**Table S1.** Clinicopathologic characteristics of patients according to the breast cancer molecular subtype

| Parameter                          | Total (n = 334) (%) | Luminal A (n = 162) (%) | Luminal B (n = 96) (%) | HER-2 (n = 21) (%) | TNBC (n = 55) (%) | p-Value |
|------------------------------------|---------------------|-------------------------|------------------------|-------------------|------------------|---------|
| Age (years)                        |                     |                         |                        |                   |                  | 0.199   |
| ≤50                                | 206 (61.7)          | 108 (66.7)              | 54 (56.3)              | 10 (47.6)         | 34 (61.8)        |         |
| >50                                | 128 (38.3)          | 54 (33.3)               | 42 (43.8)              | 11 (52.4)         | 21 (38.2)        |         |
| Histologic grade                   |                     |                         |                        |                   |                  | <0.001  |
| I/II                               | 236 (70.7)          | 153 (94.4)              | 53 (55.2)              | 9 (42.9)          | 21 (38.2)        |         |
| III                                | 98 (29.3)           | 9 (5.6)                 | 43 (44.8)              | 12 (57.1)         | 34 (61.8)        |         |
| Tumor stage                        |                     |                         |                        |                   |                  | 0.908   |
| T1                                 | 184 (55.1)          | 94 (58.0)               | 51 (53.1)              | 10 (47.6)         | 29 (52.7)        |         |
| T2                                 | 147 (44.0)          | 67 (41.4)               | 44 (45.8)              | 11 (52.4)         | 25 (45.5)        |         |
| T3                                 | 3 (0.9)             | 1 (0.6)                 | 1 (1.0)                | 0 (0.0)           | 1 (1.8)          |         |
| Nodal stage                        |                     |                         |                        |                   |                  | 0.215   |
| N0                                 | 199 (59.6)          | 84 (51.9)               | 59 (61.5)              | 16 (76.2)         | 40 (72.7)        |         |
| N1                                 | 103 (30.8)          | 59 (36.4)               | 28 (29.2)              | 4 (19.0)          | 12 (21.8)        |         |
| N2                                 | 24 (7.2)            | 14 (8.6)                | 7 (7.3)                | 1 (4.8)           | 2 (3.6)          |         |
| N3                                 | 8 (2.4)             | 5 (3.1)                 | 2 (2.1)                | 0 (0.0)           | 1 (1.8)          |         |
| LPBC                               |                     |                         |                        |                   |                  | <0.001  |
| No                                 | 292 (87.4)          | 154 (95.1)              | 81 (84.4)              | 13 (61.9)         | 44 (80.0)        |         |
| Yes                                | 42 (12.6)           | 8 (4.9)                 | 15 (15.6)              | 8 (38.1)          | 11 (20.0)        |         |
| Stromal TIL (%)                    |                     |                         |                        |                   |                  | <0.001  |
| Mean±SD                            | 21.9±31.4           | 8.8±18.3                | 19.7±28.5              | 36.5±40.0         | 21.9±31.4        |         |
| Estrogen receptor status           |                     |                         |                        |                   |                  | <0.001  |
| Negative                           | 98 (29.3)           | 4 (2.5)                 | 18 (18.8)              | 21 (100.0)        | 55 (100.0)       |         |
| Positive                           | 236 (70.7)          | 158 (97.5)              | 78 (81.3)              | 0 (0.0)           | 0 (0.0)          |         |
| Progesterone receptor status       |                     |                         |                        |                   |                  | <0.001  |
| Negative                           | 115 (34.4)          | 20 (12.3)               | 19 (19.8)              | 21 (100.0)        | 55 (100.0)       |         |
| Positive                           | 219 (65.6)          | 142 (87.7)              | 77 (80.2)              | 0 (0.0)           | 0 (0.0)          |         |
| HER-2 status                       |                     |                         |                        |                   |                  | <0.001  |
| Negative                           | 268 (80.2)          | 162 (100.0)             | 51 (53.1)              | 0 (0.0)           | 55 (100.0)       |         |
| Positive                           | 66 (19.8)           | 0 (0.0)                 | 45 (46.9)              | 21 (100.0)        | 0 (0.0)          |         |
| Ki-67 L.I. (%)                     | ≤14                  | 180 (53.9)              | 162 (100.0)            | 11 (11.5)         | 1 (4.8)          | <0.001  |
| >14                                | 154 (46.1)          | 0 (0.0)                 | 85 (88.5)              | 20 (95.2)         | 49 (89.1)        |         |

TNBC, triple-negative breast cancer; LPBC, lymphocyte predominant breast cancer; TIL, tumor infiltrating lymphocyte; SD, standard deviation; L.I., labeling index.

**Table S2.** Correlations in expression statuses among immune cell subtype-related proteins

| Parameters | STAT6 H-score | FOXP3 | CD8 | CD68 | CD163 |
|------------|---------------|-------|-----|------|-------|
| STAT4 H-score |           |     |     |      |       |
| r-coefficient | 0.189         | 0.229 | 0.293 | 0.140 | 0.200 |
| p-Value     | 0.001         | <0.001 | <0.001 | 0.010 | <0.001 |
| STAT6 H-score |           |     |     |      |       |
| r-coefficient | 0.303         | 0.268 | 0.276 | 0.355 |       |
| p-Value     | <0.001        | <0.001 | <0.001 |       |       |
| FOXP3       |               |     |     |      |       |
### Table S3. Source, clone, and dilution of antibodies

| Antibody                      | Company                      | Clone    | Dilution |
|-------------------------------|------------------------------|----------|----------|
| **Infiltrating immune cell-related proteins** |                              |          |          |
| STAT4 (Th1 cell related)      | Abcam, Cambridge, UK         | EP1900Y  | 1:100    |
| STAT6 (Th2 cell related)      | Abcam, Cambridge, UK         | YE361    | 1:50     |
| FOXP3 (Treg related)          | Abcam, Cambridge, UK         | Polyclonal | 1:200   |
| CD8 (cytotoxic T cell related)| Abcam, Cambridge, UK         | Polyclonal | 1:200   |
| CD68 (M1 related)             | Abcam, Cambridge, UK         | KP1      | 1:100    |
| CD163 (M2 related)            | Abcam, Cambridge, UK         | Polyclonal | 1:200   |
| **Molecular subtype-related proteins** |                              |          |          |
| ER                            | Thermo Scientific, San Diego, CA, USA | SP1     | 1:100    |
| PR                            | DAKO, Glostrup, Denmark      | PgR      | 1:50     |
| HER-2                         | DAKO, Glostrup, Denmark      | Polyclonal | 1:1,500 |
| Ki-67                         | Abcam, Cambridge, UK         | MIB      | 1:1,000  |