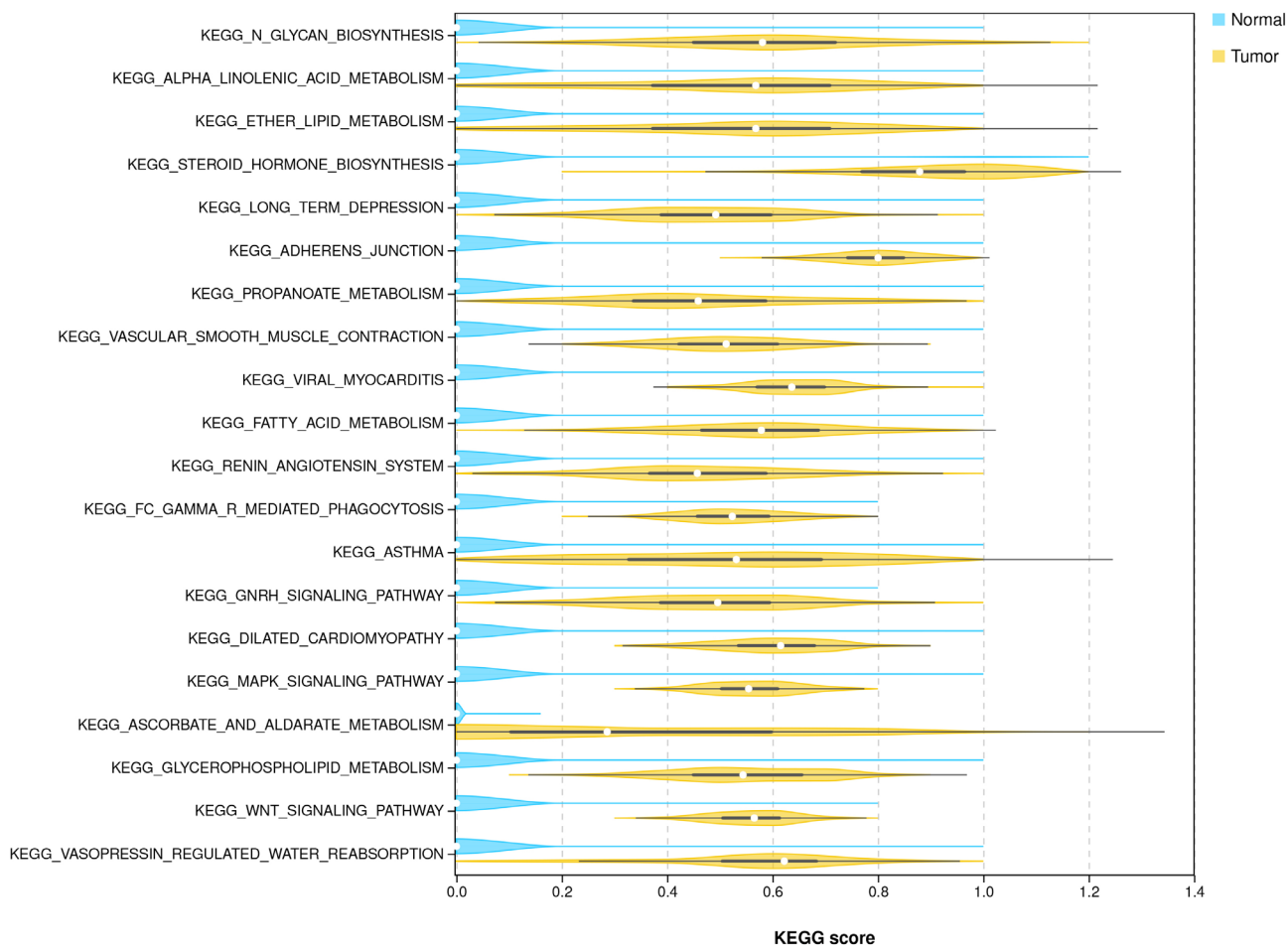
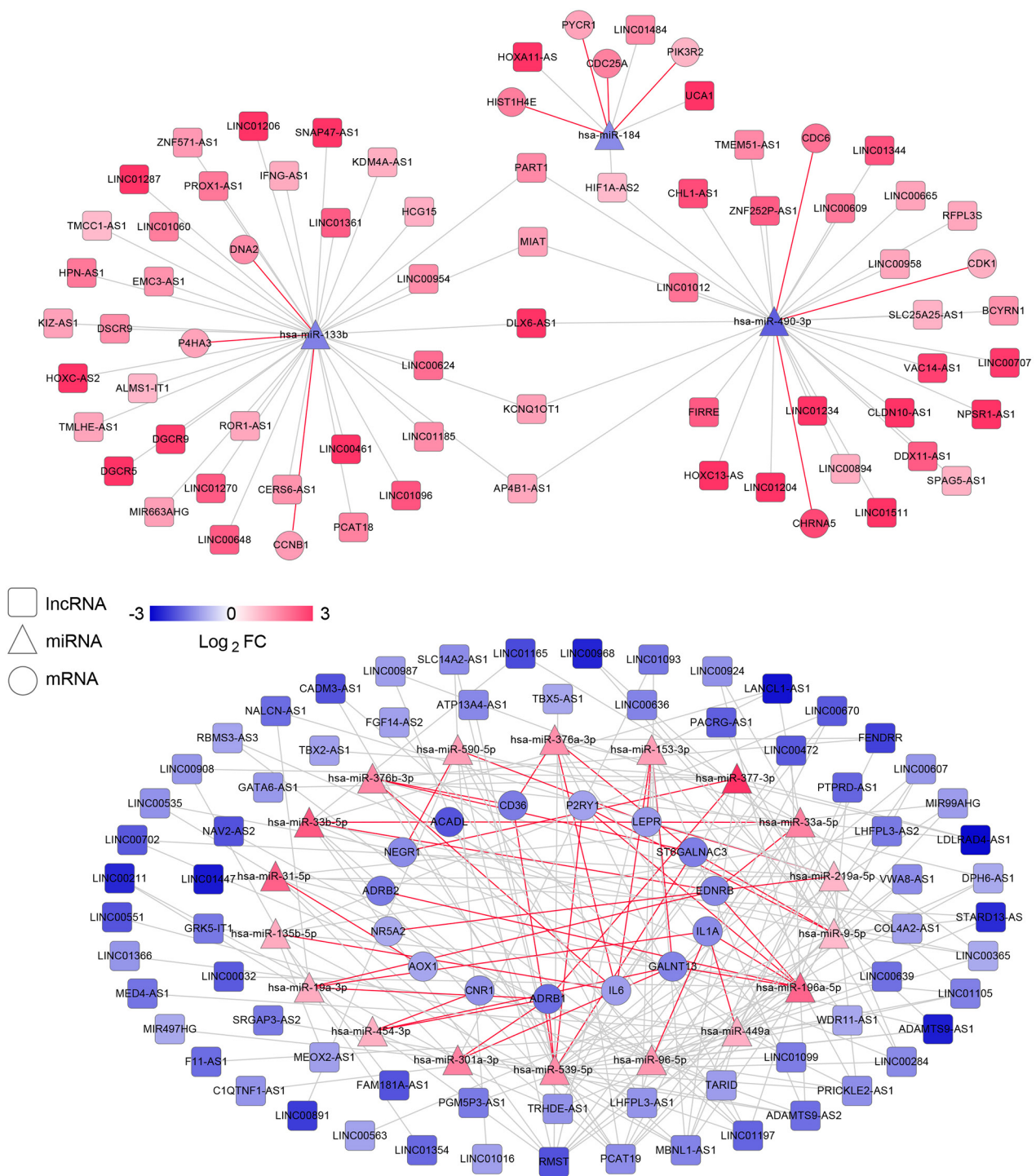


**Figure S1** The heatmap of GSVA enrichment analysis based on the expression of DEGs. GSVA, gene set variation analysis; DEGs, differentially expressed genes.



**Figure S2** The violin plot of GSVA enrichment analysis based on the expression of the DEGs. The horizontal axis suggests the score of KEGG pathway, the vertical axis indicates the KEGG entry name. Blue and yellow represented the normal and tumor group separately. GSVA, gene set variation analysis; DEGs, differentially expressed genes.



**Figure S3** ceRNA regulation network. The square, triangle, and circle represent DElncRNA, DEMiRNA and DEMRNA respectively. The change in color from blue to red indicates significant down-regulation to up-regulation of logFC, the gray and red connecting lines suggest the DElncRNA-DEMiRNA and the DEMiRNA-DEMRNA network separately. ceRNA, competitive endogenous RNA; DElncRNA, differentially expressed lncRNAs; DEMiRNA, differentially expressed miRNAs; DEMRNA, differentially expressed mRNAs.