

**Table S2. Clinico-pathological characteristics of patients included in this study (Fig. 1i, 1j and 7h)**

Patient ID	Sex	Age(y)	Diagnosis	ER	PR	HER2	Ki67	Histological classification	T stage	N stage	M stage
BC81	F	60	breast cancer	-	-	+	50%	HER2	1	1	0
BC82	F	63	breast cancer	+	+	+	10%	Luminal B	1	0	0
BC83	F	56	breast cancer	+	+	-	5%	Luminal A	1	1	0
BC84	F	34	breast cancer	+	+	-	80%	Luminal B	2	1	0
BC85	F	44	breast cancer	+	+	-	50%	Luminal B	1	1	0
BC86	F	64	breast cancer	+	-	+	40%	Luminal B	2	2	0
BC87	F	49	breast cancer	-	-	-	40%	TNBC	2	1	0
BC88	F	63	breast cancer	+	+	-	5%	Luminal A	1	1	0
BC89	F	66	breast cancer	+	+	-	10%	Luminal A	2	2	0
BC90	F	70	breast cancer	+	+	-	15%	Luminal B	2	0	0
BC91	F	55	breast cancer	+	+	-	15%	Luminal B	1	1	0
BC92	F	60	breast cancer	-	-	-	70%	TNBC	2	0	0
BC93	F	50	breast cancer	-	-	-	40%	TNBC	2	0	0
BC94	F	52	breast cancer	+	-	-	10%	Luminal A	2	0	0
BC95	F	47	breast cancer	+	+	-	10%	Luminal A	2	1	0
BC96	F	58	breast cancer	+	-	-	60%	Luminal B	1	0	0
BC97	F	63	breast cancer	-	-	+	10%	HER2	1	0	0
BC98	F	62	breast cancer	+	+	-	30%	Luminal B	1	1	0
BC99	F	56	breast cancer	+	+	-	30%	Luminal B	1	0	0
BC100	F	42	breast cancer	-	-	+	70%	HER2	2	0	0
BC101	F	72	breast cancer	-	-	-	10%	TNBC	2	1	0
BC102	F	57	breast cancer	-	-	+	70%	HER2	1	0	0
BC103	F	59	breast cancer	-	-	+	20%	HER2	1	0	0
BC104	F	45	breast cancer	+	+	+	50%	Luminal B	2	0	0
BC105	F	70	breast cancer	+	-	+	30%	Luminal B	1	0	0
BC106	F	51	breast cancer	+	-	+	40%	Luminal B	2	1	0
BC107	F	51	breast cancer	+	+	-	40%	Luminal B	2	1	0
BC108	F	41	breast cancer	+	+	-	30%	Luminal B	1	2	0
BC109	F	41	breast cancer	+	+	-	30%	Luminal B	2	0	0
BC110	F	41	breast cancer	+	+	-	40%	Luminal B	1	2	0
BC111	F	60	breast cancer	+	+	-	10%	Luminal A	1	1	0
BC112	F	47	breast cancer	-	-	+	80%	HER2	1	1	0
BC113	F	55	breast cancer	+	+	-	20%	Luminal B	2	1	0
BC114	F	72	breast cancer	+	+	-	10%	Luminal A	1	0	0
BC115	F	46	breast cancer	+	+	-	10%	Luminal A	2	0	0

BC116	F	48	breast cancer	-	-	-	40%	TNBC	1	0	0
BC117	F	28	breast cancer	-	-	+	50%	HER2	2	0	0
BC118	F	55	breast cancer	-	-	+	60%	HER2	2	1	0
BC119	F	47	breast cancer	+	+	-	80%	Luminal B	2	1	0
BC120	F	55	breast cancer	+	+	-	10%	Luminal A	1	1	0
BC121	F	58	breast cancer	+	+	+	40%	Luminal B	1	0	0
BC122	F	47	breast cancer	+	+	-	20%	Luminal B	2	1	0
BC123	F	60	breast cancer	-	-	-	80%	TNBC	2	0	0
BC124	F	45	breast cancer	-	-	+	30%	HER2	1	0	0
BC125	F	45	breast cancer	+	+	+	30%	Luminal B	1	1	0
BC126	F	32	breast cancer	-	-	-	70%	TNBC	2	1	0
BC127	F	76	breast cancer	+	+	-	5%	Luminal A	2	0	0
BC128	F	72	breast cancer	+	+	-	20%	Luminal B	1	0	0
BC129	F	45	breast cancer	+	+	-	20%	Luminal B	1	0	0
BC130	F	49	breast cancer	+	+	-	20%	Luminal B	1	0	0
BC131	F	53	breast cancer	+	+	-	10%	Luminal A	1	0	0
BC132	F	55	breast cancer	+	-	+	40%	Luminal B	2	1	0
BC133	F	43	breast cancer	+	+	-	20%	Luminal B	1	1	0
BC134	F	50	breast cancer	-	-	-	20%	TNBC	2	0	0
BC135	F	39	breast cancer	-	-	-	50%	TNBC	1	0	0
BC136	F	57	breast cancer	-	-	+	30%	HER2	1	1	0
BC137	F	47	breast cancer	-	-	+	30%	HER2	2	1	0
BC138	F	54	breast cancer	+	+	-	20%	Luminal B	1	1	0
BC139	F	28	breast cancer	+	+	+	40%	Luminal B	4	1	0
BC140	F	62	breast cancer	+	+	-	80%	Luminal B	2	2	0
BC141	F	73	breast cancer	+	+	-	30%	Luminal B	1	0	0
BC142	F	50	breast cancer	+	+	+	5%	Luminal B	2	0	0
BC143	F	78	breast cancer	+	+	-	10%	Luminal A	1	0	0
BC144	F	69	breast cancer	+	+	-	10%	Luminal A	1	0	0
BC145	F	58	breast cancer	-	-	+	50%	HER2	2	0	0
BC146	F	43	breast cancer	+	+	-	10%	Luminal A	1	0	0
BC147	F	55	breast cancer	+	+	-	10%	Luminal A	2	0	0
BC148	F	48	breast cancer	+	+	-	15%	Luminal B	2	0	0
BC149	F	53	breast cancer	-	-	+	40%	HER2	2	1	0
BC150	F	50	breast cancer	+	+	+	50%	Luminal B	2	0	0
BC151	F	48	breast cancer	+	+	-	60%	Luminal B	2	0	0
BC152	F	35	breast cancer	+	+	-	60%	Luminal B	2	1	0
BC153	F	56	breast cancer	+	+	+	50%	Luminal B	1	1	0

BC154	F	60	breast cancer	-	-	+	30%	HER2	1	1	0
BC155	F	63	breast cancer	+	+	-	30%	Luminal B	1	0	0
BC156	F	68	breast cancer	+	+	-	10%	Luminal A	1	0	0
BC157	F	75	breast cancer	+	+	-	15%	Luminal B	1	0	0
BC158	F	75	breast cancer	-	+	+	45%	Luminal B	2	1	0
BC159	F	56	breast cancer	+	-	-	60%	Luminal B	1	1	0
BC160	F	56	breast cancer	-	-	+	40%	HER2	1	1	0
BC161	F	55	breast cancer	+	+	-	5%	Luminal A	1	0	0
BC162	F	67	breast cancer	+	-	+	15%	Luminal B	2	1	0
BC163	F	50	breast cancer	-	-	-	80%	TNBC	1	0	0
BC164	F	60	breast cancer	-	-	+	30%	HER2	2	0	0
BC165	F	42	breast cancer	-	-	-	30%	TNBC	1	0	0
BC166	F	59	breast cancer	-	-	+	5%	HER2	1	0	0
BC167	F	56	breast cancer	+	+	-	10%	Luminal A	1	0	0
BC168	F	59	breast cancer	+	+	-	30%	Luminal B	1	1	0
BC169	F	57	breast cancer	+	+	-	30%	Luminal B	2	1	0
BC170	F	61	breast cancer	-	-	-	20%	TNBC	3	1	0
BC171	F	63	breast cancer	-	-	-	15%	TNBC	2	1	0
BC172	F	64	breast cancer	+	+	-	10%	Luminal A	2	0	0
BC173	F	34	breast cancer	+	-	-	15%	Luminal B	2	1	0
BC174	F	47	breast cancer	+	+	-	10%	Luminal A	2	0	0
BC175	F	66	breast cancer	+	+	-	8%	Luminal A	1	1	0
BC176	F	55	breast cancer	-	-	+	30%	HER2	2	0	0
BC177	F	66	breast cancer	+	+	+	10%	Luminal B	2	1	0
BC178	F	51	breast cancer	-	-	-	20%	TNBC	2	2	0
BC179	F	71	breast cancer	+	+	-	5%	Luminal A	1	0	0
BC180	F	43	breast cancer	+	+	-	10%	Luminal A	2	1	0
BC181	F	40	breast cancer	-	-	-	40%	TNBC	1	0	0
BC182	F	48	breast cancer	-	-	-	10%	TNBC	2	0	0
BC183	F	55	breast cancer	+	+	-	30%	Luminal B	1	1	0
BC184	F	65	breast cancer	-	-	+	30%	HER2	2	1	0
BC185	F	63	breast cancer	+	+	-	5%	Luminal A	1	0	0
BC186	F	51	breast cancer	-	-	+	60%	HER2	2	2	0
BC187	F	66	breast cancer	+	+	-	10%	Luminal A	1	0	0
BC188	F	38	breast cancer	-	-	-	70%	TNBC	2	0	0
BC189	F	38	breast cancer	-	-	-	65%	TNBC	2	2	0
BC190	F	51	breast cancer	+	+	-	30%	Luminal B	2	1	0
BC191	F	59	breast cancer	-	-	+	15%	HER2	2	0	0

BC192	F	39	breast cancer	+	+	-	10%	Luminal A	1	0	0
BC193	F	43	breast cancer	+	+	+	30%	Luminal B	2	1	0
BC194	F	65	breast cancer	+	-	+	30%	Luminal B	2	1	0
BC195	F	47	breast cancer	+	+	-	40%	Luminal B	2	0	0
BC196	F	41	breast cancer	+	+	-	40%	Luminal B	2	1	0
BC197	F	68	breast cancer	+	+	-	8%	Luminal A	1	1	0
BC198	F	51	breast cancer	+	+	-	40%	Luminal B	2	1	0
BC199	F	73	breast cancer	+	+	-	2%	Luminal A	1	1	0
BC200	F	47	breast cancer	-	-	+	20%	HER2	1	1	0
BN1	F	57	breast fibroadenoma								
BN2	F	37	breast fibroadenoma								
BN3	F	46	breast fibroadenoma								
BN4	F	41	breast fibroadenoma								
BN5	F	33	breast fibroadenoma								
BN6	F	45	breast fibroadenoma								
BN7	F	51	breast fibroadenoma								
BN8	F	57	breast fibroadenoma								
BN9	F	52	breast fibroadenoma								
BN10	F	56	breast fibroadenoma								
BN11	F	54	breast fibroadenoma								
BN12	F	43	breast fibroadenoma								
BN13	F	81	breast fibroadenoma								
BN14	F	62	breast fibroadenoma								
BN15	F	43	breast fibroadenoma								
BN16	F	60	breast fibroadenoma								
BN17	F	59	breast fibroadenoma								
BN18	F	60	breast fibroadenoma								
BN19	F	28	breast fibroadenoma								
BN20	F	26	breast fibroadenoma								
BN21	F	55	breast fibroadenoma								
BN22	F	69	breast fibroadenoma								
BN23	F	52	breast fibroadenoma								
BN24	F	24	breast fibroadenoma								
BN25	F	46	breast fibroadenoma								
BN26	F	48	breast fibroadenoma								
BN27	F	42	breast fibroadenoma								
BN28	F	52	breast fibroadenoma								
BN29	F	73	breast fibroadenoma								



BN68	F	42	breast fibroadenoma									
BN69	F	37	breast fibroadenoma									
BN70	F	44	breast fibroadenoma									
BN71	F	37	breast fibroadenoma									
BN72	F	42	breast fibroadenoma									
BN73	F	43	breast fibroadenoma									
BN74	F	49	breast fibroadenoma									
BN75	F	42	breast fibroadenoma									
BN76	F	44	breast fibroadenoma									
BN77	F	61	breast fibroadenoma									
BN78	F	59	breast fibroadenoma									
BN79	F	63	breast fibroadenoma									
BN80	F	42	breast fibroadenoma									
BN81	F	32	breast fibroadenoma									
BN82	F	54	breast fibroadenoma									
BN83	F	40	breast fibroadenoma									
BN84	F	29	breast fibroadenoma									
BN85	F	39	breast fibroadenoma									
BN86	F	47	breast fibroadenoma									
BN87	F	36	breast fibroadenoma									