

**Supplemental Table 1.** Realtime PCR primer sequences and conditions.

| Gene  | Forward primer       | Reverse primer       | Tm, °C |
|-------|----------------------|----------------------|--------|
| GADPH | TGATGACATCAAGAAGGTGG | TCTTACTCCTTGGAGGCC   | 60     |
| K18   | CACAGTCTGCTGAGGTTGGA | GAGCTGCTCCATCTGTAGGG | 60     |
| K14   | TTCTGAACGAGATGCGTGAC | GCAGCTCAATCTCCAGGTTC | 60     |
| Bmi-1 | CCAGGGCTTTTCAAAAATGA | CCGATCCAATCTGTTCTGGT | 60     |
| Nanog | CAAAGGCAAACAACCCACTT | TCTGCTGGAGGCTGAGGTAT | 60     |
| Sox2  | ACACCAATCCCATCCACACT | CAAACCTCCTGCAAAGCTCC | 60     |

**Supplemental Table 2.** Characterization of tumors.

| Tumor | ER  | PR  | HER2 | K5  | p63 | K8  |
|-------|-----|-----|------|-----|-----|-----|
| SH1   | neg | neg | pos  | neg | pos | pos |
| SH5   | neg | neg | pos  | pos | pos | pos |
| SH12  | neg | neg | neg  | pos | pos | pos |
| 012   | neg | neg | neg  | pos | pos | neg |

NOTE: Expression of estrogen receptor (ER), progesterone receptor (PR), HER2, p63, and keratins 5 and 8 in xenografts. SH1, SH5, and SH12 were breast tumor metastases collected from pleural fluid. 012 was a primary breast tumor.

**Supplemental Table 3.** Tumorigenicity of SH5 xenografts sorted for SSEA4, CD205, or CD29.

| Population (250 cells injected)              | Tumors/<br>Injection |
|--|----------------------|
| CD44 <sup>pos</sup> SSEA4 <sup>hi</sup>      | 1/4                  |
| CD44 <sup>pos</sup> SSEA4 <sup>neg/low</sup> | 1/4                  |
| CD44 <sup>pos</sup> CD29 <sup>hi</sup>       | 2/3                  |
| CD44 <sup>pos</sup> CD29 <sup>neg/low</sup>  | 4/4                  |
| CD44 <sup>pos</sup> CD205 <sup>hi</sup>      | 3/4                  |
| CD44 <sup>pos</sup> CD205 <sup>neg/low</sup> | 4/4                  |

**Supplemental Table 4.** Heterogeneity in tumorigenicity is maintained through multiple *in vivo* passages.

| Population (250 cells injected)   | Tumors/<br>Injection |
|---|----------------------|
| SH5, passage 5  |                      |
| CD44 <sup>pos</sup> CD49f <sup>hi</sup> CD133/2 <sup>hi</sup>           | 2/4                  |
| CD44 <sup>pos</sup> CD49f <sup>neg/low</sup> CD133/2 <sup>neg/low</sup> | 0/5                  |
| SH5, passage 6  |                      |
| CD44 <sup>pos</sup> CD49f <sup>hi</sup> CD133/2 <sup>hi</sup>           | 4/5                  |
| CD44 <sup>pos</sup> CD49f <sup>neg/low</sup> CD133/2 <sup>neg/low</sup> | 0/5                  |