**Supplementary Table 1.** Characteristic of breast cancer cohort.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SAMPLE**  | **AGE** | **Histology** | **GRADE** | **ER** | **PR** | **HER2** |
| 1 | 85 | Invasive Ductal | 2 | POS | POS | NEG |
| 2 | 88 | Invasive Ductal | 2 | POS | POS | NEG |
| 3 | 74 | Invasive Ductal | 2 | POS | POS | NEG |
| 4 | 82 | Invasive Ductal | 2 | POS | POS | NEG |
| 5 | 49 | Invasive Ductal | 2 | POS | POS | NEG |
| 6 | 67 | In situ Ductal | 2 | POS | POS | NEG |
| 7 | 75 | Invasive Ductal | 2 | POS | POS | NEG |
| 8 | 46 | Invasive Ductal | 2 | POS | POS | NEG |
| 9 | 57 | Invasive Ductal | 2 | POS | POS | NEG |
| 10 | 54 | Invasive Ductal | 2 | POS | POS | NEG |
| 11 | 76 | Invasive Ductal | 2 | POS | POS | NEG |
| 12 | 67 | Invasive Ductal | 2 | POS | POS | NEG |
| 13 | 64 | Invasive Ductal | 2 | POS | POS | NEG |
| 14 | 74 | Invasive Ductal | 2 | POS | POS | NEG |
| 15 | 68 | Invasive Ductal | 2 | POS | POS | NEG |
| 16 | 55 | Invasive Ductal | 3 | POS | POS | NEG |
| 17 | 52 | Invasive Ductal | 3 | POS | POS | NEG |
| 18 | 33 | Invasive Ductal | 3 | POS | POS | NEG |
| 19 | 51 | Invasive Ductal | 3 | POS | POS | NEG |
| 20 | 57 | Invasive Ductal | 3 | POS | POS | NEG |
| 21 | 56 | Invasive Ductal | 3 | NEG | NEG | POS |
| 22 | 52 | Invasive Ductal | 3 | NEG | NEG | POS |
| 23 | 45 | Invasive Ductal | 3 | NEG | NEG | POS |
| 24 | 56 | Invasive Ductal | 3 | NEG | NEG | POS |
| 25 | 50 | Invasive Ductal | 2 | NEG | NEG | POS |
| 26 | 57 | In situ Ductal | 2 | NEG | NEG | POS |
| 27 | 72 | Invasive Ductal | 2 | NEG | NEG | POS |
| 28 | 75 | Invasive Ductal | 3 | NEG | NEG | NEG |
| 29 | 83 | Invasive Ductal | 3 | NEG | NEG | NEG |
| 30 | 45 | Invasive Ductal | 3 | NEG | NEG | NEG |
| 31 | 61 | Invasive Ductal | 3 | NEG | NEG | NEG |
| 32 | 75 | In situ Ductal | 3 | NEG | NEG | NEG |
| 33 | 64 | Mucinous | 3 | NEG | NEG | NEG |
| 34 | 53 | Invasive Ductal | 3 | NEG | NEG | NEG |
| 35 | 60 | In situ Ductal | 3 | NEG | NEG | NEG |

Thirty-five patient-derived breast cancer samples were used in this study. Abbreviation: **POS** positive, **NEG** negative, **ER** Estrogen Receptor, **PR** Progesterone Receptor, **HER2,** epidermal growth factor receptor 2.