Supplementary Table 1. Best response to selpercatinib compared to prior systemic therapy

Treatment response	Chemo[1] (N=15)	IO[2] (N=10)	Chemo-IO (N=5)	TKI (N=7)	Overall (N=37)
Objective response rate (ORR)[3], % (95% CI)					
with prior therapy	40	10	40	43	41 (25-58)
with selpercatinib	66	50	80	86	68 (50-82)
Disease control rate (DCR)[4], % (95% CI)					
with prior therapy	93	90	60	71	83 (68-94)
with selpercatinib	100	80	80	100	92 (78-98)

Data-cutoff date: January 27, 2021. ORR, DCR and ORR assessed according to RECIST v1.1; ORR and DCR, were calculated using the Clopper-Pearson method.

[1]Five patients received an angiogenetic agent in combination with chemotherapy.

[2]One patient received a VEGF/Ang2-blocking nanobody in combination with immunotherapy.

[3]ORR was defined as complete response or partial response.

[4]DCR was including complete response, partial response, or stable disease.

CI, confidential interval.; Chemo, chemotherapy; IO, immunotherapy; TKI, tyrosine kinase inhibitor.

Supplementary Table 2: Treatment-related adverse events (TRAEs) in patients treated with selpercatinib (N=50)

Patients, n (%[1])							
TRAEs	**Grade 1**	**Grade 2**	**Grade 3**	**Grade 4**	**Any Grade**	**Dose reduction***	**Dose interruption****
Any Event	32 (64)	22 (44)	10 (20)	2 (4)	44 (88)	20 (40)	13 (26)
Fatigue/asthenia	12 (24)	6 (12)	2 (4)	0	20 (40)	7 (14)	1 (2)
Increased Liver enzym levels[2]	10 (20)	2 (4)	4 (8)	1 (2)	17 (34)	6 (12)	6 (12)
Hypertension	2 (4)	9 (18)	2 (4)	0	13 (26)	2 (4)	1 (2)
Dry mouth	12 (24)	1 (2)	0	0	13 (26)	1 (2)	0
Edema peripheral	5 (10)	4 (8)	0	1(2)	10 (20)	2 (4)	1 (2)
Diarrhea	3 (6)	3 (6)	0	0	6 (12)	0	0
Nausea	4 (8)	1(2)	0	0	5 (10)	0	0
Abdominal pain	1 (2)	1 (2)	2 (4)	0	4 (8)	2 (4)	0
Rash	2 (4)	1 (2)	1 (2)	0	4 (8)	2 (4)	2 (4)
Increased creatinin	2 (4)	1 (2)	0	0	3 (6)	0	0
Prolonged QTc time	1 (2)	0	1 (2)	1 (2)	3 (6)	1 (2)	1 (2)
Leucopenia	1 (2)	1 (2)	1 (2)	0	3 (6)	1 (2)	0
Fever	1 (2)	1 (2)	0	0	2 (4)	1 (2)	0

Headache	2 (4)	0	0	0	2 (4)	0	0
Dysgeusia	0	1 (2)	0	0	1 (2)	0	0
Dyspnea	0	1 (2)	0	0	1 (2)	0	0
Bloating	0	1 (2)	0	0	1 (2)	0	0
Allodynia	1 (2)	0	0	0	1 (2)	0	0
Pericarditis	0	0	0	1 (2)	1 (2)	1 (2)	1 (2)
Dry skin	1 (2)	0	0	0	1 (1)	0	0
Iron deficience	0	1 (2)	0	0	1 (1)	0	0
Constipation	1 (2)	0	0	0	1 (2)	0	0
Gastritis	0	1 (2)	0	0	1 (2)	0	0
Livedo reticularis	0	0	1 (2)	0	1 (2)	0	0
Paronchyia	0	0 (0)	1 (2)	0	1 (2)	0	0
Hypersensitivity reaction	0	0	1 (2)	0	1 (2)	1 (2)	1 (2)
Ascites	0	1 (2)	0	0	1 (2)	0	0
Myalgia	0	1 (2)	0	0	1 (2)	0	0
Hyponatremia	0	0	1 (2)	0	1 (2)	1 (2)	0
Thrombocytopenia	0	1 (2)	0	0	1 (2)	0	0
Hypocalcemia	1 (2)	0	0	0	1 (2)	0	0

Data cut-off date: January 27, 2021; this analysis included any patient who received at least one dose of selpercatinib; TRAEs were graded as per Common Terminology Criteria for Adverse Events (CTCAE) version 5.0, as determined by the treating physician.

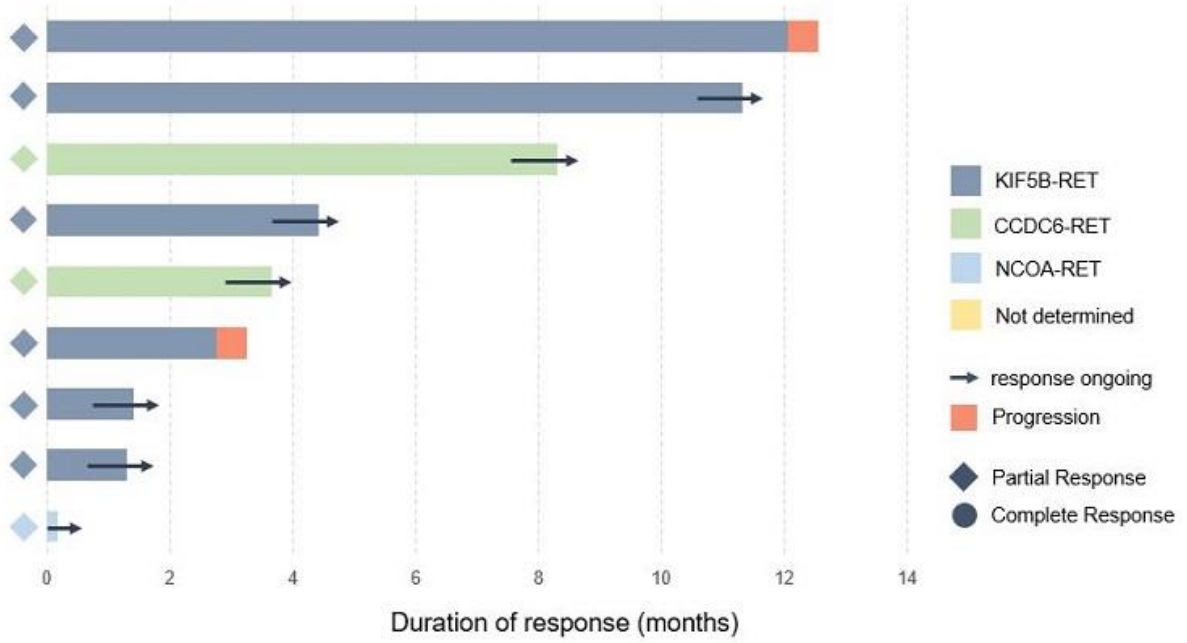
[1]Percentage may not equal to 100 because of rounding.

[2]Liver enzymes are related to aspartate aminotransferase (AST) and alanine aminotransferase (ALT), bilirubin and gamma-glutamyl transferase (GGT).

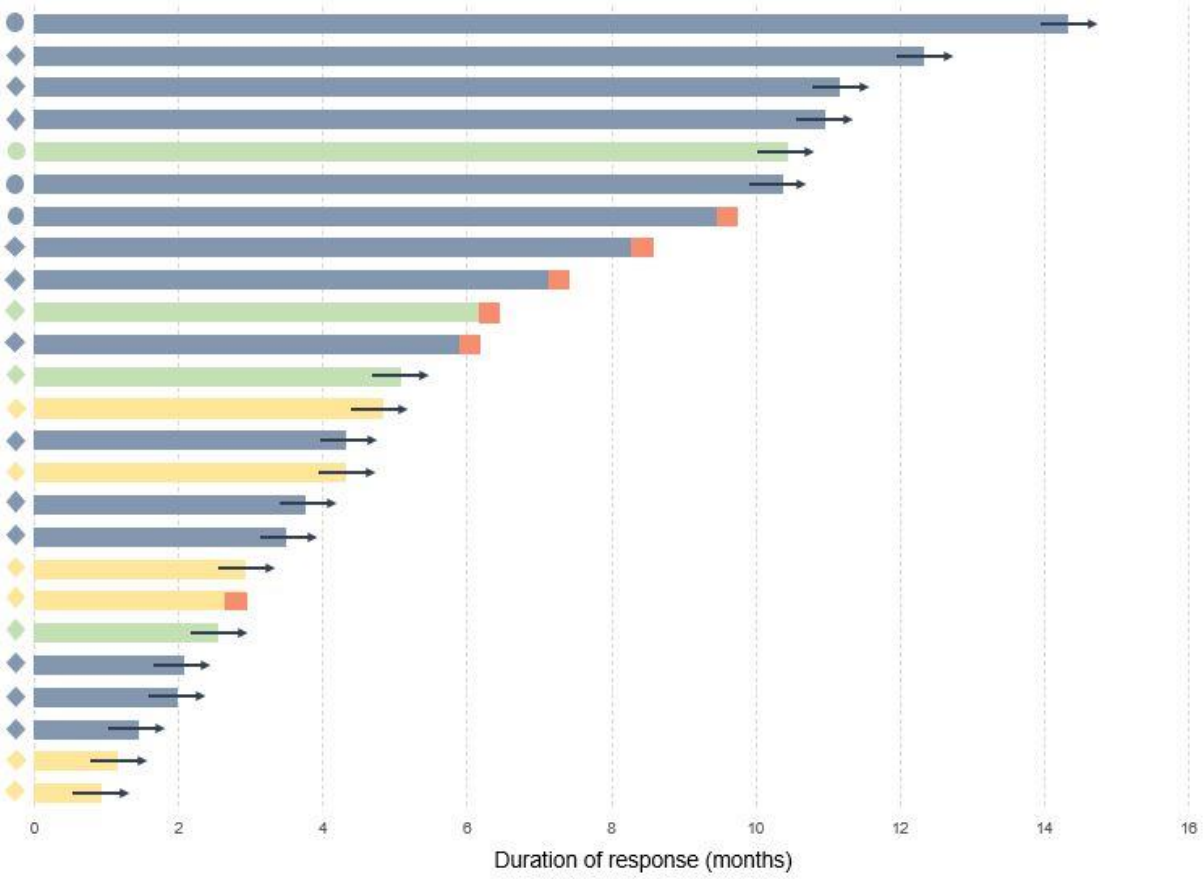
* In three patients, dose reduction occurred because of two simultaneously TRAEs; in two other patients, dose reduction was due to three TRAEs at once.

**In two patients, dose interruption occurred because of two simultaneously TRAEs.

Supplementary Figure 1 A.



Supplementary Figure 1 B.



Supplementary Figure 1. Duration of response after selpercatinib therapy in treatment-naïve (n=9) (A) and pretreated patients (n=25) (B) by RET fusion-partner type

Duration of response was defined as the time between the initial response to therapy and subsequent disease progression or death due to any cause.