



**Supplementary Figure S1.** Distribution of molecular subtype of breast cancer based on ESR1 expression level.

LumA, luminal A; LumB, luminal B; HER2E, HER2-enriched.

**Supplementary Table S1.** Basal characteristics of study cohort.

| Parameters                         | Values     |
|------------------------------------|------------|
| Age, years (median, range)         | 49 (25–81) |
| Menopause, <i>n</i> (%)            |            |
| Premenopausal                      | 235 (58.6) |
| Menopause                          | 155 (38.7) |
| Not assessable                     | 11 (2.7)   |
| Histologic diagnosis, <i>n</i> (%) |            |
| Invasive ductal carcinoma, NOS     | 365 (91.0) |
| Invasive lobular carcinoma         | 28 (7.0)   |
| Mixed invasive ductal carcinoma    | 6 (1.5)    |
| Mucinous carcinoma                 | 2 (0.5)    |
| Tumor size, cm (mean ± SD)         | 1.9 ± 0.8  |
| Pathologic T stage                 |            |
| T1                                 | 246 (61.3) |
| T2/3                               | 155 (38.6) |
| Oncotype Dx RS (mean ± SD)         | 18.1 ± 9.1 |
| Oncotype Dx risk category          |            |
| Low risk (<26)                     | 340 (84.8) |
| High risk (≥26)                    | 61 (15.2)  |
| Histologic grade                   |            |
| I                                  | 63 (15.7)  |
| II                                 | 311 (77.6) |
| III                                | 27 (6.7)   |
| Lymphovascular invasion            |            |
| Present                            | 122 (30.4) |
| Absent                             | 279 (69.6) |
| Lymph node metastasis              |            |
| Present                            | 96 (23.9)  |
| Absent                             | 305 (76.1) |

|                                    |                 |
|------------------------------------|-----------------|
| TIL, % (mean $\pm$ SD)             | 11.2 $\pm$ 13.7 |
| Two-tiered TIL group, <i>n</i> (%) |                 |
| Low-TIL ( $\leq 10\%$ )            | 302 (75.3)      |
| High-TIL ( $> 10\%$ )              | 99 (24.7)       |
| TSR, % (mean $\pm$ SD)             | 71.0 $\pm$ 18.1 |
| Two-tiered TSR group, <i>n</i> (%) |                 |
| Stroma-low (TSR $> 50\%$ )         | 344 (86.0)      |
| Stroma-high (TSR $\leq 50\%$ )     | 56 (14.0)       |
| YAP1 expression                    |                 |
| Low (score 0/1)                    | 139 (34.7)      |
| High (score 2/3)                   | 262 (65.3)      |

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NOS, not otherwise specified; SD, standard deviation; RS, risk score; TIL, tumor-infiltrating lymphocyte; TSR, tumor–stroma ratio; YAP1, Yes-associated protein 1.