

# Oligo GEArray® Human Breast Cancer Biomarkers Microarray

**HybTube Format** Cat. No. OHS-402  
**HybPlate Format** Cat. No. EHS-402

## Description

The Oligo GEArray® Breast Cancer Biomarkers Microarray profiles the expression of 264 genes useful as molecular markers in the prognosis and diagnosis of breast cancer. This array is designed with clinical researchers and research pathologists in mind. The genes in the diagnosis markers group are highly associated with breast cancer based on the published literature [1]. The genes in the prognosis markers group have been successfully used to predict the clinical outcome of breast cancer [5, 13, 14]. The gene content on the array is also grouped according to biological function to help track the underlying mechanisms of breast cancer progression. Use this array to study differential expression of known biomarkers among breast cancer biopsies or cell lines in your laboratory. Through a simple side-by-side hybridization experiment you can determine differential gene expression between your samples.

## Functional Gene Groupings

### Potential Diagnosis Markers

#### **Cell Cycle:**

Cell Cycle Arrest and Checkpoint: MYC, RB1, TP53.

Negative Regulation of the Cell Cycle: ATM, BAX, BRCA1, EGFR, ESR1, NME1, PTEN, RB1, TP53.

Regulation of the Cell Cycle: BCL2, BRCA2, CCND1, CCNE1, CDK4, FGF3, FGF8, IGF2, MAPK3, PCNA, PRKCA, TGFA, TGFB1, TGFB2, TGFB3, VEGF.

DNA Replication: CDK2, EGF, IGF1, PCNA.

#### **Cell Growth and Proliferation:**

Growth Factors and Cytokines: BMP6, CSF1, CSF3, EGF, FGF18, FGF3, FGF8, IGF1, IGF2, TGFA, TGFB1, TGFB2, TGFB3, TNF, VEGF.

Positive Regulation of Cell Proliferation: CDK2, CSF1, CSF3, EGF, FGF18, FGF3, IGF1, VEGF.

Negative Regulation of Cell Proliferation: BCL2, NME1, ODZ1, PLG.

Regulation of Cell Growth: ESR2, IGFBP3, TP53, TSG101,

Other Genes Involved in Cell Growth and Proliferation: AR, BRCA1, CDK4, EGFR, ERBB2, ERBB4, ESR1, MYC, PCNA, PRKD1, PRL.

**Cell Differentiation:** CSF1, IGFBP3, TP53.

#### **Apoptosis:**

Induction of Apoptosis: BAX, MX1, PRKCA, PRKCE, TP53.

Anti-apoptosis: AKT1, BAG3, BCL2, BCL2L1, PRKCZ, TGFB1, TNF.

Other Apoptosis Genes: BRCA1, IGFBP3, VEGF.

**DNA Repair:** ATM, BRCA1, BRCA2, PCNA, RAD51, TP53, XRCC3.

**Angiogenesis Factors:** FGF3, VEGF.

**Cell Adhesion Molecules:** CD34, CDH1, CTNNB1, ITGB3, PECAM1.

**Extracellular Matrix (ECM) Molecules:** ALB, BRCA1, BRCA2, COL4A2, CSF3, CTSD, EGF, ERBB2, FGF18, FGF3, FGF8, IGF1, IGF2, IGFBP3, INS, KLK13, MMP11, MMP9, ODZ1, PRL, SERPINE1, SHBG, TGFA, VEGF.

**Protein Kinases:** AKT1, ATM, CDK2, CDK4, EGFR, ERBB2, ERBB3, ERBB4, MAPK3, PDPK1, PRKCA, PRKCB1, PRKCD, PRKCE, PRKCG, PRKCZ, PRKD1, PRKD2, SRC, TYK2.

**Protein Phosphatases:** IGFBP3, PTEN.

**Transcription Factors and Regulators:** AR, BRCA1, BRCA2, CTNNB1, EGR3, ESR1, ESR2, FOS, JUN, MYC, NR4A1, PCNA, PGR, RB1, SP1, TNF, TP53, TSG101.

**Proteases and Protease Inhibitors:** CTSB, CTSC, CTSD, CTSE, CTSL2, KLK13, MMP11, MMP9, PCSK6, PLG, SERPINE1.

**Other Potential Diagnostic Markers:** ABCB1, ABCG2, AKAP1, CEACAM5, CYB5, CYC1, CYP19A1, GSTM1, GSTM3, KRT18, KRT19, MIB1, MUC1, MUC19, PALM2-AKAP2, VIM.

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## Potential Prognosis Markers

### **Cell Cycle:**

Cell Cycle Arrest and Checkpoint: CCNE2.

Negative Regulation of the Cell Cycle: ESR1, EXT1.

Regulation of the Cell Cycle: BCL2, CCNB1, CCNB2, CDC25B, CENPF, MKI67, MYBL2, PCTK1, PSMD2, TGFB3, VEGF.

DNA Replication: MCM6, ORC6L, RFC4, RRM2.

Other Cell Cycle Genes: BIRC5, BUB1, CKS2, MAD2L1, SMC4L1, STK6.

### **Cell Growth and Proliferation:**

Growth Factors and Cytokines: ESM1, FGF18, TGFB3, VEGF.

Positive Regulation of Cell Proliferation: CDC25B, FGF18, FLT1, VEGF.

Negative Regulation of Cell Proliferation: BCL2, BTG2.

Regulation of Cell Growth: CHPT1, ESM1, IGFBP5, WISP1.

Other Genes Involved in Cell Growth and Proliferation: BUB1, CKS2, ESR1, MAPRE2, MKI67.

**Cell Differentiation:** NDRG1.

### **Apoptosis:**

Anti-Apoptosis: BAG1, BCL2, BIRC5, BNIP3, MYBL2.

Other Apoptosis Genes: RAD21, STK3, VEGF.

**DNA Repair:** BTG2, RAD21.

**Angiogenesis Factors:** FLT1, VEGF.

**Cell Adhesion Molecules:** WISP1.

**Extracellular Matrix (ECM) Molecules:** ADM, COL4A2, CP, ESM1, FGF18, FLT1, IGFBP5, MATN3, MMP11, MMP9, RBP3, TFRC, VEGF, WISP1.

**Protein Kinases:** BUB1, CCNE2, CDC42BPA, CKS2, FLT1, MELK, PCTK1, STK3, STK32B, STK6.

**Protein Phosphatases:** CDC25B, MTMR2.

**Transcription Factors and Regulators:** BTG2, ESR1, EZH2, HMGB3, IVNS1ABP, KIAA1442, MCM6, MLLT10, MYBL2, PGR, PIR, SEC14L2, TBX3, TRIP13.

**Proteases and Protease Inhibitors:** BIRC5, CTSL2, GGH, MMP11, MMP9, PCSK6, PITRM1, RBP3, TFRC, UCHL5.

**Other Potential Prognostic Markers:** ACADS, ALDH4A1, ALDH6A1, AP2B1, ASNS, ASPM, BBC3, BM039, C20orf103, C20orf28, C20orf46, CA9, CD68, CENPA, CIRBP, CTPS, DCK, DEGS, DEPDC1, DKFZP434B168, DKFZp762E1312, DLG7, ECT2, EGLN1, EIF2C2, ERP70, EVL, FBP1, FBXO31, FBXO5, FGD6, FLJ10134, FLJ10156, FLJ10511, FLJ10901, FLJ12150, FLJ21924, FLJ22341, FUT8, GBE1, GCN1L1, GMPS, GNAZ, GPR126, GSPM2, GRB7, GSTM1, GSTM3, HRASLS, HRB, IHPK2, ITR, KIAA0882, KIAA1181, KIAA1217, KIAA1324, KIAA1683, KIF14, KIF21A, KIF3B, KNTC2, KRT18, LCHN, LGP2, LOC388134, LOC56901, LYRIC, M160, MCCC1, MGAT4A, MIR, MLF1IP, MRPL13, MS4A7, MYRIP, NMB, NMU, NUSAP1, ODZ3, OXCT, PALM2-AKAP2, PAQR3, Peci, PEX12, PFKP, PGK1, PIB5PA, PLEKHA1, PRAME, PRC1, PRO2000, PSMD7, PTDSS1, PTPLB, QDPR, RAB27B, RAB6B, RAI2, RAMP, RASL11B, RPS4X, RRAGD, SACS, SCUBE2, SERF1A, SLC2A3, SLC7A1, Spc25, ST7, STMN1, STX1A, SYNCRIP, TK1, TMEFF1.

## **Storage Conditions**

***Please check the kit components immediately after you receive this package. SuperArray is only responsible for missing items reported within two (2) business days of receipt.***

GEArray microarrays are shipped at ambient temperature enclosed in either a HybTube or ExpressPak Storage Box. They should be stored at  $-20^{\circ}\text{C}$  upon receipt.

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## References

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