**Table S1** List of 246 genes associated with breast cancer pathogenesis and the references from which they were collected

|  |  |  |
| --- | --- | --- |
| **Sr. No.**  | **GENE ID** | **Reference** |
|  | *HIF1A* | [1–3] |
|  | *GLUT1*  | [1,4] |
|  | *CAIX* | [1,5] |
|  | *ERO1A* | [6] |
|  | *AR* | [7,8] |
|  | *JUN* | [7–9] |
|  | *STAT1*  | [3,7,8] |
|  | *PKC*  | [7,8] |
|  |  *RelA*  | [2,7,8]  |
|  | *cABL*  | [7,8] |
|  | *SUMO1*  | [7] |
|  | *CDK1*  | [7,8] |
|  | *HDAC1*  | [7,8] |
|  | *IRF1*  | [3,7,8] |
|  | *RBAP48*  | [7] |
|  | *RGS19*  | [7] |
|  | *Top1* | [7] |
|  | *TACC1*  | [7,10] |
|  | *RND3*  | [10] |
|  | *DTL*  | [10,11] |
|  | *ATM*  | [2,10,12,13] |
|  | *BUB1*  | [10,14] |
|  | *RAD51*  | [12,15] |
|  | *MKI67* | [3,16] |
|  | *STK15*  | [16] |
|  | *Survivin* | [16] |
|  |  *CCNB1* | [16,17] |
|  |  *MYBL2* | [16] |
|  | *MMP11* | [16] |
|  | *CTSV* | [16] |
|  | *GRB7* | [16] |
|  | *Her2* | [16] |
|  | *ER* | [16] |
|  | *PGR* | [16] |
|  | *BCL2* | [16] |
|  | *SCUBE2* | [16] |
|  | *GSTM1* | [16] |
|  | *CD68* | [16] |
|  | *BAG1* | [16] |
|  | *NUSAP1* | [11] |
|  | *PRC1*  | [11] |
|  | *L2DTL* | [11]  |
|  | *cyclin E2* | [14] |
|  | *MCM6* | [14] |
|  | *MMP9* | [14] |
|  | *MP1* | [14] |
|  | *RAB6B* | [14] |
|  | *PK428* | [14] |
|  | *ESM1* | [14] |
|  | *FLT1* | [14] |
|  | *RAD21* | [14] |
|  | *Cyclin B2* | [14] |
|  | *PCTAIRE* | [14] |
|  | *CDC25B* | [14] |
|  | *CENPF* | [14] |
|  | *VEGF* | [14] |
|  | *PGK1* | [14] |
|  | *MAD2* | [14] |
|  | *CKS2* | [14] |
|  | *BUB1* | [14] |
|  | *FGL2* | [18] |
|  | *CYP24A1* | [19] |
|  | *LOXL4* | [19] |
|  | *MGP* | [19] |
|  | *COL5A2* | [19] |
|  | *AREG* | [19] |
|  | *ARHGAP36* | [19] |
|  | *CCDC85A* | [19] |
|  | *SHH* | [19] |
|  | *SERPINE1* | [19] |
|  | *RBM24* | [19] |
|  | *SNAI2* | [19] |
|  | *TMEM40* | [19] |
|  | *RBP7* | [19] |
|  | *COL12A1* | [19] |
|  | *SPOCK1* | [19] |
|  | *PIM1* | [19] |
|  | *GABRP* | [19] |
|  | *MATN3* | [19] |
|  | *FBLN2* | [19] |
|  | *LOXL1* | [19] |
|  | *ATM* | [12] |
|  | *BARD1* | [12] |
|  | *BRCA1* | [12] |
|  | *BRCA2* | [12] |
|  | *FANCA* | [12] |
|  | *MELK* | [20] |
|  | *HDAC1* | [8] |
|  | *RELA* | [8] |
|  | *PKC-beta* | [8] |
|  | *SUMO-1* | [8] |
|  | *ABL1* | [8] |
|  | *STAT1* | [8] |
|  |  *IRF1* | [8] |
|  | *TGFB1* | [21] |
|  | *SOD2* | [21] |
|  | *XRCC3* | [21] |
|  | *XRCC1* | [21] |
|  | *APEX* | [21] |
|  | *PIK3CA* | [22] |
|  | *NBN* | [13] |
|  | *MRE11* | [13] |
|  | *RAD50* | [13] |
|  | *RAD51* | [13] |
|  | *ATRX* | [13] |
|  | *XRCC4* | [13] |
|  | *XRCC2* | [13] |
|  | *PRKDC* | [13] |
|  | *LIG4S* | [13] |
|  | *XRCC6* | [13] |
|  | *XRCC5/KU80* | [13] |
|  | *CHEK1* | [13] |
|  | *CHEK2* | [13] |
|  |  *DCLRE1C* | [13] |
|  | *ABL* | [13] |
|  | *MDC1* | [12,13] |
|  | *TERT* | [13] |
|  | *CDC25C*  | [9] |
|  | *NFKB1* | [9] |
|  | *TGFB2* | [9] |
|  | *ADRB2* | [9] |
|  | *SNAI1* | [9] |
|  | *CAV1* | [9] |
|  | *TNF* | [9] |
|  | *ADRB1* | [9] |
|  | *JUNB* | [9] |
|  | *FOSB* | [9] |
|  | *HIST1H4E* | [9] |
|  | *FOS* | [9] |
|  |  *MOAP1* | [9] |
|  | *ITPR1* | [9] |
|  | *ADAMTS9* | [9] |
|  | *LEF1* | [9] |
|  | *NR3C1* | [9] |
|  | *FAM49B* | [9] |
|  | *LMNB1* | [9] |
|  | *FAS* | [9,23] |
|  | *CDKN1A* | [9] |
|  | *NR4A3* | [9] |
|  | *C2CD2* | [9] |
|  | *CACNB2* | [9] |
|  | *PLK1* | [9] |
|  | *HIST1H1B* | [9] |
|  | *HIST1H4B* | [9] |
|  | *HIST2H2AB* | [9] |
|  | *HIST2H2AC* | [9] |
|  | *CDC42* | [9] |
|  | *H2AFX* | [9] |
|  | *MGMT* | [24] |
|  | *CDH1* | [24] |
|  | *p16* | [24] |
|  | *ERp29* | [24] |
|  | *p53* | [25] |
|  | *BAX* | [25] |
|  | *Nrf2* | [26] |
|  | *HO-1* | [26] |
|  | *p21* | [27] |
|  | *Myc* | [27] |
|  | *14-3-3 zeta* | [27] |
|  | *cyclin A* | [27] |
|  | *cyclin B1* | [27] |
|  | *GADD153* | [27] |
|  | *Beclin-1* | [28] |
|  | *Atg5* | [28] |
|  | *Atg7* | [28] |
|  | *Atg12* | [28] |
|  | *FOXC1* | [3,29] |
|  | *TRAPPC9* | [29] |
|  |  *AMIGO3* | [29] |
|  | *PDCD2* | [17] |
|  | *MCL1* | [17] |
|  | *CDC10 protein homolog* | [17] |
|  | *TIMP3* | [17] |
|  | *BCGF1* | [17] |
|  | *BMP2A* | [17] |
|  | *endothelin 2* | [17] |
|  | *MSH2* | [12,17] |
|  | *MSH6* | [17] |
|  | *TOP2A* | [17] |
|  | *RPA* | [17] |
|  | *VEGFR1* | [17] |
|  | *IFNG* | [17] |
|  | *CDK4* | [17] |
|  | *TNFRSF12* | [17] |
|  | *ARHGDIA* | [17] |
|  | *RAD52* | [30] |
|  | *HuR* | [31] |
|  | *COX-2* | [31] |
|  | *SIRT1* | [31] |
|  | *p27* | [31] |
|  |  *GTSE1* | [32] |
|  | *CDC20* | [32] |
|  | *CDC25C* | [32] |
|  |  *KIF2C* | [32] |
|  | *MLL* | [32] |
|  | *CXCR3* | [32] |
|  | *ZDHHC15* | [32] |
|  | *CASP8* | [32] |
|  | *GADD45B*  | [32] |
|  | *NOTCH1* | [32] |
|  | *TP53INP1* | [32] |
|  | *CDKN3* | [32] |
|  | *HIST1H4C* | [32] |
|  | *HIST1H4D* | [32] |
|  | *NDC80* | [32] |
|  | *NEK2* | [32] |
|  | *PERK* | [33] |
|  | *ATF4* | [33] |
|  | *LAMP3* | [33] |
|  | *Caspase 3* | [34] |
|  | *ACTB* | [34] |
|  | *ATR* | [2] |
|  | *BCL2L1* | [2] |
|  | *ERCC4* | [2] |
|  | *ERCC6* | [2] |
|  | *ERCC1* | [2] |
|  | *MRE11A* | [2] |
|  | *RAD18* | [2] |
|  | *TIGAR* | [2] |
|  | *TP53* | [2] |
|  | *XIAP* | [2] |
|  | *XPA* | [2] |
|  | *ABCG2* | [2] |
|  | *XRCC5* | [2] |
|  | *AKT1* | [2] |
|  | *OSMR* | [3] |
|  | *RAD54L* | [3] |
|  | *CCL19* | [3] |
|  | *IRF8* | [3] |
|  | *FGR* | [3] |
|  | *TNFRSF1B* | [3] |
|  | *C3* | [3] |
|  | *IRF1* | [3] |
|  | *AURKA* | [3] |
|  | *HIF1* | [3] |
|  | *HIF2A* | [3] |
|  | *WRAP53* | [3] |
|  | *ERBB2* | [3] |
|  | *TACC1* | [10] |
|  | *RND3* | [10] |
|  | *DTL* | [10] |
|  | *Wnt3a* | [35] |
|  | *LRP6* | [35] |
|  | *CTNNB1* | [35] |
|  | *C-myc* | [35] |
|  | *ATF3* | [36] |

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