### Supplementary Table 1. General characteristics of breast cancer survival-related immune genes.

| ID     | HR     | HR.95L    | HR.95H    | P-value  |
|--------|--------|-----------|-----------|----------|
| PSME2  | 0.98511606 | 0.97654026 | 0.99376718 | 0.00077519 |
| ULBP2  | 1.12414412 | 1.05361278 | 1.199397  | 0.00040065 |
| CXCL9  | 0.996502  | 0.9935673 | 0.99944536 | 0.01987772 |
| CXCL13 | 0.99649413 | 0.99305749 | 0.99994265 | 0.04631633 |
| S100A11| 1.00025859 | 1.00002757 | 1.00048967 | 0.02824391 |
| MMP9   | 1.00028343 | 1.0009984 | 1.00046705 | 0.00247757 |
| PLAU   | 1.00520427 | 1.00132679 | 1.00909677 | 0.00847936 |
| PLTP   | 1.00445817 | 1.00005618 | 1.0087953 | 0.04714064 |
| SOCS3  | 0.9913671  | 0.98328682 | 0.99951378 | 0.03785364 |
| JUN    | 0.99648985 | 0.99306484 | 0.99992667 | 0.04531569 |
| IL18   | 0.93510883 | 0.88889297 | 0.98372758 | 0.00947637 |
| TNFSF4 | 1.12112275 | 1.02672558 | 1.2241988 | 0.01084408 |
| CCR7   | 1.01305579 | 1.00127558 | 1.02497459 | 0.02973711 |
| CCL24  | 1.09096389 | 1.03150135 | 1.15385424 | 0.00233001 |
| VAV3   | 0.99162762 | 0.98397554 | 0.99933921 | 0.03340306 |
| FOS    | 0.99827108 | 0.99658311 | 0.99969191 | 0.04506121 |
| NFKBIE | 0.9613734  | 0.92951814 | 0.99432036 | 0.02194824 |
| IGHE   | 1.05974172 | 1.0318211 | 1.0841787 | 2.05E-05 |
| CXCR3  | 0.94015595 | 0.88939062 | 0.99381892 | 0.02934 |
| ADM    | 1.01763819 | 1.00329978 | 1.03218151 | 0.01573582 |
| FGF7   | 1.08206807 | 1.00944347 | 1.15991766 | 0.02607287 |
| SCG2   | 1.00412622 | 1.00201544 | 1.00624145 | 0.00012544 |
| TSLP   | 0.1923959 | 0.05487823 | 0.67451488 | 0.01001861 |
| ADRB1  | 0.80855291 | 0.66812286 | 0.97849939 | 0.0290163 |
| FLT3   | 0.88368991 | 0.8087506 | 0.96556542 | 0.00623679 |
| IL2RG  | 0.98406789 | 0.97071868 | 0.99760068 | 0.02118435 |
| LIFR   | 0.93736412 | 0.87897813 | 0.99962839 | 0.04869056 |
| NPR3   | 1.03653553 | 1.00729834 | 1.0662134 | 0.01396767 |
| SDC1   | 1.00256793 | 1.00105283 | 1.00408533 | 0.00088839 |
| SSTR1  | 1.04209544 | 1.02001597 | 1.06465285 | 0.0001608 |
| TNFRSF8| 0.51228195 | 0.31193119 | 0.84131632 | 0.00822689 |
| CD3D   | 0.97714889 | 0.95766 | 0.9970344 | 0.02451843 |
| TRAV12-3 | 0.80263302 | 0.66324643 | 0.97131282 | 0.02388121 |
| TRAV41 | 0.70015573 | 0.50332291 | 0.9739633 | 0.03429223 |
Supplementary Table 2. Univariate Cox proportional hazards regression analysis of IRGs.

| ID      | HR     | HR.95L | HR.95H | p-value  |
|---------|--------|--------|--------|----------|
| PSME2   | 0.985116 | 0.97654 | 0.993767 | 0.000775 |
| ULBP2   | 1.124144 | 1.053613 | 1.199397 | 0.000401 |
| CXCL9   | 0.996502 | 0.993567 | 0.999445 | 0.019878 |
| CXCL13  | 0.996494 | 0.993057 | 0.999943 | 0.046316 |
| S100A11 | 1.000259 | 1.000028 | 1.00049  | 0.028244 |
| MMP9    | 1.000283 | 1.0001  | 1.000467 | 0.002478 |
| PLAU    | 1.005204 | 1.001327 | 1.009097 | 0.008479 |
| PLTP    | 1.004458 | 1.000056 | 1.00888  | 0.047141 |
| SOCS3   | 0.991367 | 0.983287 | 0.999514 | 0.037854 |
| JUN     | 0.99649  | 0.993065 | 0.999927 | 0.045316 |
| IL18    | 0.935109 | 0.888893 | 0.983728 | 0.009476 |
| TNFSF4  | 1.121123 | 1.026726 | 1.224199 | 0.010844 |
| CCR7    | 1.013056 | 1.001276 | 1.024975 | 0.029737 |
| CCL24   | 1.090964 | 1.031501 | 1.153854 | 0.00233 |
| VAV3    | 0.991628 | 0.983976 | 0.999339 | 0.033403 |
| FOS     | 0.998271 | 0.996583 | 0.999962 | 0.045061 |
| NFKBIE  | 0.961373 | 0.929518 | 0.99432  | 0.021948 |
| IGHE    | 1.059742 | 1.031821 | 1.088418 | 2.05E-05 |
| CXCR3   | 0.940156 | 0.889391 | 0.993819 | 0.02934 |
| ADM     | 1.017638 | 1.0033  | 1.032182 | 0.015736 |
| FGF7    | 1.082068 | 1.009443 | 1.159918 | 0.026073 |
| SCG2    | 1.004126 | 1.002015 | 1.006241 | 0.000125 |
| TSLP    | 0.192396 | 0.054878 | 0.674515 | 0.010019 |
| ADRB1   | 0.808553 | 0.668123 | 0.978499 | 0.029016 |
| FLT3    | 0.88369 | 0.808757 | 0.965565 | 0.006237 |
| IL2RG   | 0.984068 | 0.970719 | 0.997601 | 0.021184 |
| LIFR    | 0.937364 | 0.878978 | 0.999628 | 0.048691 |
| NPR3    | 1.036536 | 1.007298 | 1.066621 | 0.013968 |
| SDC1    | 1.002568 | 1.001053 | 1.004085 | 0.000888 |
| Gene   | Value1   | Value2   | Value3   | Value4   |
|--------|----------|----------|----------|----------|
| SSTR1  | 1.042095 | 1.020016 | 1.064653 | 0.000161 |
| TNFRSF8| 0.512282 | 0.311931 | 0.841316 | 0.008227 |
| CD3D   | 0.977149 | 0.95766  | 0.997034 | 0.024518 |
| TRAV12-3| 0.802633 | 0.663246 | 0.971313 | 0.023881 |
| TRAV41  | 0.700156 | 0.503323 | 0.973963 | 0.034292 |
| TRBC2  | 0.982984 | 0.96928  | 0.996882 | 0.016577 |
| TRBV18 | 0.812499 | 0.661688 | 0.997684 | 0.047468 |
| TRBV20-1| 0.94365  | 0.890553 | 0.999912 | 0.049654 |
| TRBV28 | 0.968825 | 0.943218 | 0.995128 | 0.020489 |
| TRDV1  | 0.665198 | 0.496953 | 0.890401 | 0.006139 |