**Supplemental Table 1. Distribution of FOXA1 protein expression in H-scores in ER+ and ER- tumors, by specimen and tissue types**

1. **ER+ tumors**

| Specimen type | N, total  | Tissue type | N | Mean | Std Dev | Minimum | Maximum |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Whole section | 435 |

|  |
| --- |
| Tumor |
| DCIS |
| Adjacent normal |

 |

|  |
| --- |
| 298 |
| 142 |
| 105 |

 |

|  |
| --- |
| 189 |
| 189 |
| 73 |

 |

|  |
| --- |
| 57 |
| 66 |
| 43 |

 |

|  |
| --- |
| 0 |
| 2 |
| 0.3 |

 |

|  |
| --- |
| 278 |
| 284 |
| 205 |

 |
| TMAs | 525 |

|  |
| --- |
| Tumor |
| DCIS |
| Adjacent normal |

 |

|  |
| --- |
| 443 |
| 85 |
| 88 |

 |

|  |
| --- |
| 188 |
| 148 |
| 50 |

 |

|  |
| --- |
| 71 |
| 85 |
| 45 |

 |

|  |
| --- |
| 0.2 |
| 0 |
| 0 |

 |

|  |
| --- |
| 295 |
| 290 |
| 224 |

 |

1. **ER- tumors**

| Specimen type | N, total | Tissue type | N | Mean | Std Dev | Minimum | Maximum |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Whole section | 125 |

|  |
| --- |
| Tumor |
| DCIS |
| Adjacent normal |

 |

|  |
| --- |
| 98 |
| 29 |
| 42 |

 |

|  |
| --- |
| 91 |
| 166 |
| 62 |

 |

|  |
| --- |
| 95 |
| 80 |
| 44 |

 |

|  |
| --- |
| 0 |
| 0.4 |
| 0 |

 |

|  |
| --- |
| 277 |
| 286 |
| 179 |

 |
| TMAs | 223 |

|  |
| --- |
| Tumor |
| DCIS |
| Adjacent normal |

 |

|  |
| --- |
| 202 |
| 23 |
| 59 |

 |

|  |
| --- |
| 52 |
| 108 |
| 48 |

 |

|  |
| --- |
| 82 |
| 97 |
| 42 |

 |

|  |
| --- |
| 0 |
| 1.7 |
| 0 |

 |

|  |
| --- |
| 288 |
| 296 |
| 216 |

 |

**Supplemental Table 2. The association of differences in FOXA1 protein expression between tumor and adjacent-normal tissue with ER+ and non-TNBC**

|  |  |  |  |
| --- | --- | --- | --- |
| Subtype | N | OR (95% CI)1, each 10 point increase in H-score | P-value |
|  |  |  |  |
| ER+ (vs. ER-) | 244 | 1.13 (1.09-1.19) | <0.001 |
|  |  |  |  |
| Non-TNBC (vs. TNBC) | 218 | 1.22 (1.14-1.31) | <0.001 |
|  |  |  |  |

1 Logistic regression adjusting for age, race, grade, and stage.

**Supplemental** **Table 3. FOXA1 protein expression in relation to parity and history of breastfeeding, additionally adjusting for tumor grade, breast cancer stage, and specimen type**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  ER+ tumors |  |  ER- tumors |
|  |  |  | Model 11 |  | Model 22 |  |  | Model 11 |  | Model 22 |  |
|  |  |  N | β (95% CI) | P-value | β (95% CI) | P-value |  N | β (95% CI) | P-value | β (95% CI) | P-value |
| Parous vs. Nulliparous (ref.) |  | 869 | -6.5 (-16.7, 4.6) | 0.26 | -6.1 (-16.8, 4.5) | 0.26 | 328 | -17.6 (-43.2, 7.9) | 0.18 | -17.0 (-44.4, 10.4) | 0.22 |
|  |  |  |  |  |  |  |  |  |  |  |  |
| Number of births (1, 2, 3+) |  | 685 | -7.8 (-14.6, -0.9) | 0.026 | -7.8 (-14.7, -1.0) | 0.026 | 272 | -7.9 (-22.0, 6.2) | 0.27 | -7.0 (-21.5, 7.5) | 0.34 |
|  |  |  |  |  |  |  |  |  |  |  |  |
| Number of birth stratified by history of breastfeeding (BF)2 |  |  |  |  |  |  |  |  |  |  |  |
|  Never BF |  | 355 | -11.0 (-21.0, -1.1) | 0.031 | -10.9 (-20.9, -0.8) | 0.034 | 146 | -13.9 (-37.5, 9.7) | 0.25 | -16.2 (-40.4, 7.9) | 0.19 |
|  Ever BF |  | 330 |  -5.6 (-15.5, 4.3) | 0.27 | -5.3 (-15.3, 4.6) | 0.29 | 126 |  5.4 (-14.5, 25.2) | 0.53 | 10.0 (-9.6, 29.7) | 0.32 |

1 Generalized linear models adjusting for age, race, tumor grade, and breast cancer stage.

1 Generalized linear models adjusting for age, race, tumor grade, breast cancer stage, and specimen type.

**Supplemental Table 4. FOXA1 protein expression in relation to age at menarche, age at first live birth, and breastfeeding**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  | ER+ tumors |  |  | ER- tumors |  |
|  |  |  N | β (95% CI)1 | P-value |  N | β (95% CI)1 | P-value |
| Age at menarche, years |  | 957 |  |  | 348 |  |  |
|  <11 |  |  | Ref. |  |  | Ref. |  |
|  11-12 |  |  | -6.7 (-20.7, 7.2) | 0.35 |  | 13.1 (-15.9, 42.1) | 0.38 |
|  ≥13 |  |  | -2.7 (-16.4, 11.0) | 0.70 |  | 13.4 (-14.9, 41.8) | 0.35 |
|  |  |  |  |  |  |  |  |
| Age at first live birth, years |  | 756 |  |  | 289 |  |  |
|  <24 |  |  | Ref. |  | Ref. |  |  |
|  25-29 |  |  | -2.6 (-14.6, 9.4) | 0.68 |  | 9.9 (-16.7, 36.4) | 0.47 |
|  ≥30 |  |  |  0.5 (-13.4, 14.4) | 0.95 |  | 40.7 (7.2, 74.3) | 0.017 |
|  |  |  |  |  |  |  |  |
| Breastfeeding (among parous women) |  | 756 |  |  | 289 |  |  |
|  Never |  |  | Ref. |  |  | Ref. |  |
|  Ever |  |  | 0.2 (-9.9, 10.4) |  | 0.97 | -6.7 (-29.0, 15.5) | 0.55 |

1 Generalized linear models adjusting for age and race.