**Suppl 1:** Patients and clinical characteristics in TCGA HR+ HER2- cohort and other independent HR+ HER2- BC cohorts, GSE199135, GSE9195, GSE6532, and GSE21653.

|  |  |
| --- | --- |
| **Variables** | **Number of Patients (%)** |
| **TCGA (*N* = 585)** | **GSE199135 (*N* = 112)** | **GSE9195 (*N* = 77)** | **GSE6532 (*N* = 87)** | **GSE21653 (*N* = 122)** |
| Age | > 50  | 147 (25.1) | 28 (25) | 6 (7.8) | 5 (5.7) | 42 (34.4) |
| < 50  | 438 (74.9) | 84 (75) | 71 (92.2) | 82 (94.3) | 80 (65.6) |
| Menopausal state | Pre | 134 (22.9) | 34 (30.4) |  |  |  |
| Post | 389 (66.5) | 78 (69.6) |  |  |  |
| Unknown | 62 (10.6) | 0 |  |  |  |
| Tumor size (cm) | > 2 | 100 (17.1) | 79 (70.5) | 34 (44.2) | 43 (49.4) | 87 (71.3) |
| < 2 | 485 (82.9) | 31 (27.7) | 43 (55.8) | 44 (50.6) | 34 (27.9) |
| Unknown | 0 | 2 (1.8) | 0 | 0 | 1 (0.8) |
| Lymphnode metastases | Negative | 269 (46) | 71 (63.4) | 41 (53,2) | 29 (33.3) | 46 (37.7) |
| Positive | 308 (52.6) | 41 (36.6) | 36 (46.8) | 58 (66.7) | 76 (62.3) |
| Histopathology | Ductal | 385 (65.8) | 110 (98.2) |  |  | 97 (79.5) |
| Lobular | 144 (24.6) | 1 (0.9) |  |  | 9 (7.4) |
| Others/unknown | 56 (9.6) | 1 (0.9) |  |  | 16 (13.1) |
| Tumor grade | 1 |  | 37 (33) | 14 (18.2) | 17 (19.5) | 32 (26.2) |
| 2, 3 |  | 72 (64.3) | 44 (57.1) | 53 (60.9) | 90 (73.8) |
| unknown |  | 3 (2.7) | 19 (24.7) | 17 (19.5) | 0 |
| PgR | Negative | 80 (13.7) | 21 (18.8) | 18 (23.4) | 21 (24.1) | 17 (13.9) |
| Positive | 503 (86) | 91 (81.2) | 59 (76.6) | 64 (73.6) | 105 (86.1) |
| Unknown | 2 (0.3) | 0 | 0 | 2 (2.3) | 0 |
| PAM50 | Luminal A | 303 (51.8) |  |  |  | 67 (54.9) |
| Luminal B | 122 (20.9) |  |  |  | 36 (29.5) |
| HER2 | 3 (0.5) |  |  |  | 2 (1.6) |
| Basal-like | 9 (1.5) |  |  |  | 8 (6.6) |
| Normal | 13 (2.2) |  |  |  | 9 (7.4) |
| Unknown | 135 (23.1) |  |  |  | 0 |

**Abbreviations:** TCGA, The Cancer Genome Atlas; HR+, hormone receptor positive; HER2, human epidermal growth receptor 2; BC, breast cancer; PgR, progesterone receptor.