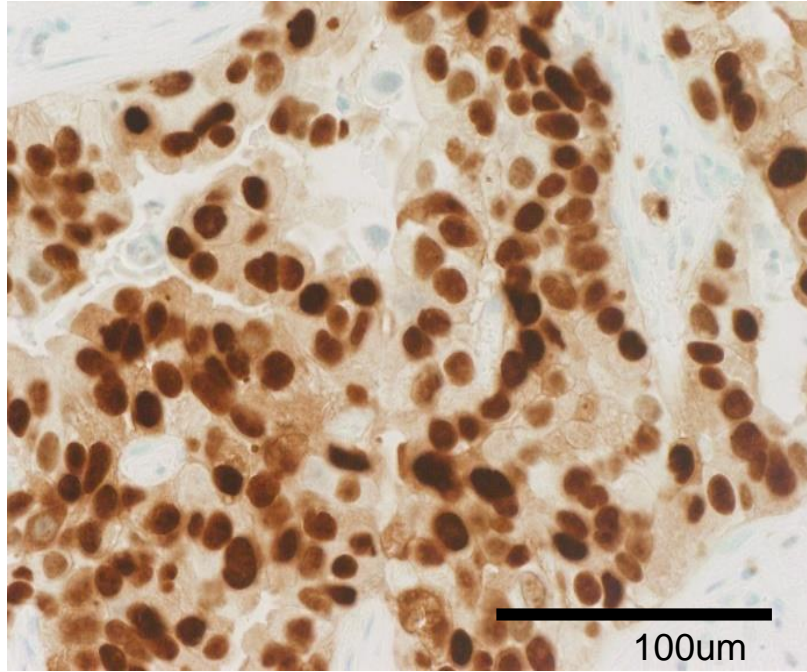
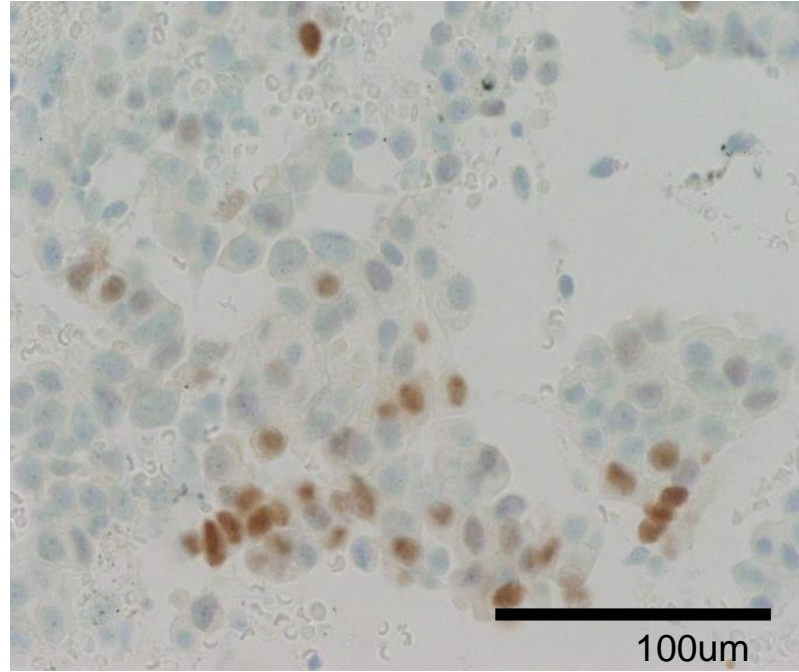
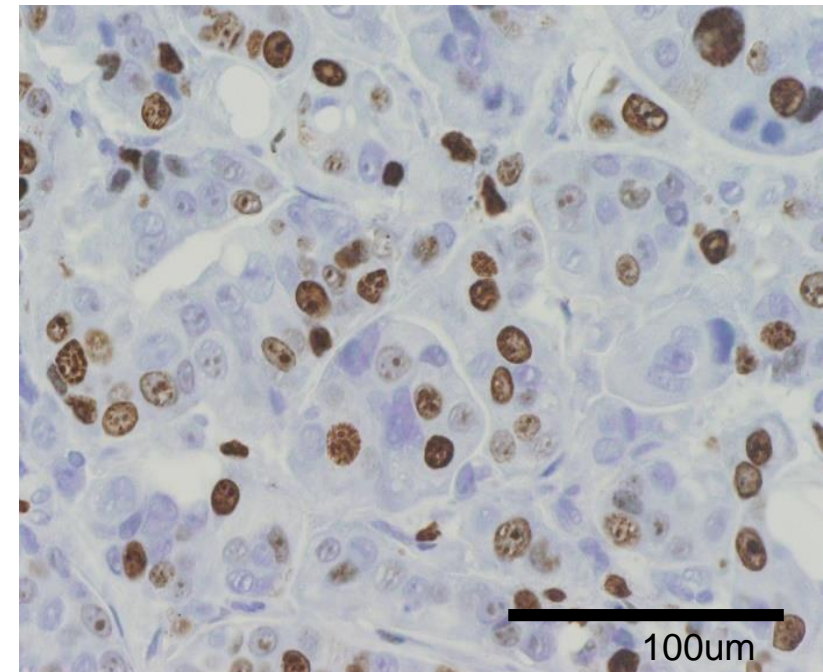
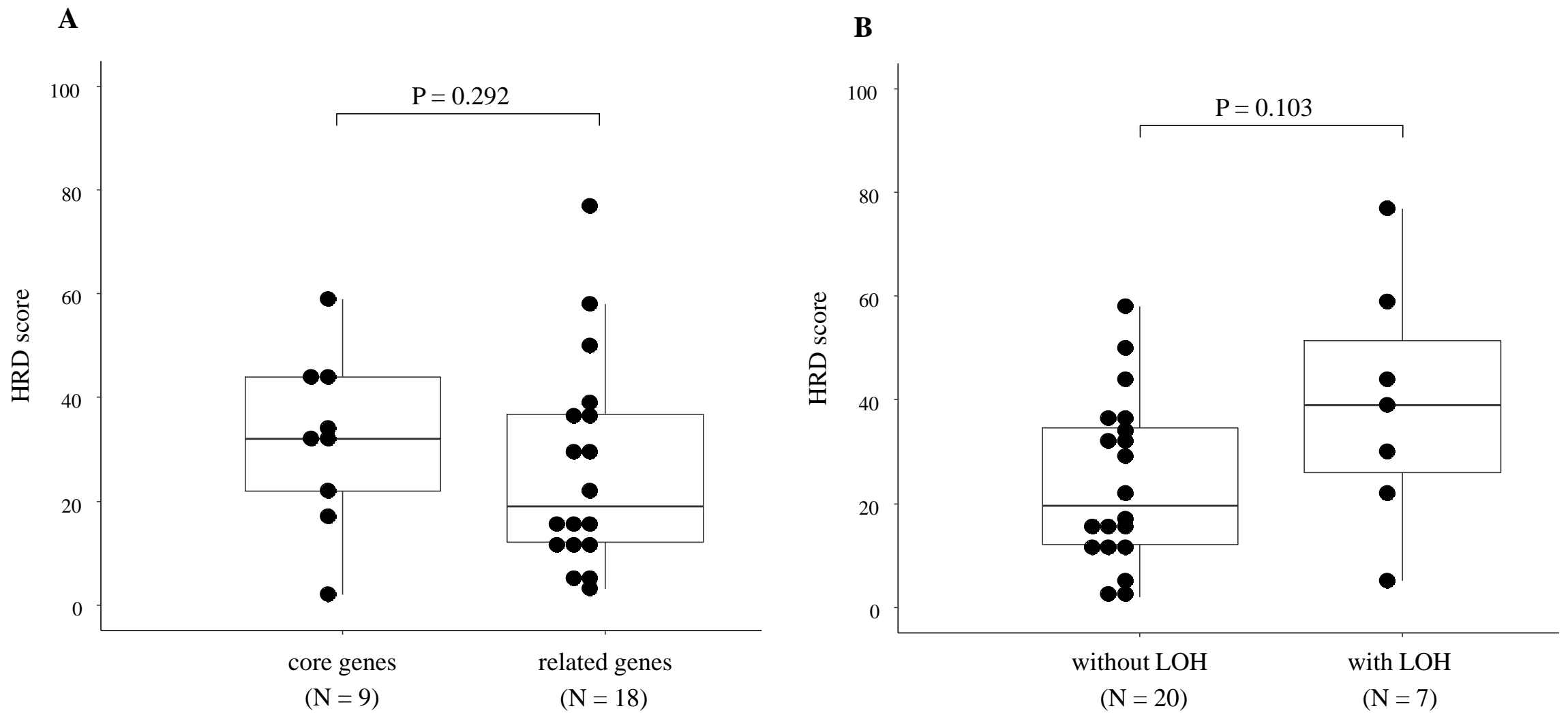


A**ER****B****PR****C****Ki-67**

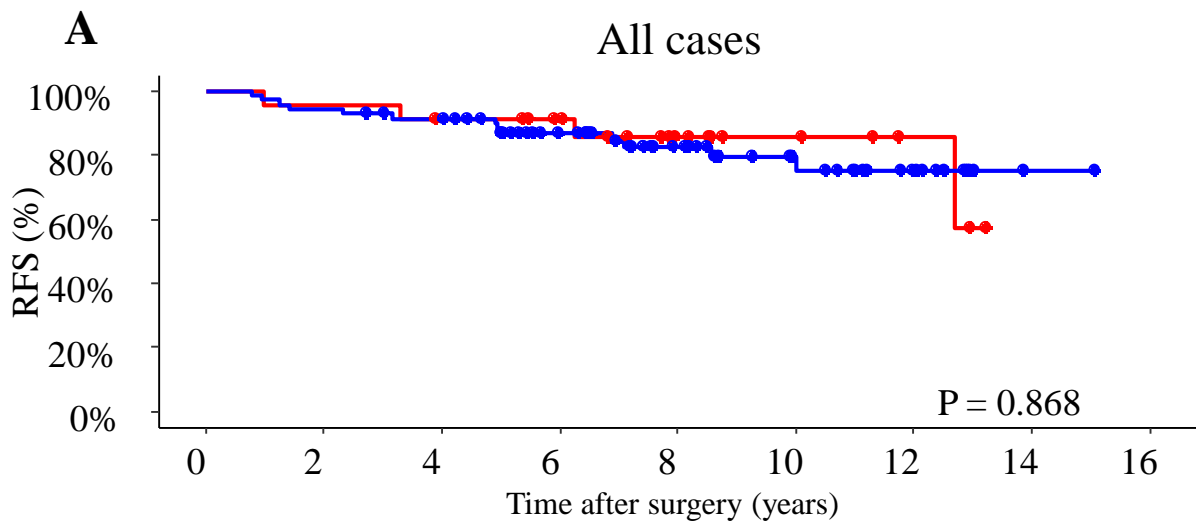
Supplementary Figure 1. Representative immunohistochemical staining of ER, PR, and Ki-67 in breast tumors.

ER was strongly stained ($> 66.7\%$) (A). PR was weakly stained ($10\% \leq < 33.3\%$) (B). Ki-67 was moderately stained (40-50%) (C).



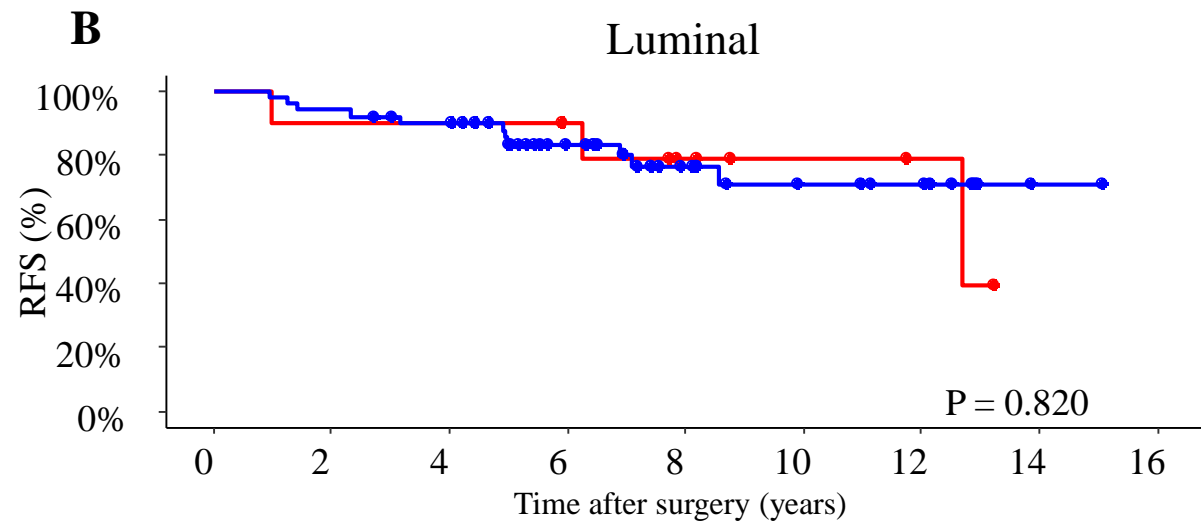
Supplementary Figure 2. HRD scores according to somatic HRR gene mutations

Somatic HRR genes were divided into the HRR-core and HRR-related genes according to their function. The HRD scores were compared between tumors with somatic mutations in HRR-core and HRR-related genes (A). In tumors with somatic HRR gene mutations, LOH at the mutated gene loci were also analyzed. The HRD scores were compared between somatic HRR gene mutant tumors with and without LOH (B).



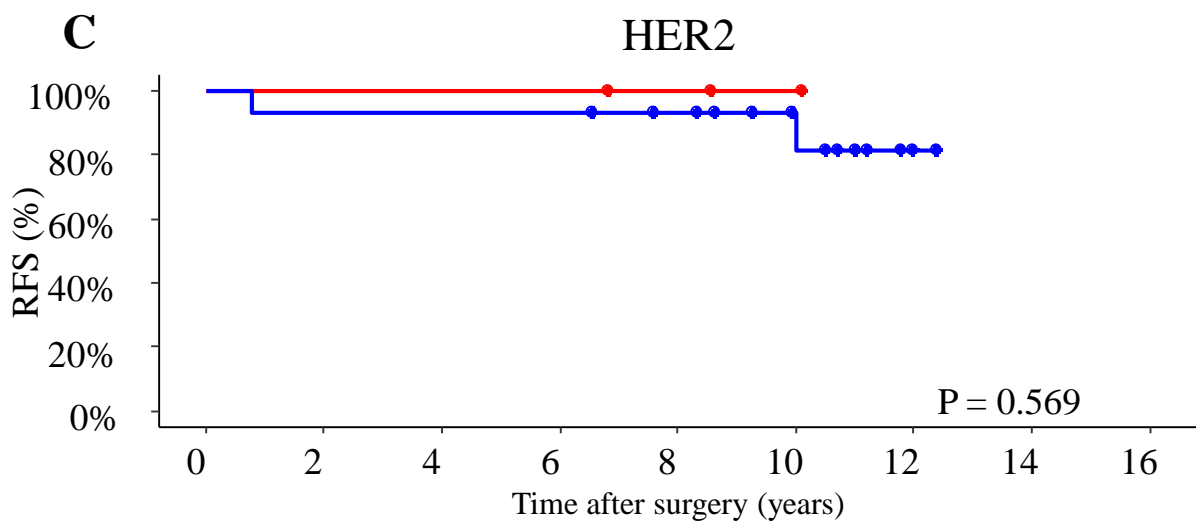
HRD score

Low	71	67	63	47	31	20	11	1	0
High	23	22	20	17	10	6	3	0	0



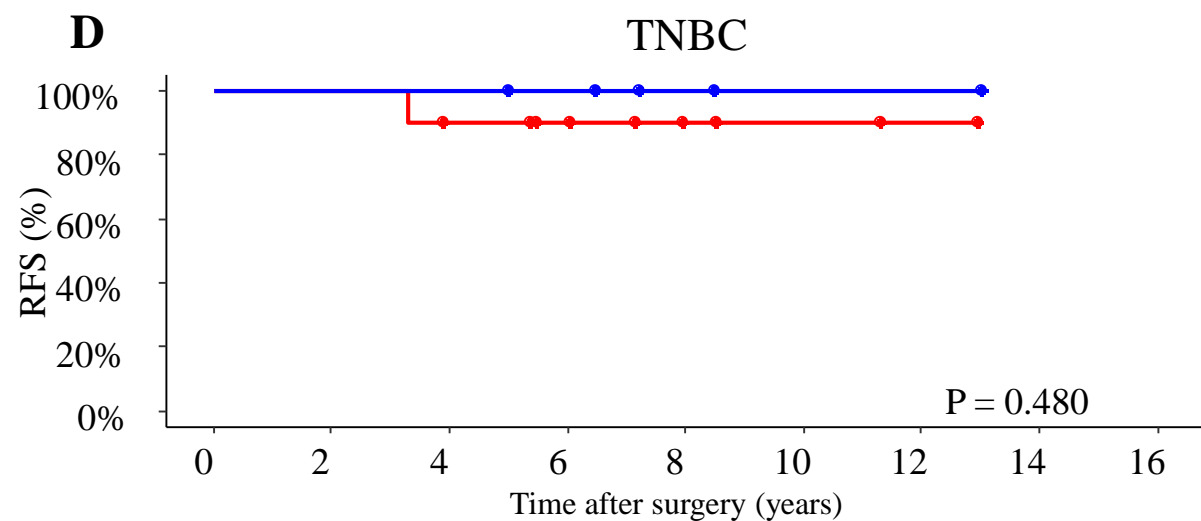
HRD score

Low	51	48	44	29	17	11	9	1	0
High	10	9	9	8	5	3	2	0	0



HRD score

Low	15	14	14	14	12	8	1	0	0
High	3	3	3	3	2	1	0	0	0

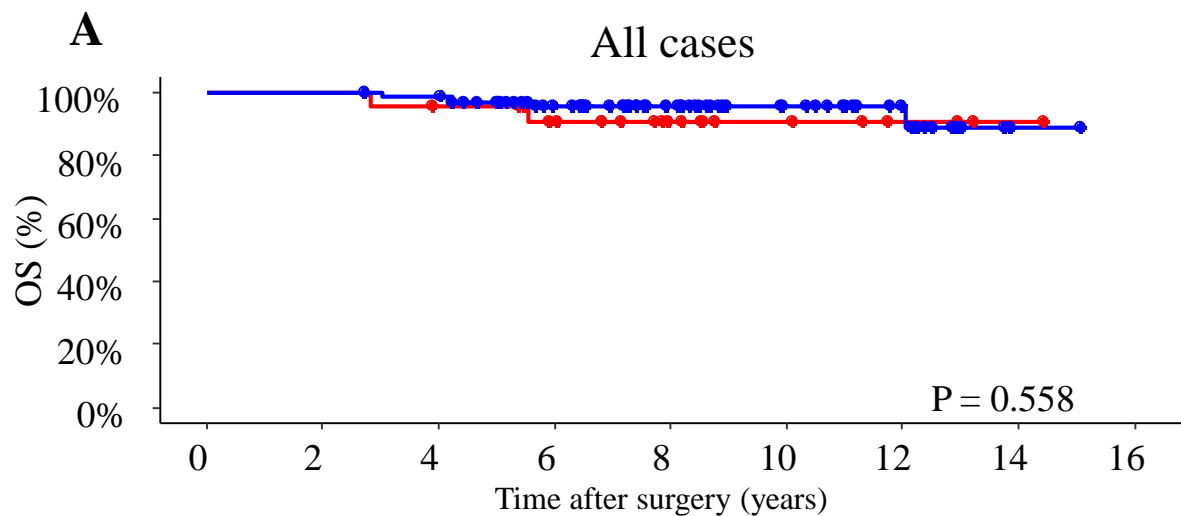


HRD score

Low	5	5	5	4	2	1	1	0	0
High	10	10	8	6	3	2	1	0	0

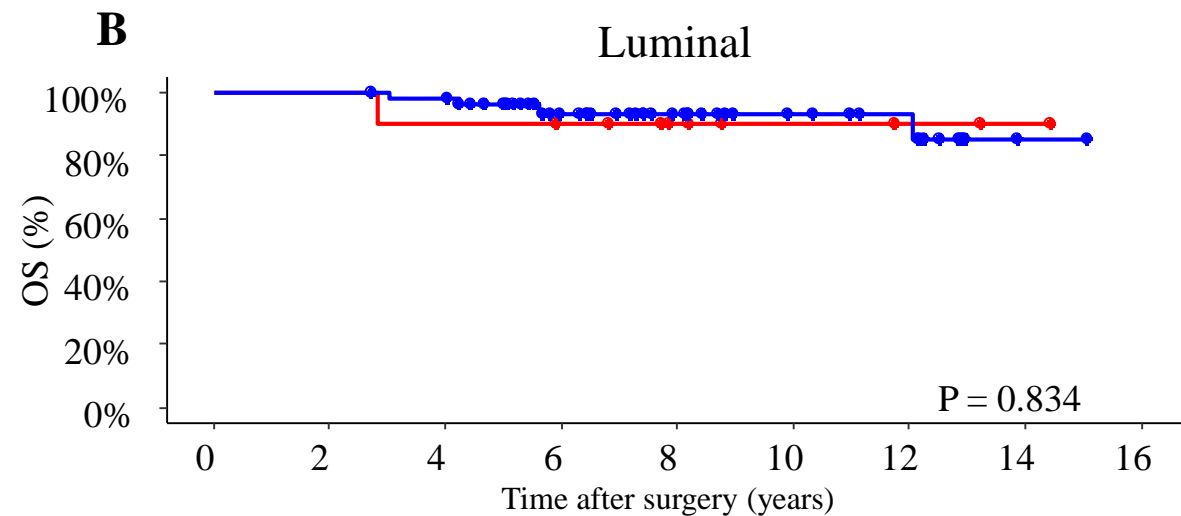
Supplementary Figure 3. Relapse-free survival curves according to HRD status

Patients (n = 94) treated with neoadjuvant chemotherapy (NAC) without trastuzumab were analyzed. Relapse-free survival (RFS) was analyzed using the Kaplan-Meier method in all patients (A), the luminal subtype (B), the HER2 type included luminal-HER2 and HER2 subsets in Figure 2 (C), and TNBC (D). The differences were assessed with the log-rank test. Relapse didn't include a contralateral breast in this analysis. The median follow-up period was 6.86 (0.34 - 15.06) months.



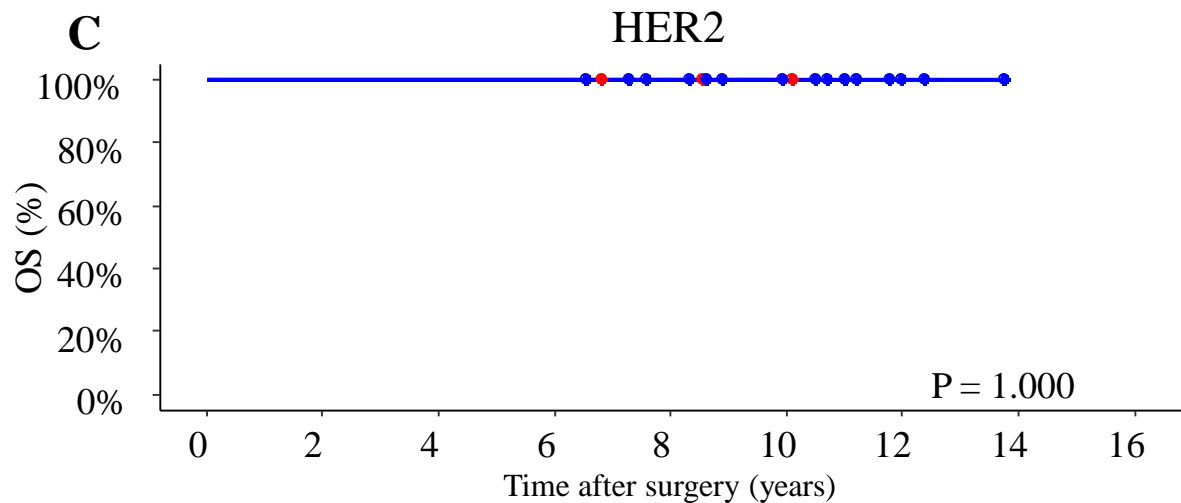
HRD score

Low	71	71	69	52	36	23	14	1	0
High	23	23	21	17	10	6	3	1	0



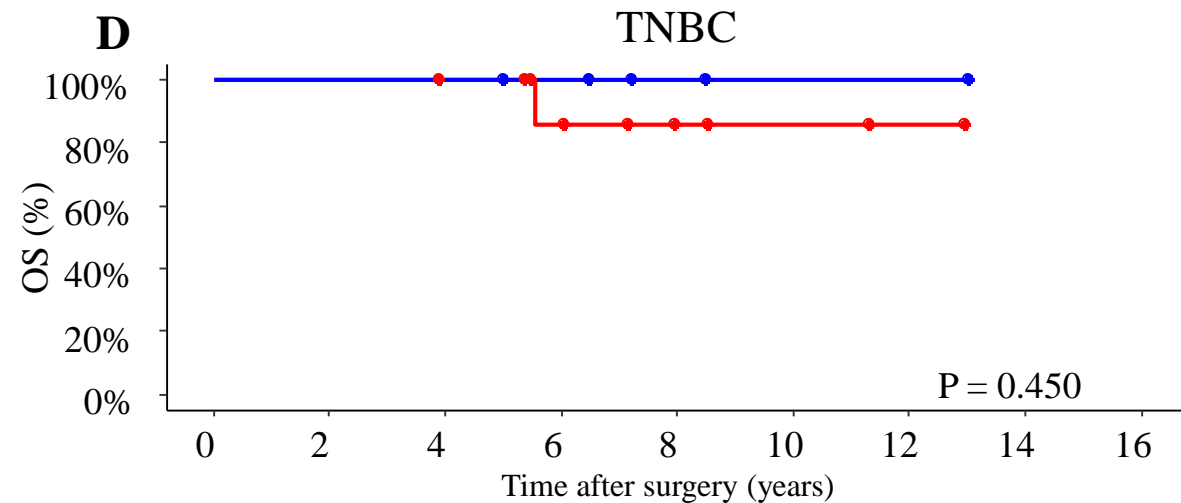
HRD score

Low	51	51	49	33	22	14	11	1	0
High	10	10	9	8	5	3	2	1	0



HRD score

Low	15	15	15	15	12	8	2	0	0
High	3	3	3	3	2	1	0	0	0



HRD score

Low	5	5	5	4	2	1	1	0	0
High	10	10	9	6	3	2	1	0	0

Supplementary Figure 4. Overall survival curves according to HRD status

Patients (n = 94) treated with neoadjuvant chemotherapy (NAC) without trastuzumab were analyzed. Overall survival (OS) was analyzed using the Kaplan-Meier method in all patients (A), the luminal subtype (B), the HER2 type included luminal-HER2 and HER2 subsets in Figure 2 (C), and TNBC (D). The differences were assessed with the log-rank test. The median follow-up period was 7.25 (2.26 - 15.06) months. During this period, there were six events (four breast cancer-caused deaths and two other-caused deaths).