

**Supplementary Table 2** GSEA Hallmark Pathway

Subtype	Regulation	Hallmark Pathway	NES	FDR	p-val
Basal	Up-regulated	HALLMARK_UNFOLDED_PROTEIN_RESPONSE	1.863	0.051	0.004
Basal	Up-regulated	HALLMARK_MYC_TARGETS_V2	1.768	0.041	0.006
Basal	Up-regulated	HALLMARK_MYC_TARGETS_V1	1.847	0.020	0.006
Basal	Up-regulated	HALLMARK_E2F_TARGETS	1.860	0.026	0.010
Basal	Up-regulated	HALLMARK_UV_RESPONSE_UP	1.570	0.104	0.016
Basal	Up-regulated	HALLMARK_GLYCOLYSIS	1.682	0.052	0.016
Basal	Up-regulated	HALLMARK_MTORC1_SIGNALING	1.713	0.044	0.025
Basal	Up-regulated	HALLMARK_HYPOXIA	1.546	0.106	0.027
Basal	Up-regulated	HALLMARK_G2M_CHECKPOINT	1.724	0.048	0.030
Basal	Down-regulated	HALLMARK_PANCREAS_BETA_CELLS	-1.458	1.000	0.046
Her2	Up-regulated	HALLMARK_MTORC1_SIGNALING	1.680	0.507	0.011
Her2	Up-regulated	HALLMARK_GLYCOLYSIS	1.657	0.312	0.013
Luminal A	Up-regulated	HALLMARK_CHOLESTEROL_HOMEOSTASIS	1.713	0.082	0.003
Luminal A	Up-regulated	HALLMARK_IL2_STAT5_SIGNALING	1.693	0.080	0.003
Luminal A	Up-regulated	HALLMARK_INFLAMMATORY_RESPONSE	1.817	0.142	0.005
Luminal A	Up-regulated	HALLMARK_COMPLEMENT	1.805	0.079	0.005
Luminal A	Up-regulated	HALLMARK_INTERFERON_GAMMA_RESPONSE	1.803	0.053	0.014
Luminal A	Up-regulated	HALLMARK_KRAS_SIGNALING_UP	1.677	0.068	0.014
Luminal A	Up-regulated	HALLMARK_PI3K_AKT_MTOR_SIGNALING	1.582	0.089	0.018
Luminal A	Up-regulated	HALLMARK_IL6_JAK_STAT3_SIGNALING	1.674	0.062	0.024
Luminal A	Up-regulated	HALLMARK_MTORC1_SIGNALING	1.639	0.077	0.028
Luminal A	Up-regulated	HALLMARK_TNFA_SIGNALING_VIA_NFKB	1.595	0.088	0.030
Luminal A	Up-regulated	HALLMARK_HYPOXIA	1.419	0.154	0.033
Luminal A	Up-regulated	HALLMARK_ALLOGRAFT_REJECTION	1.733	0.087	0.033
Luminal A	Up-regulated	HALLMARK_UV_RESPONSE_UP	1.462	0.138	0.037
Luminal A	Up-regulated	HALLMARK_EPITHELIAL_MESENCHYMAL_TRANSITION	1.692	0.068	0.038
Luminal A	Up-regulated	HALLMARK_APICAL_JUNCTION	1.489	0.126	0.050
Luminal B	Up-regulated	HALLMARK_OXIDATIVE_PHOSPHORYLATION	2.012	0.007	0.000
Luminal B	Up-regulated	HALLMARK_MYC_TARGETS_V1	1.949	0.006	0.000
Luminal B	Up-regulated	HALLMARK_MYC_TARGETS_V2	1.913	0.008	0.000
Luminal B	Up-regulated	HALLMARK_FATTY_ACID_METABOLISM	1.794	0.024	0.000
Luminal B	Up-regulated	HALLMARK_MTORC1_SIGNALING	1.896	0.007	0.004
Luminal B	Up-regulated	HALLMARK_UNFOLDED_PROTEIN_RESPONSE	1.742	0.036	0.011
Luminal B	Up-regulated	HALLMARK_GLYCOLYSIS	1.543	0.097	0.022
Luminal B	Up-regulated	HALLMARK_ADIPOGENESIS	1.622	0.062	0.025
Luminal B	Up-regulated	HALLMARK_DNA_REPAIR	1.657	0.060	0.032
Luminal B	Up-regulated	HALLMARK_UV_RESPONSE_UP	1.457	0.133	0.042
Luminal B	Up-regulated	HALLMARK_PEROXISOME	1.417	0.149	0.049
Luminal B	Down-regulated	HALLMARK_NOTCH_SIGNALING	-1.843	0.043	0.004
Luminal B	Down-regulated	HALLMARK_WNT_BETA_CATENIN_SIGNALING	-1.587	0.302	0.039

