacobson, M. Kaufman, J. Pitman, O. Rosen, B. Smith, D. Westwood: Deciphera employees
- Ongoing study: Presentation contains preliminary data that are partially monitored and validated

Background and Rationale for DCC-2618 in GIST

- DCC-2618 is a potent pan-KIT and PDGFRα kinase switch control inhibitor active across a broad range of mutations

- In non-clinical analyses, DCC-2618 showed activity against all initiation and resistance mutations tested including mutations in both the activation loop and the ATP binding pocket

- Dose of 150 mg QD was selected as the recommended dose for the Phase 1 expansion stage (RP2D) of the First-In-Human Study
  - MTD not reached. Daily doses of up to 400 mg were tested

- The Phase 1 expansion stage is enrolling GIST patients who have progressed on, or are intolerant to imatinib and or other TKIs

Study Design and Methods (NCT# 02571036)

- Dose-escalation study of oral DCC-2618 (QD or BID q28 days) followed by expansion cohorts (cut-off July 28, 2017)
- Tumor assessment: CT scans every 2 cycles per local assessment
  - Escalation phase only: FDG-PET scans at baseline and after 3 weeks of therapy
- Next generation sequencing (NGS) of plasma cfDNA was performed throughout the study to quantify KIT, PDGFRα and other molecular alterations
- Tumor tissue was obtained at baseline for NGS analysis

Patients (Major Eligibility Criteria)

- Patients with advanced refractory cancers (KIT/PDGFRα mutated) with a focus on GIST
- ECOG 0-1; adequate end organ function
- Prior KIT/PDGFRα inhibitors were allowed

DCC-2618 – GIST Patient Characteristics (N=57)

- Median age: 62 years (range 28 - 85)
- ECOG PS:
  - 0: 18 (33%)
  - 1: 37 (67%) [Note: 2 subjects missing screening ECOG]
- Baseline mutations: (archival tissue*, N=57)
  - KIT Exon 9: 13
  - KIT Exon 11: 27
  - KIT Exon 17: 4
  - PDGRα Exon18: 4
  - Other/UKN: 9 (2x KIT Ex13, 1x KIT UKN, 1x SDH, 5x not done)
- Mean prior number of agents: 3.3 (median 3; range 1 - 7)
  - Imatinib: 49/49 (100%)
  - Sunitinib: 43/49 (88%)
  - Regorafenib: 36/49 (73%)
  - Other: 35/49 (71%)
- DCC-2618 treatment doses:
  - <100 mg/day: 5 (9%)
  - ≥100 mg/day: 52 (91%)
  - **150 mg QD: 21 (37%)**

*various methods used per institutional standards

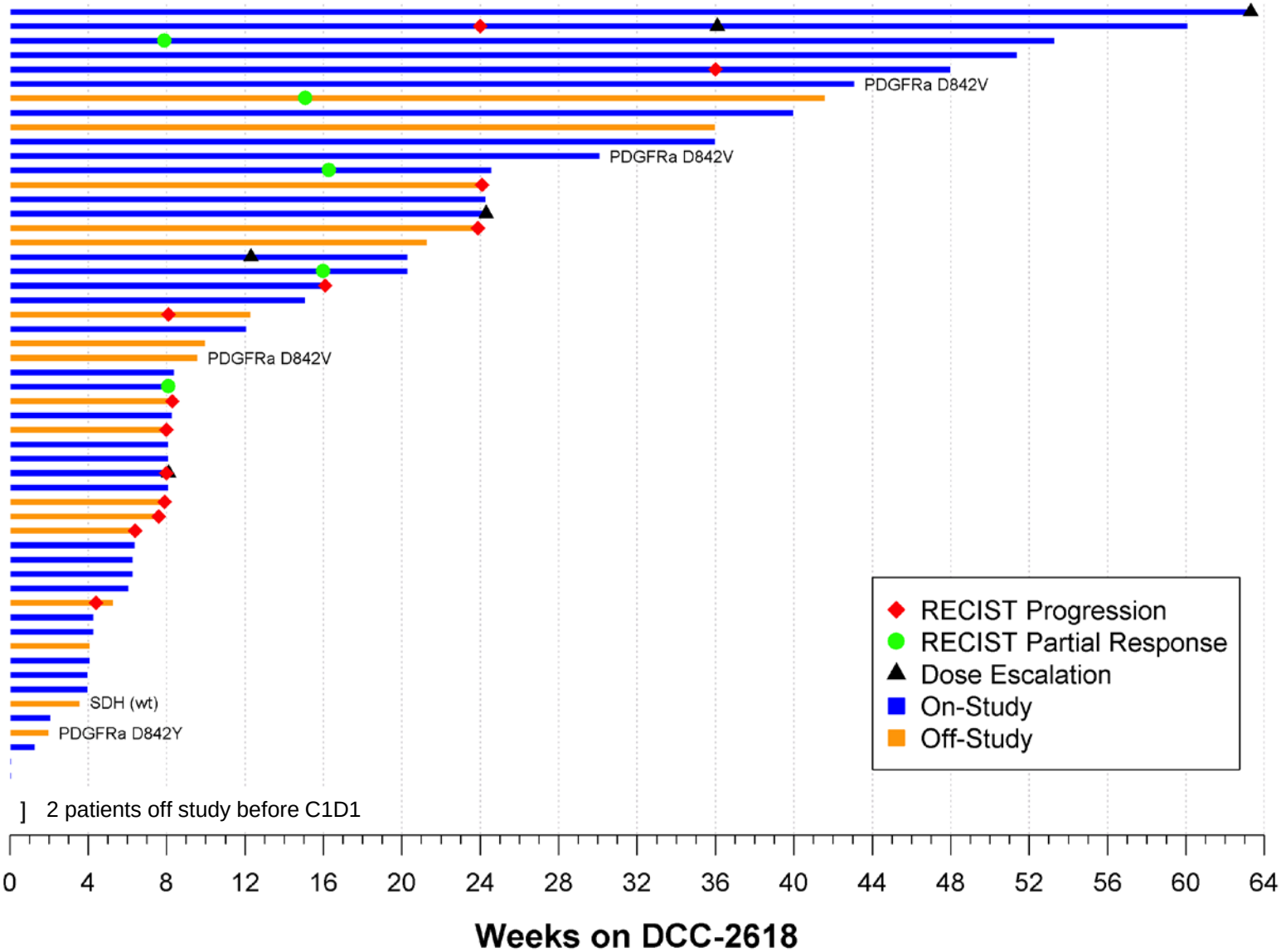
DCC-2618 Safety Population - Summary of TEAEs
(Treatment-Emergent AE / Regardless of Causality) ≥10% (N=70)

ADVERSE EVENT	GRADE 1/2	GRADE 3/4	TOTAL (n=70)	150 mg QD GRADE 1/2	150 mg QD GRADE 3/4	150 mg QD TOTAL (n=21)
Lipase increased	20	13	33 (47%)	3	2	5 (24%)
Fatigue	31	1	32 (46%)	5	0	5 (24%)
Anemia	10	19	29 (41%)	0	1	1 (5%)
Decreased appetite	18	1	20 (29%)	3	0	3 (14%)
Diarrhea	16	0	16 (23%)	0	0	0 (0%)
Alopecia	15	0	15 (21%)	4	0	4 (19%)
Hypertension	9	6	15 (21%)	0	0	0 (0%)
Amylase increased	13	1	14 (20%)	1	0	1 (5%)
Myalgia	14	0	14 (20%)	2	0	2 (10%)
Weight decreased	14	0	14 (20%)	1	0	1 (5%)
Dyspnea	12	1	13 (19%)	1	0	1 (5%)
Abdominal pain	10	1	11 (16%)	0	0	0 (0%)
Constipation	11	0	11 (16%)	2	0	2 (10%)
Nausea	11	0	11 (16%)	1	0	1 (5%)
Palmar-plantar erythrodysaesthesia	11	0	11 (16%)	2	0	2 (10%)
Arthralgia	10	0	10 (14%)	0	0	0 (0%)
Blood bilirubin increased	8	2*	10 (14%)	0	1	1 (5%)
Rash	8	0	8 (11%)	1	0	1 (5%)

All DLT events were not clinically significant: 2 G3 lipase ↑ at 100 mg & 200 mg BID and a G4 CPK ↑ at 150 mg QD

*Unconjugated bilirubin, both patients are homozygous for 28 *(TA)7/(TA)7 UGT1A1 polymorphism per local assessment

Duration of Treatment on DCC-2618 – All GIST Patients (N=57)



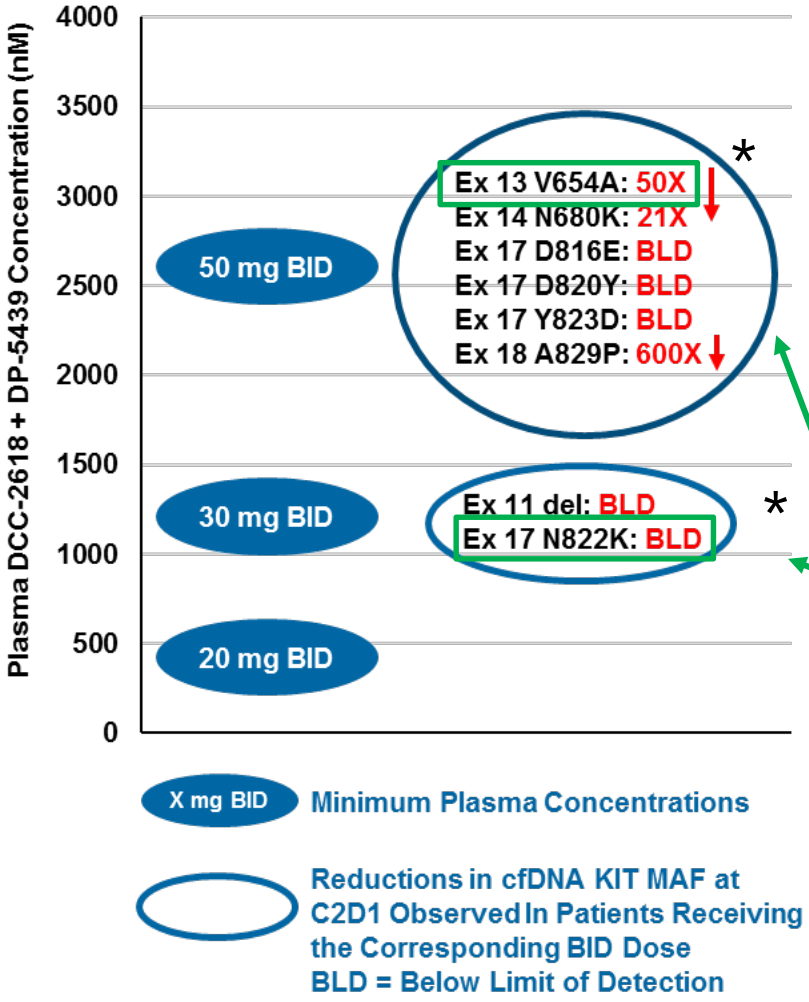
PET/CT Tumor Assessment & Disease Control Rates

	FDG-PET Scans (N=33)		
	Partial Metabolic Response	Stable Metabolic Disease	Progressive Metabolic Disease
<100 mg/d (N=1)	1/1 (100%)	0 (0%)	0 (0%)
≥100 mg/d (N=32)	22 (69%)	9 (22%)	1 (3%)
150 mg QD (N=8)	3 (38%)	5 (63%)	0 (0%)

Disease Control Rate (DCR)*
KIT- and PDGFRα GIST cohorts (daily dose ≥100 mg)
76% (19/25) at 12 weeks
57% (12/21) at 24 weeks
*PR + SD per RECIST

- Metabolic response rate consistent with good disease control, but was not discriminating among doses
  - Partial Metabolic Responses were observed at all dose levels
  - PMR rate of 69% (22/32) at ≥100 mg/day
  - 12-week DCR of 76% (19/25) at >100 mg/day
- Reduction in Mutation Allele Frequency (MAF) in plasma cfDNA was used as a pharmacodynamic marker for RP2D selection

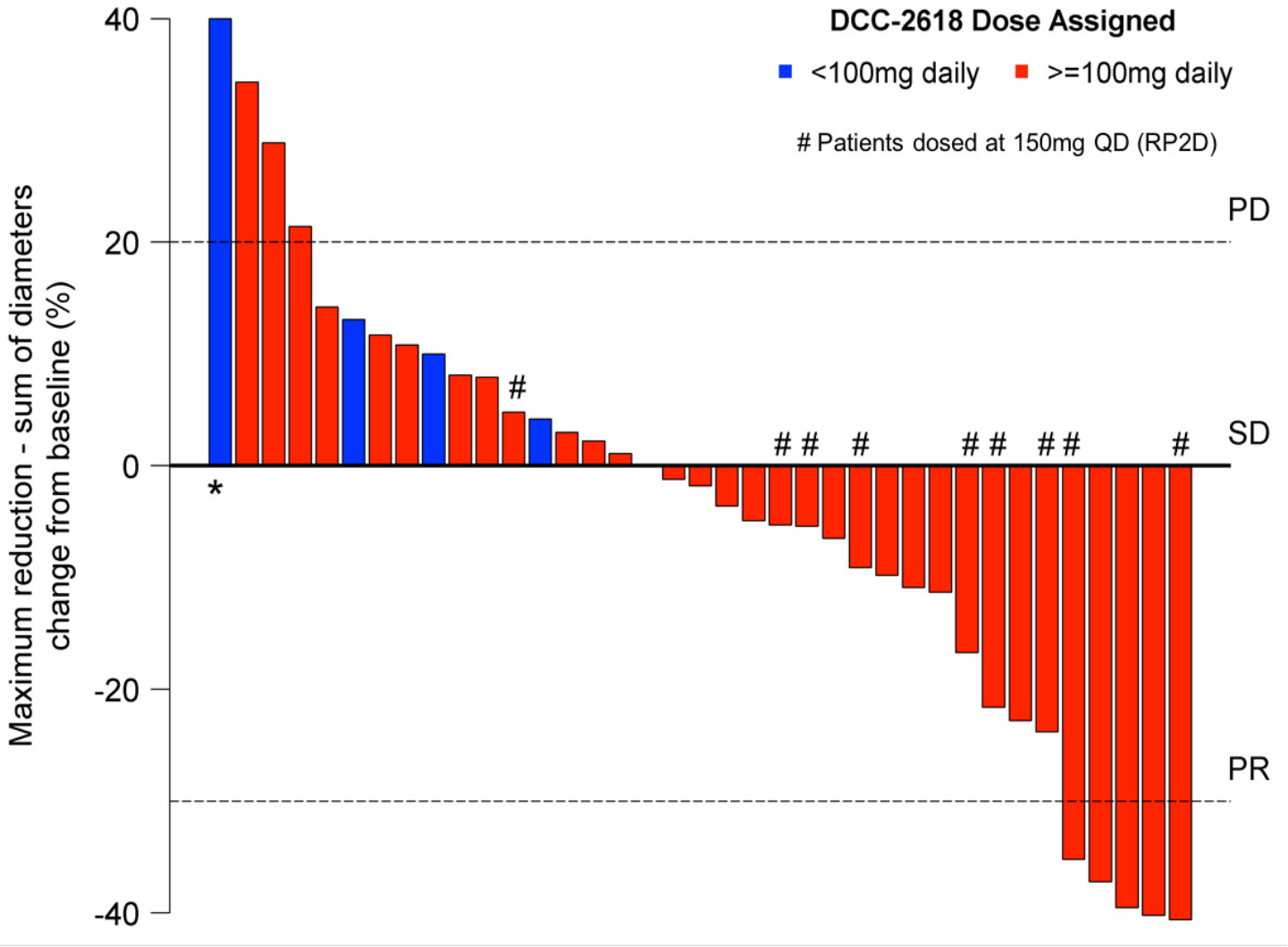
Identification of Therapeutic Threshold and RP2D based on Use of cfDNA as PD Biomarker



Key data points: reduction of KIT mutation frequency of very sensitive (N822K) and of least sensitive mutation (V654A) to DCC2618

*IC_{50}/IC_{90}: N822K: 13 / 130 nM; V654A: 215 / 2150 nM

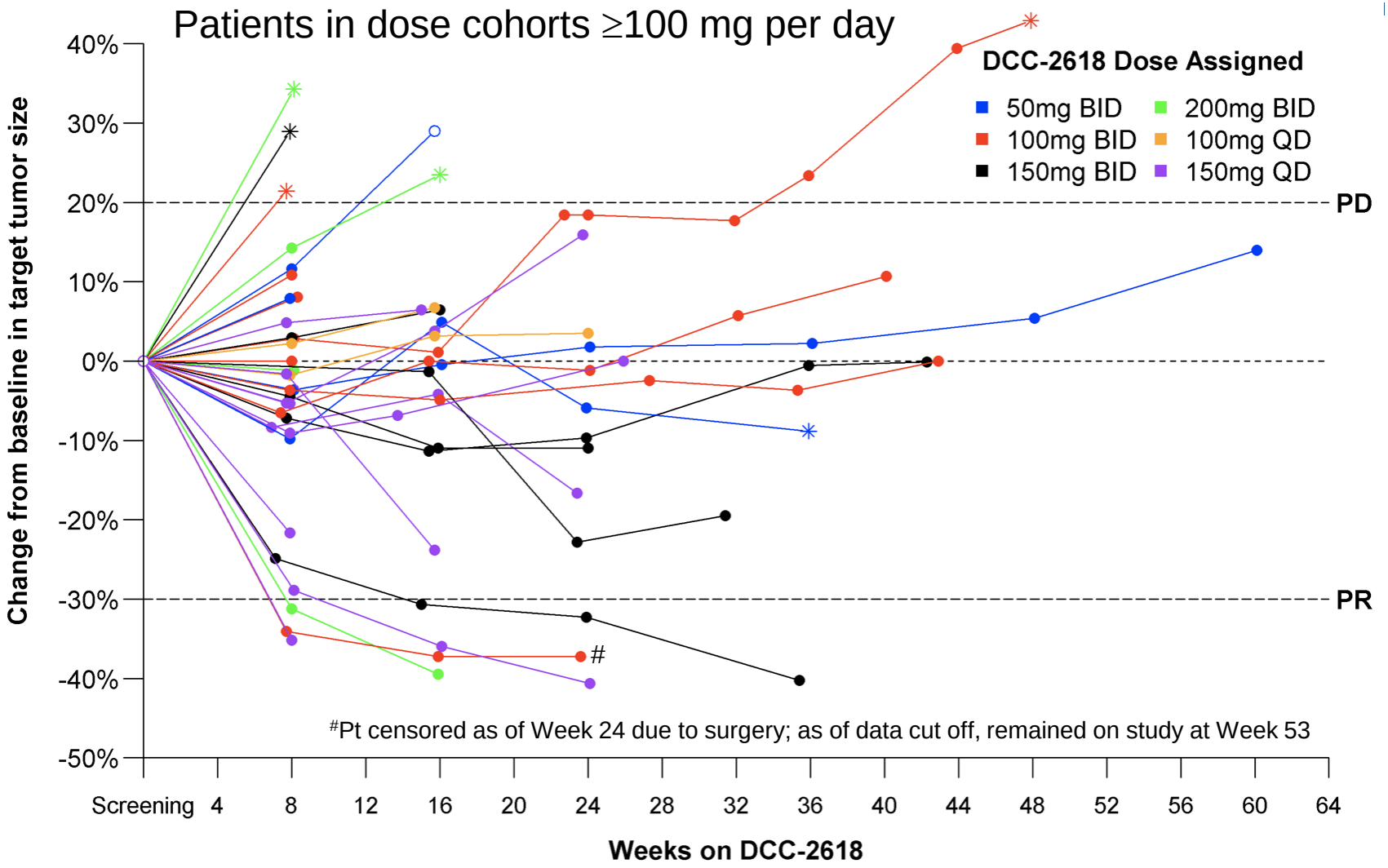
Waterfall Plot of KIT/PDGFRα GIST Patients (Best Response Per RECIST, N=37)



PD = Progressive disease, SD = Stable disease, PR = Partial response

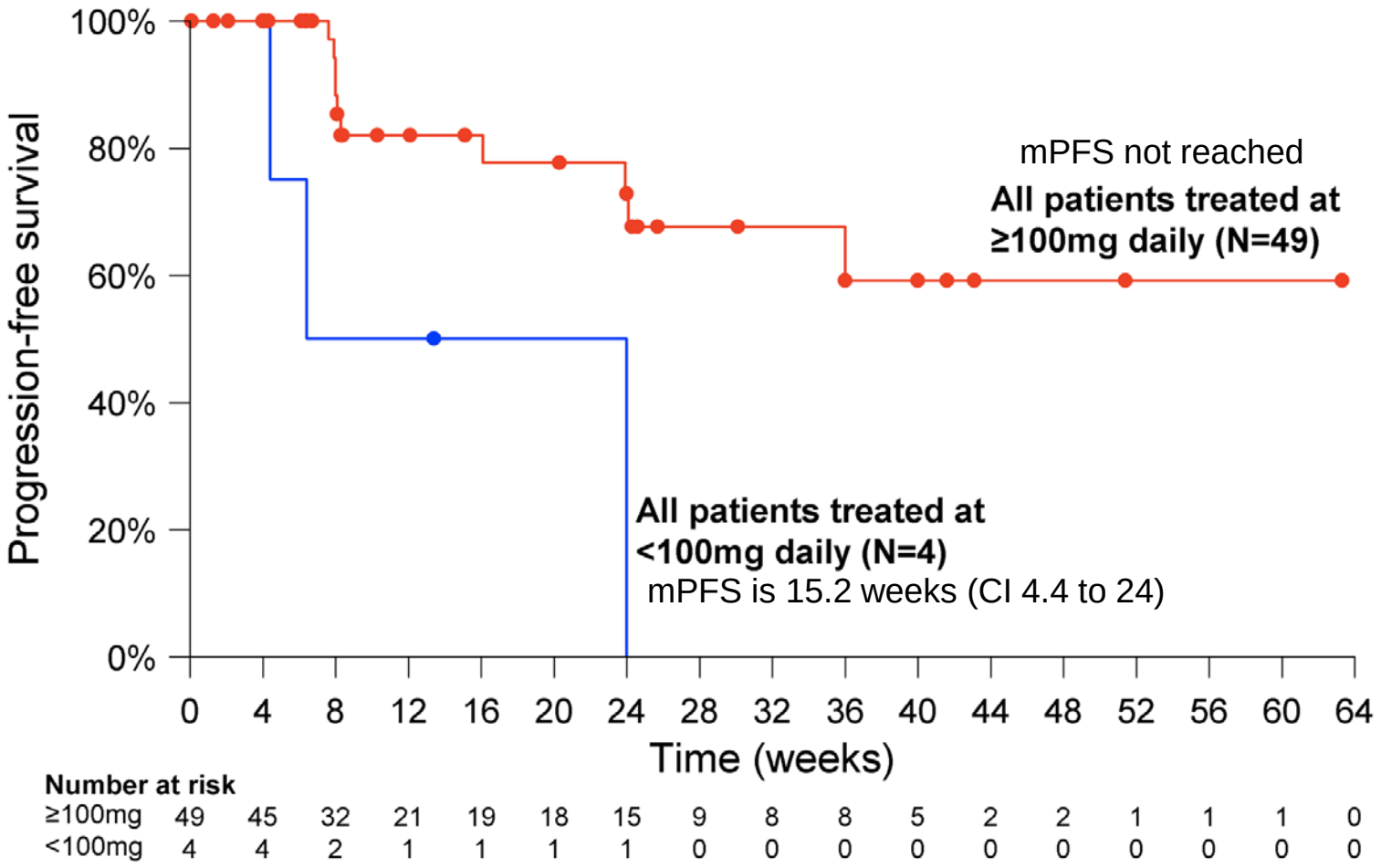
*66% increase in tumor size; #Patients treated at RP2D

DCC-2618 Produces Durable Disease Control in Heavily Pre-Treated KIT and PDGFRα mutant GIST Patients (N=33)



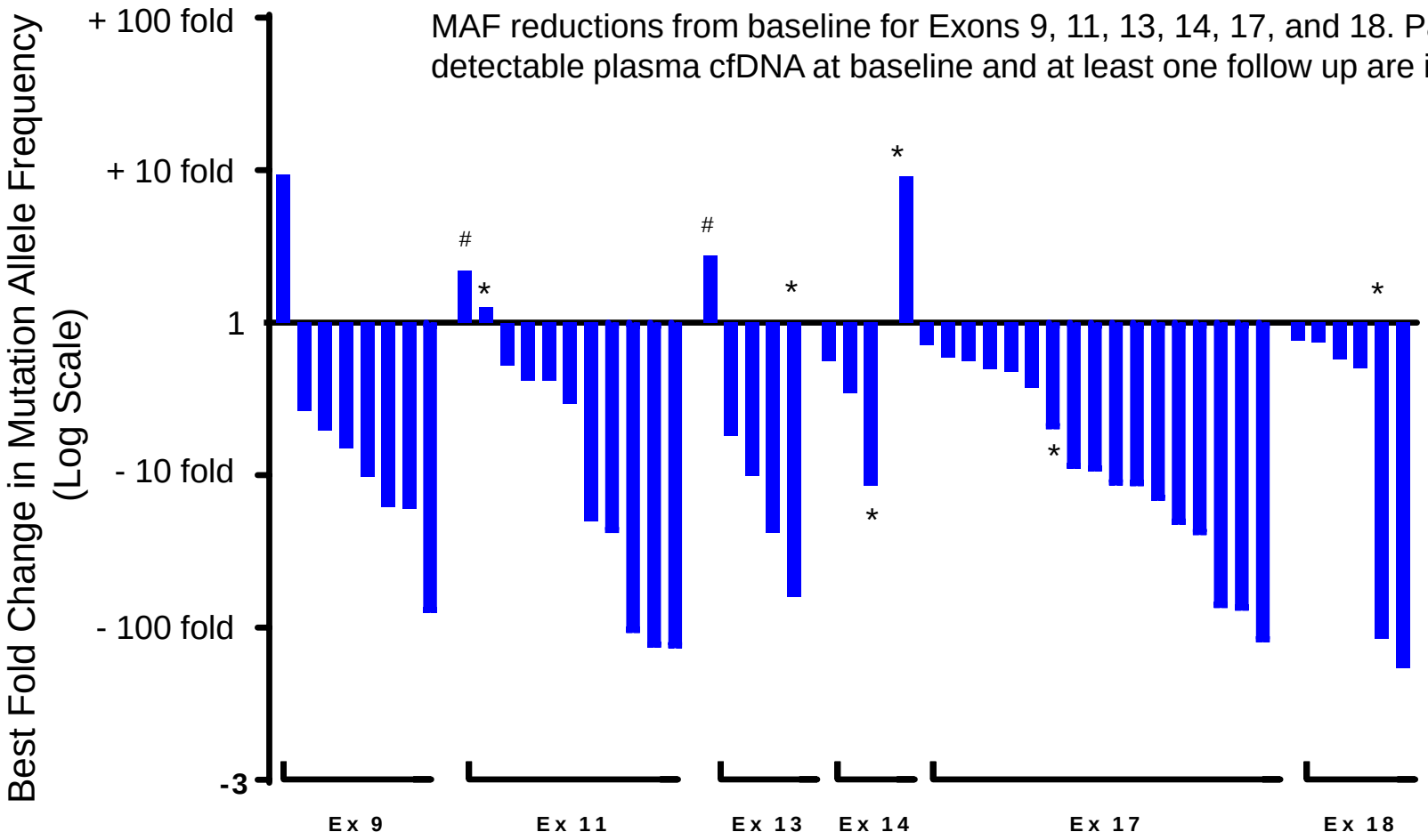
Closed circles denote patient on DCC-2618 at time of scan; Open circles denote patient was off DCC-2618 at time of scan; Stars indicate final visit; (d) per investigator assessment.

DCC-2618: Progression-Free Survival
Patients treated at ≥100 mg/d compared to <100 mg/d



- Despite small sample size results suggest that doses of 40 or 60 mg/d are insufficient
- The fact that 30 mg BID is an insufficient dose is supported by improvement in disease control in a patient with PD after 24 weeks following dose escalation (not shown)

Use of cfDNA as Pharmacodynamic Biomarker Demonstrates pan−KIT Activity of DCC-2618 in KIT mutant, advanced GIST Patients (Best Response, N=19)



- Enrolled patient population reveals broad range of KIT mutations
- DCC-2618 leads to reductions in MAF in cfDNA across all exons associated with resistance
- Treatment decisions were made based on disease control and not on changes in MAF

#Patient in first dose cohort, *Patient represented with mixed histology

NGS of KIT in DNA Derived From Tumor vs cfDNA (N=12)

Tumor biopsies were taken at baseline

Tumor	Plasma
KIT Ex9 Indel	KIT Ex9 Indel
KIT Ex11 W557R KIT Ex17 Y823D	KIT Ex11 W557R KIT Ex17 Y823D
KIT Ex9 Indel	KIT Ex9 Indel KIT Ex17 N822T; D820E
KIT Ex9 Indel	KIT Ex9 Indel KIT Ex11 P573S KIT Ex17 D820N KIT Ex18 S840N
KIT Ex11 V560D KIT Ex18 A829P	KIT Ex18 A829P
KIT Ex9 Indel	None

Tumor	Plasma
KIT Ex11 Indel KIT Ex13 V654A KIT Ex17 Y823D	KIT Ex11 Indel KIT Ex13 V654A KIT Ex14 N680K KIT Ex17 Y823D; Y823C; Indel
KIT Ex11 V560D KIT Ex17 D820Y	KIT Ex11 V560D KIT Ex17 D820Y
KIT Ex11 Indel KIT Ex18 A829P	KIT Ex11 Indel KIT Ex13 V654A KIT Ex14 N680K KIT Ex17 D820G; V824M KIT Ex18 A829P
*KIT Ex11 Indel KIT Ex13 V654A KIT Ex17 Y823D	*None
None	None
KIT Ex11 Indel	None

- Tumor tissue detected in 23/28 patients with available biopsies at baseline
  - 12/23 samples passed required quality for NGS
- Baseline molecular characteristics reveal broad diversity of KIT mutations in both tumor and plasma sample
- More resistance mutations were found in plasma cfDNA compared to tissue biopsies

*Patient changed treatment due to toxicity and not progressive disease

Conclusions

- DCC-2618 was well tolerated up to doses of 200 mg BID
  - Expansion phase ongoing at 150 mg QD
  - As of October 31, 125 patients have been treated with DCC-2618 including 109 GIST patients
- DCC-2618 shows encouraging disease control in heavily pre-treated GIST patients
  - The DCR for KIT- and PDGFRα mutant GIST receiving total daily dose of ≥100 mg: 76% (19/25) at 12 weeks and 57% (12/21) at 24 weeks
- cfDNA MAF reduction across all exons supports the pan−KIT activity of DCC-2618
- The encouraging results strongly support testing of DCC-2618 in the planned placebo-controlled randomized, pivotal phase 3 study in patients who have received at least 3 prior agents (invictus)

Acknowledgment

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