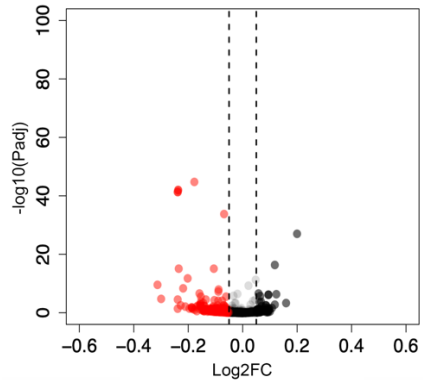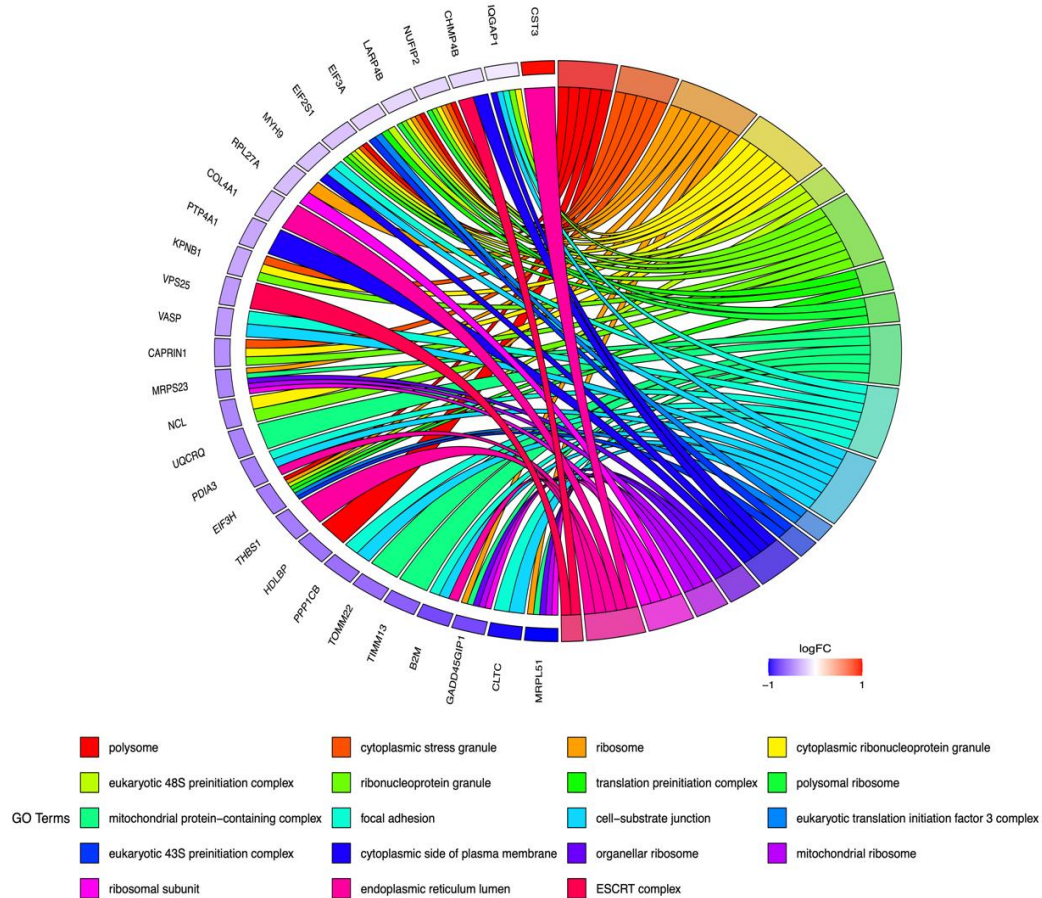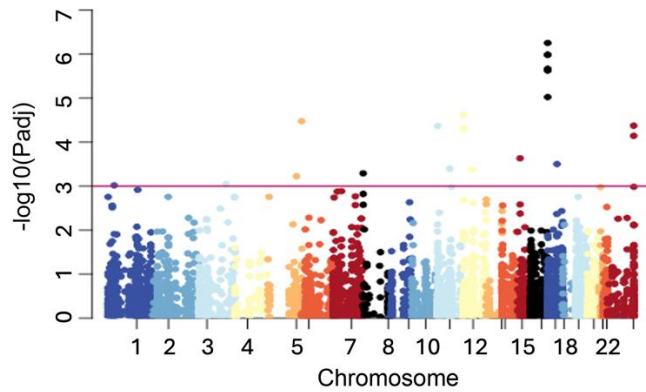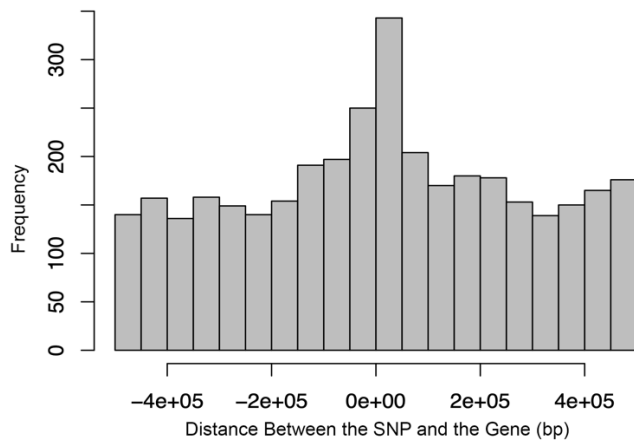**Supplementary Materials**

Supplementary Figure 1. Volcano Plot of Transcript Expression**.** (Red dots represent genes with significantly decreased PDUI values, black dots represent genes with significantly upregulated PDUI values, and gray dots indicate non-significant changes.)
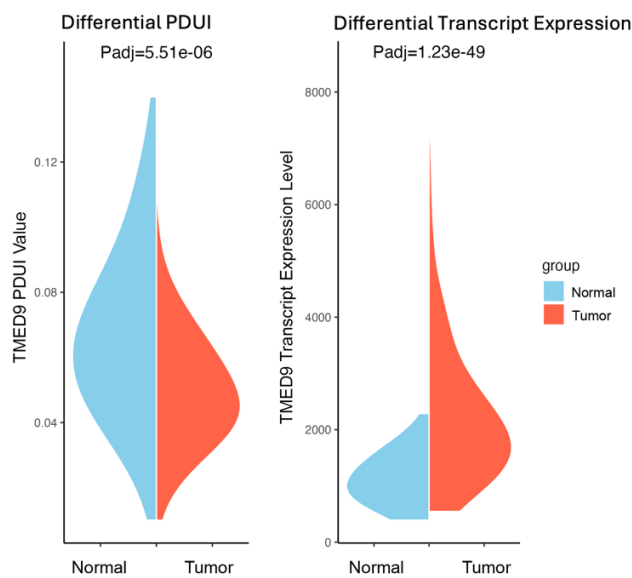

Supplementary Figure 2. GO Analysis Circos Plot of Differentially Expressed Transcripts with APA Events. (The circos plot visualizes relationships between Gene Ontology (GO) terms and differentially expressed transcripts with APA events. The colors represent different GO categories, and the connections indicate shared genes between GO terms.)

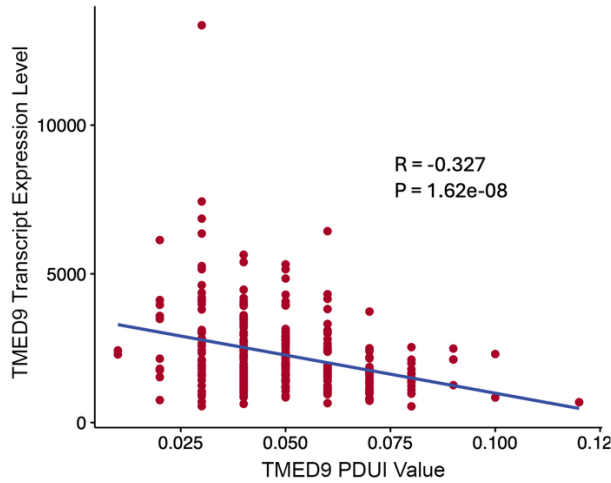**Supplementary Figure 3.** Manhattan Plot of SNPs Identified Through apaQTL Analysis. (The x-axis represents the chromosome number, and the y-axis shows the -log10(p-value). The red horizontal line indicates the significance threshold p < 0.001.)

Supplementary Figure 4. Distribution of Distance Relationships Between Genes and SNPs. (The x-axis represents the distance, and the y-axis shows the frequency of occurrences.)

Supplementary Figure 5. Comparison of PDUI and RNA Levels Between Tumor and Control Tissues. (Blue represents the control group, while red represents the tumor (TNBC) group.)

Supplementary Figure 6. Correlation Between PDUI Values and RNA Expression Levels of *TMED9* Gene. (The blue line represents the linear regression trend, with a correlation coefficient (R) of -0.327 and a p-value of 1.62e-08.)

Supplementary Table 1. Significant apaQTL Event with Padj < 0.05

Gene	SNP	Distance	p	Slope	Padj
BCAP31	rs2266890	281774	4.23491e-05	0.492058	0.025166363
	rs7350355	281797	7.1927e-05	0.481829	0.034298904
IFITM1	rs371738438	-107186	4.30261e-05	-0.865074	0.025166363
RPL13	rs13380730	799	1.04628e-06	0.533157	0.002328322
	rs12709088	919	5.57955e-07	0.534498	0.002328322
	rs12932337	1337	1.02242e-06	0.526897	0.002328322
	rs12709088	919	2.14913e-06	0.47667	0.003170312
	rs12932337	1337	2.37441e-06	0.47877	0.003170312
	rs13380730	799	9.46919e-06	0.456178	0.010536052
TMED9	rs3749822	36427	3.33395e-05	0.332787	0.0247305
TPI1	rs10849541	53111	2.40028e-05	-0.591861	0.020030337
	rs10849541	53111	2.40028e-05	-0.591861	0.020030337
	rs3741922	52824	4.90058e-05	-0.552557	0.025166363
	rs3741922	52824	4.90058e-05	-0.552557	0.025166363