

**Figure S1** GO and KEGG analyses of the screened 2,207 up- and down-regulation molecules in HCC. GO, Gene Ontology; KEGG, Kyoto Encyclopedia of Genes and Genomes; HCC, hepatocellular carcinoma.



Figure S2 The correlation of the expression of candidate molecules with clinical stage of HCC patients. Analyses were performed using the F test, and differences between the two groups were considered significant when Pr (>F) was less than 0.05. *GPC3*, *glypican 3*; *AKR1B10*, *aldo-keto reductase family 1 member B10*; *MDK*, *midkine*; *PIGY*, *pbosphatidylinositol glycan anchor biosynthesis class Y*; *UBD*, *ubiquitin D*; *CCL20*, *C-C motif chemokine ligand 20*; HCC, hepatocellular carcinoma.



**Figure S3** The relationship between candidate molecule expression and prognosis of HCC patients. The median expression values were used for group cutoff. The survival was analyzed using the log-rank test. The P value less than 0.05 indicates significant difference. The "n" represents number of samples. TPM, transcripts per kilobase million; HR, hazard ratio; *GPC3, glypican 3; AKR1B10, aldo-keto reductase family 1 member B10; MDK, midkine; PIGY, phosphatidylinositol glycan anchor biosynthesis class Y; UBD, ubiquitin D; CCL20, C-C motif chemokine ligand 20;* HCC, hepatocellular carcinoma.



**Figure S4** The GO annotation and KEGG pathway enrichments of *CDKN2A*-related top 500 positively and negatively associated genes in HCC cohorts. GO, Gene Ontology; KEGG, Kyoto Encyclopedia of Genes and Genomes; *CDKN2A*, *cyclin-dependent kinase inhibitor 2A*; HCC, hepatocellular carcinoma.