

Supplementary Data. Additional patient information. ▲ indicate the plasma sampling.

Patient	Status	Gender	Age	Subtype	Baseline	Treatment-1	Treatment-2	Treatment-3	Treatment-4
2	MBC	Female	33	HR+ HER2-	Post-surgery, 8 weeks MBC recurrence, 0 day Prior to salvage therapy ▲				
15	MBC	Female	37	HR+ HER2-	MBC diagnosis, 4 weeks Prior to salvage therapy ▲	paclitaxel + capecitabine 6 weeks, PR ▲	paclitaxel + capecitabine 6 weeks, SD ▲		
26	MBC	Female	63	HR+ HER2-	Post-surgery, 362 weeks MBC recurrence, 4 weeks Prior to salvage therapy ▲	paclitaxel + capecitabine 4 weeks, SD ▲	paclitaxel + capecitabine 4 weeks, SD ▲	paclitaxel + capecitabine 6 weeks, SD ▲	paclitaxel + capecitabine 6 weeks, PR ▲
29	MBC	Female	50	HR+ HER2-	MBC recurrence, 0 day Prior to salvage therapy ▲	paclitaxel 14 weeks, SD ▲			
35	MBC	Female	48	HR+ HER2-	MBC recurrence, 0 day Prior to salvage therapy ▲	letrozole + leuprorelin 32 weeks, SD ▲			
38	MBC	Female	70	HR+ HER2-	Prior to salvage therapy ▲	fulvestrant 7 weeks, PR ▲			
39	MBC	Female	72	HR+ HER2-	Prior to salvage therapy ▲	fulvestrant 11 weeks, PR ▲			
49	MBC	Female	49	HR+ HER2-	Post-surgery, 527 weeks MBC recurrence, 0 day Prior to salvage therapy ▲				
50	MBC	Female	60	HR+ HER2-	Post-surgery, 737 weeks MBC recurrence, 12 days Prior to salvage therapy ▲	fulvestrant 9 weeks, PR ▲			
51	MBC	Female	26	HR+ HER2-	Prior to salvage therapy Prior to salvage therapy ▲	letrozole + palbociclib 9 weeks, SD ▲	letrozole + palbociclib 14 weeks, SD		
56	NMBC	Female	61	HR+ HER2-	NMBC diagnosis, 15 days Prior to neoadjuvant therapy ▲				
60	MBC	Female	46	HR+ HER2-	MBC diagnosis, 28 days Prior to salvage therapy ▲	paclitaxel + capecitabine 7 weeks, PR ▲	paclitaxel + capecitabine 6 weeks, PR ▲		
63	MBC	Female	56	HR+ HER2-	Prior to salvage therapy ▲	apatinib			

						11 weeks, PD ▲			
74	NMBC	Female	64	HR+ HER2-	NMBC diagnosis, 34 days Prior to neoadjuvant therapy ▲				
76	MBC	Female	45	HR+ HER2-	MBC diagnosis, 5 days Prior to salvage therapy ▲	paclitaxel + zoledronic acid 5 weeks, PR ▲			
85	MBC	Female	48	HR+ HER2-	Post-surgery, 458 weeks MBC recurrence, 7 days Prior to salvage therapy ▲	paclitaxel 8 weeks, PR ▲	paclitaxel + capecitabine 12 weeks, PR ▲	capecitabine 11 weeks, PD ▲	
86	MBC	Female	38	HR+ HER2-	Post-surgery, 77 weeks MBC recurrence, 1 day Prior to salvage therapy ▲	paclitaxel + doxorubicin 7 weeks, SD ▲	paclitaxel + doxorubicin 15 weeks, PR ▲		
89	MBC	Female	33	HR+ HER2-	Prior to salvage therapy ▲	vinorelbine + pyrotinib 9 weeks, PD ▲	paclitaxel 6 weeks, PD ▲	apatinib 13 weeks, PD ▲	
90	MBC	Female	43	HR+ HER2-	Prior to salvage therapy ▲	goserelin + letrozole + palbociclib 7 weeks, SD ▲	goserelin + letrozole + palbociclib 5 weeks, PD ▲	bevacizumab + vinorelbine 5 weeks, SD ▲	
92	NMBC	Female	51	HR+ HER2-	NMBC diagnosis, 6 days Prior to neoadjuvant therapy ▲				
96	MBC	Female	65	HR+ HER2-	Post-surgery, 413 weeks MBC recurrence, 0 day Prior to salvage therapy ▲				
97	MBC	Female	38	HR+ HER2-	Prior to salvage therapy ▲	paclitaxel 6 weeks, PD ▲			
100	MBC	Female	61	HR+ HER2-	Post-surgery, 549 weeks MBC recurrence, 0 day Prior to salvage therapy ▲	paclitaxel 7 weeks, SD ▲	paclitaxel 24 week, SD		
102	MBC	Female	56	HR+ HER2-	Prior to salvage therapy ▲	fulvestrant 26 weeks, SD			
111	MBC	Female	56	HR+ HER2-	MBC diagnosis, 22 days Prior to salvage therapy ▲	paclitaxel + capecitabine 7 weeks, SD ▲	paclitaxel + capecitabine 7 weeks, SD		
114	MBC	Female	47	HR+ HER2-	Prior to salvage therapy ▲	paclitaxel 7 weeks, SD ▲	anastrozole + goserelin 68 weeks, PR		
116	MBC	Female	43	HR+ HER2-	Prior to salvage therapy ▲	capecitabine	capecitabine		

						25 weeks, PR ▲	7 weeks, PD ▲		
122	MBC	Female	46	HR+ HER2-	Post-surgery, 100 weeks MBC recurrence, 22 days Prior to salvage therapy ▲	anastrozole + leuporelin 6 weeks, SD ▲	anastrozole + leuporelin 22 weeks, SD		
127	MBC	Female	65	HR+ HER2-	Post-surgery, 563 weeks MBC recurrence, 26 days Prior to salvage therapy ▲				
132	MBC	Female	47	HR+ HER2-	Prior to salvage therapy ▲	paclitaxel + capecitabine 23 weeks, SD			
133	NMBC	Female	32	HR+ HER2-	NMBC diagnosis, 24 days Prior to neoadjuvant therapy ▲				
155	MBC	Female	52	HR+ HER2-	Post-surgery, 159 weeks MBC recurrence, 13 days Prior to salvage therapy ▲	anastrozole + goserelin 55 weeks, PD			
159	MBC	Female	38	HR+ HER2-	Post-surgery, 154 weeks MBC recurrence, 17 days Prior to salvage therapy ▲				
164	MBC	Female	64	HR+ HER2-	Post-surgery, 531 weeks MBC recurrence, 2 days Prior to salvage therapy ▲				
165	MBC	Female	68	HR+ HER2-	Prior to salvage therapy ▲	paclitaxel 14 weeks, SD			
168	NMBC	Female	62	HR+ HER2-	NMBC diagnosis, 12 days Prior to neoadjuvant therapy ▲				
210	MBC	Female	64	HR+ HER2-	Prior to salvage therapy ▲	paclitaxel 17 weeks, SD			
211	MBC	Female	47	HR+ HER2-	Post-surgery, 279 weeks MBC recurrence, 3 days Prior to salvage therapy ▲	paclitaxel + capecitabine 9 weeks, SD	vinorelbine 15 weeks, SD		
271	NMBC	Female	55	HR+ HER2-	NMBC diagnosis, 15 days Prior to neoadjuvant therapy ▲				
288	MBC	Female	48	HR+ HER2-	Prior to salvage therapy ▲	paclitaxel 13 weeks, SD	toremifene 28 weeks, PD		

344	MBC	Female	54	HR+ HER2-	Prior to salvage therapy ▲	paclitaxel 6 weeks, PD ▲			
345	NMBC	Female	40	HR+ HER2-	NMBC diagnosis, 2 days Prior to neoadjuvant therapy ▲				
357	NMBC	Female	46	HR+ HER2-	NMBC diagnosis, 0 day Prior to neoadjuvant therapy ▲				
414	NMBC	Female	52	HR+ HER2-	NMBC diagnosis, 7 days Prior to neoadjuvant therapy ▲				
415	NMBC	Female	32	HR+ HER2-	NMBC diagnosis, 14 days Prior to neoadjuvant therapy ▲				
449	MBC	Female	48	HR+ HER2-	Prior to salvage therapy ▲	anastrozole + goserelin 7 weeks, PD			
503	MBC	Female	50	HR+ HER2-	Post-surgery, 86 weeks MBC recurrence, 21 days Prior to salvage therapy ▲	paclitaxel 25 weeks, SD			
517	MBC	Female	37	HR+ HER2-	Prior to salvage therapy ▲	fulvestrant + goserelin 12 weeks, PD			
531	NMBC	Female	49	HR+ HER2-	NMBC diagnosis, 0 day Prior to neoadjuvant therapy ▲	letrozole 7 weeks, SD			
581	MBC	Female	57	HR+ HER2-	Post-surgery, 615 weeks MBC recurrence, 14 days Prior to salvage therapy ▲				
621	MBC	Female	43	HR+ HER2-	Prior to salvage therapy ▲	paclitaxel 8 weeks, SD	vinorelbine 26 weeks, PD		
681	MBC	Female	41	HR+ HER2-	MBC diagnosis, 18 days Prior to salvage therapy ▲	paclitaxel 31 weeks, PR	anastrozole + leuprorelin 6 weeks, SD		
704	NMBC	Female	61	HR+ HER2-	NMBC diagnosis, 2 days Prior to neoadjuvant therapy ▲				
18	MBC	Female	56	HR+ HER2+	Prior to salvage therapy ▲	capecitabine + trastuzumab 12 weeks, SD ▲	capecitabine + trastuzumab 26 weeks, PR		
31	MBC	Female	59	HR+ HER2+	Prior to salvage therapy ▲	anastrozole + trastuzumab 4 weeks, PD ▲	capecitabine + pyrotinib 13 weeks, PR ▲	capecitabine + pyrotinib 8 weeks, PD ▲	
40	MBC	Female	48	HR+ HER2+	Prior to salvage therapy ▲	anastrozole + goserelin +			

						lapatinib 16 weeks, SD			
46	MBC	Female	56	HR+ HER2+	Post-surgery, 192 weeks MBC recurrence, 4 days Prior to salvage therapy ▲	fulvestrant + lapatinib 9 weeks, SD ▲	fulvestrant + lapatinib 7 weeks, SD ▲		
67	MBC	Female	32	HR+ HER2+	Prior to salvage therapy ▲	capecitabine + lapatinib 13 weeks, SD			
94	MBC	Female	56	HR+ HER2+	Prior to salvage therapy ▲	capecitabine + lapatinib 6 weeks, SD ▲	capecitabine + lapatinib 18 weeks, SD		
124	MBC	Female	59	HR+ HER2-	Prior to salvage therapy ▲	paclitaxel + cyclophosphamide 11 weeks, PR ▲	paclitaxel + cyclophosphamide 4 weeks, PR ▲		
142	MBC	Female	78	HR+ HER2+	Prior to salvage therapy ▲	trastuzumab + lapatinib 4 weeks, SD			
154	MBC	Female	56	HR+ HER2+	Post-surgery, 135 weeks MBC recurrence, 12 days Prior to salvage therapy ▲				
201	MBC	Female	54	HR+ HER2+	Prior to salvage therapy ▲	trastuzumab 44 weeks, PR			
212	MBC	Female	19	HR+ HER2+	Prior to salvage therapy ▲	anastrozole + goserelin + trastuzumab + platinum 7 weeks, SD ▲			
246	MBC	Female	43	HR+ HER2+	Prior to salvage therapy ▲	pyrotinib 18 weeks, PD			
258	MBC	Female	52	HR+ HER2+	Prior to salvage therapy ▲	paclitaxel + trastuzumab 17 weeks, PR ▲	paclitaxel + trastuzumab 4 weeks, SD ▲		
272	MBC	Female	44	HR+ HER2+	Prior to salvage therapy ▲	paclitaxel + lapatinib 14 weeks, SD ▲	paclitaxel + lapatinib 33 weeks, PD		
273	MBC	Female	50	HR+ HER2+	Prior to salvage therapy ▲	paclitaxel + capecitabine + trastuzumab 5 weeks, PR ▲	capecitabine + trastuzumab, 12 weeks, SD		
278	MBC	Female	50	HR+ HER2+	Prior to salvage therapy ▲	vinorelbine + platinum 4 weeks, SD ▲	vinorelbine + platinum 17 weeks, PR		

362	MBC	Female	59	HR+ HER2+	Prior to salvage therapy ▲	capecitabine + trastuzumab 36 weeks, SD			
366	NMBC	Female	62	HR+ HER2+	NMBC diagnosis, 13 days Prior to neoadjuvant therapy ▲				
400	MBC	Female	50	HR+ HER2+	Prior to salvage therapy ▲	gemcitabine + trastuzumab 7 weeks, PD ▲			
431	MBC	Female	47	HR+ HER2+	Prior to salvage therapy ▲	apatinib 8 weeks, SD	capecitabine +apatinib 6 weeks, SD		
691	NMBC	Female	56	HR+ HER2+	NMBC diagnosis, 10 days Prior to neoadjuvant therapy ▲				
694	MBC	Female	30	HR+ HER2+	Prior to salvage therapy ▲	capecitabine + pyrotinib 48 weeks, SD			
14	MBC	Female	46	HR- HER2+	Prior to salvage therapy ▲	vinorelbine + pyrotinib 5 weeks, PD ▲	vinorelbine + pyrotinib 9 weeks, SD ▲		
47	MBC	Female	57	HR- HER2+	Prior to salvage therapy ▲	capecitabine + trastuzumab + pertuzumab 8 weeks, PR ▲	capecitabine + trastuzumab + pertuzumab 8 weeks, PR ▲		
54	NMBC	Female	48	HR- HER2+	NMBC diagnosis, 9 days Prior to neoadjuvant therapy ▲				
73	NMBC	Female	47	HR- HER2+	NMBC diagnosis, 0 day Prior to neoadjuvant therapy ▲				
84	MBC	Female	56	HR- HER2+	MBC recurrence, 21 days Prior to salvage therapy ▲	paclitaxel + trastuzumab 6 weeks, SD ▲	paclitaxel + trastuzumab 6 weeks, SD ▲	paclitaxel + trastuzumab 13 weeks, SD	
112	MBC	Female	58	HR- HER2+	Prior to salvage therapy ▲	capecitabine 7 weeks, PD ▲	paclitaxel 6 weeks, SD ▲	paclitaxel 16 weeks, SD	
117	MBC	Female	44	HR- HER2+	Prior to salvage therapy ▲	paclitaxel + trastuzumab 12 weeks, PR	paclitaxel + trastuzumab 15 weeks, SD		
134	MBC	Female	64	HR- HER2+	Post-surgery, 54 weeks MBC recurrence, 24 days Prior to salvage therapy ▲	capecitabine + pyrotinib 51 weeks, SD			
151	MBC	Female	49	HR- HER2+	Post-surgery, 204 weeks MBC recurrence, 13 days Prior to salvage therapy ▲	paclitaxel + capecitabine + trastuzumab 23 weeks, PR ▲			

175	MBC	Female	57	HR- HER2+	Prior to salvage therapy ▲	vinorelbine + lapatinib 7 weeks, SD ▲	vinorelbine + lapatinib 16 weeks, SD		
192	MBC	Female	56	HR- HER2+	Prior to salvage therapy ▲	medroxyprogesterone + trastuzumab 5 weeks, SD ▲	medroxyprogesterone + trastuzumab 11 weeks, PD ▲	pyrotinib 11 weeks, SD ▲	
216	MBC	Female	58	HR- HER2+	Prior to salvage therapy ▲	paclitaxel + trastuzumab 17 weeks, PD ▲	pyrotinib 8 weeks, PR ▲		
274	MBC	Female	53	HR- HER2+	Prior to salvage therapy ▲	paclitaxel + trastuzumab + platinum 5 weeks, PR ▲			
289	NMBC	Female	67	HR- HER2+	NMBC diagnosis, 2 days Prior to neoadjuvant therapy ▲				
363	MBC	Female	49	HR- HER2+	Prior to salvage therapy ▲	trastuzumab 7 weeks, PR ▲	trastuzumab 29 weeks, SD		
368	MBC	Female	62	HR- HER2+	Prior to salvage therapy ▲	capecitabine + pyrotinib 9 weeks, PR ▲			
389	MBC	Female	58	HR- HER2+	Prior to salvage therapy ▲	capecitabine + lapatinib 6 weeks, PR ▲			
391	MBC	Female	46	HR- HER2+	MBC diagnosis, 6 days Prior to salvage therapy ▲	paclitaxel + capecitabine + trastuzumab 20 weeks, PR			
404	MBC	Female	63	HR- HER2+	Post-surgery, 163 weeks MBC recurrence, 6 days Prior to salvage therapy ▲	capecitabine + pyrotinib 7 weeks, SD ▲	capecitabine + pyrotinib 8 weeks, SD		
420	NMBC	Female	63	HR- HER2+	NMBC diagnosis, 6 days Prior to neoadjuvant therapy ▲				
433	MBC	Female	83	HR- HER2+	Post-surgery, 510 weeks MBC recurrence, 34 days Prior to salvage therapy ▲				
453	NMBC	Female	46	HR- HER2+	NMBC diagnosis, 12 days Prior to neoadjuvant therapy ▲				
587	NMBC	Female	72	HR- HER2+	NMBC diagnosis, 4 days Prior to neoadjuvant therapy ▲				

34	MBC	Female	34	TNBC	Prior to salvage therapy ▲	vinorelbine 20 weeks, PR ▲	vinorelbine 16 weeks, PD ▲		
45	MBC	Female	80	TNBC	MBC diagnosis, 6 days Prior to salvage therapy ▲	capecitabine 9 weeks, SD ▲	capecitabine 6 weeks, SD ▲	capecitabine 7 weeks, PD ▲	paclitaxel 10 weeks, PR ▲
57	MBC	Female	46	TNBC	Post-surgery, 107 weeks MBC recurrence, 6 days Prior to salvage therapy ▲	vinorelbine + platinum 7 weeks, PR ▲	vinorelbine + platinum 6 weeks, PR ▲	vinorelbine 21 weeks, PR ▲	
61	MBC	Female	51	TNBC	Post-surgery, 71 weeks MBC recurrence, 0 day Prior to salvage therapy ▲	paclitaxel 6 weeks, PD ▲			
64	MBC	Female	55	TNBC	Prior to salvage therapy ▲	capecitabine + bevacizumab 5 weeks, PD ▲			
66	MBC	Female	45	TNBC	Prior to salvage therapy ▲	capecitabine 7 weeks, SD ▲	capecitabine 7 weeks, SD ▲		
68	NMBC	Female	41	TNBC	NMBC diagnosis, 27 days Prior to neoadjuvant therapy ▲				
82	MBC	Female	60	TNBC	Prior to salvage therapy ▲	paclitaxel + toripalimab 7 weeks, SD ▲	vinorelbine + platinum 7 weeks, PR ▲		
88	MBC	Female	58	TNBC	Post-surgery, 164 weeks MBC recurrence, 6 days Prior to salvage therapy ▲	paclitaxel 10 weeks, SD ▲	paclitaxel 3 weeks, SD ▲		
93	MBC	Female	70	TNBC	Post-surgery, 63 weeks MBC recurrence, 6 days Prior to salvage therapy ▲	paclitaxel + toripalimab 10 weeks, PR ▲	paclitaxel + toripalimab 3 weeks, PR ▲	paclitaxel + toripalimab 7 week, PD	
101	MBC	Female	46	TNBC	MBC recurrence, 6 days Prior to salvage therapy ▲	paclitaxel + capecitabine 6 weeks, SD ▲	paclitaxel + capecitabine 7 weeks, SD	paclitaxel 6 weeks, PD	
131	MBC	Female	55	TNBC	Prior to salvage therapy ▲	apatinib 5 weeks, PR ▲	apatinib 10 weeks, PD		
178	MBC	Female	46	TNBC	Prior to salvage therapy ▲	paclitaxel + capecitabine 7 weeks, PR ▲	paclitaxel + capecitabine 16 weeks, PR		
226	MBC	Female	62	TNBC	Prior to salvage therapy ▲	apatinib 11 weeks, SD			
245	MBC	Female	28	TNBC	Prior to salvage therapy ▲	vinorelbine + platinum	vinorelbine + platinum		

						6 weeks, PR ▲	15 weeks, PR		
248	MBC	Female	31	TNBC	Prior to salvage therapy ▲	etoposide 16 weeks, PD ▲	gemcitabine 6 weeks, PD ▲		
287	MBC	Female	51	TNBC	Prior to salvage therapy ▲	paclitaxel 9 weeks, PD ▲	apatinib 7 weeks, SD ▲		
343	MBC	Female	78	TNBC	Post-surgery, 23 weeks MBC recurrence, 0 day Prior to salvage therapy ▲				
384	MBC	Female	61	TNBC	Post-surgery, 450 weeks MBC recurrence, 12 day Prior to salvage therapy ▲	paclitaxel + capecitabine 7 weeks, PR ▲	paclitaxel + capecitabine 8 weeks, SD		
529	MBC	Female	37	TNBC	Post-surgery, 45 weeks MBC recurrence, 20 days Prior to salvage therapy ▲	apatinib + toripalimab 38 weeks, PD			
548	MBC	Female	43	TNBC	Post-surgery, 414 weeks MBC recurrence, 0 day Prior to salvage therapy ▲	paclitaxel + toripalimab 36 weeks, PD			
550	MBC	Female	35	TNBC	Post-surgery, 94 weeks MBC recurrence, 0 day Prior to salvage therapy ▲	bevacizumab 13 weeks, PR			
585	MBC	Female	69	TNBC	Post-surgery, 625 weeks MBC recurrence, 18 days Prior to salvage therapy ▲	paclitaxel 54 weeks, PR			