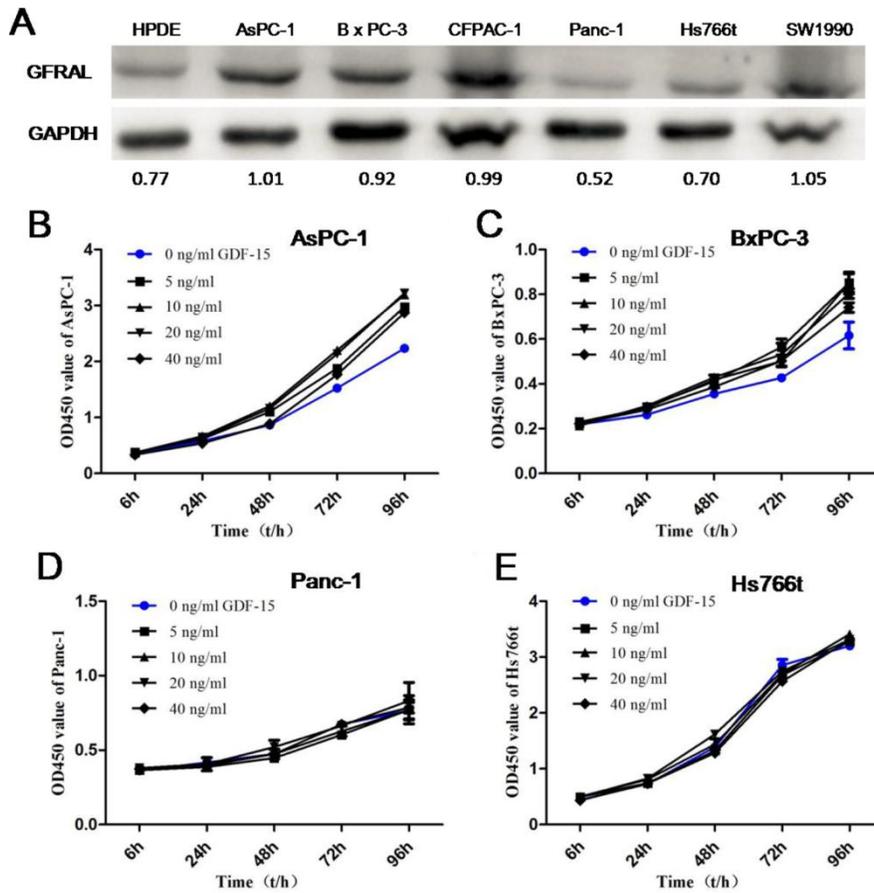
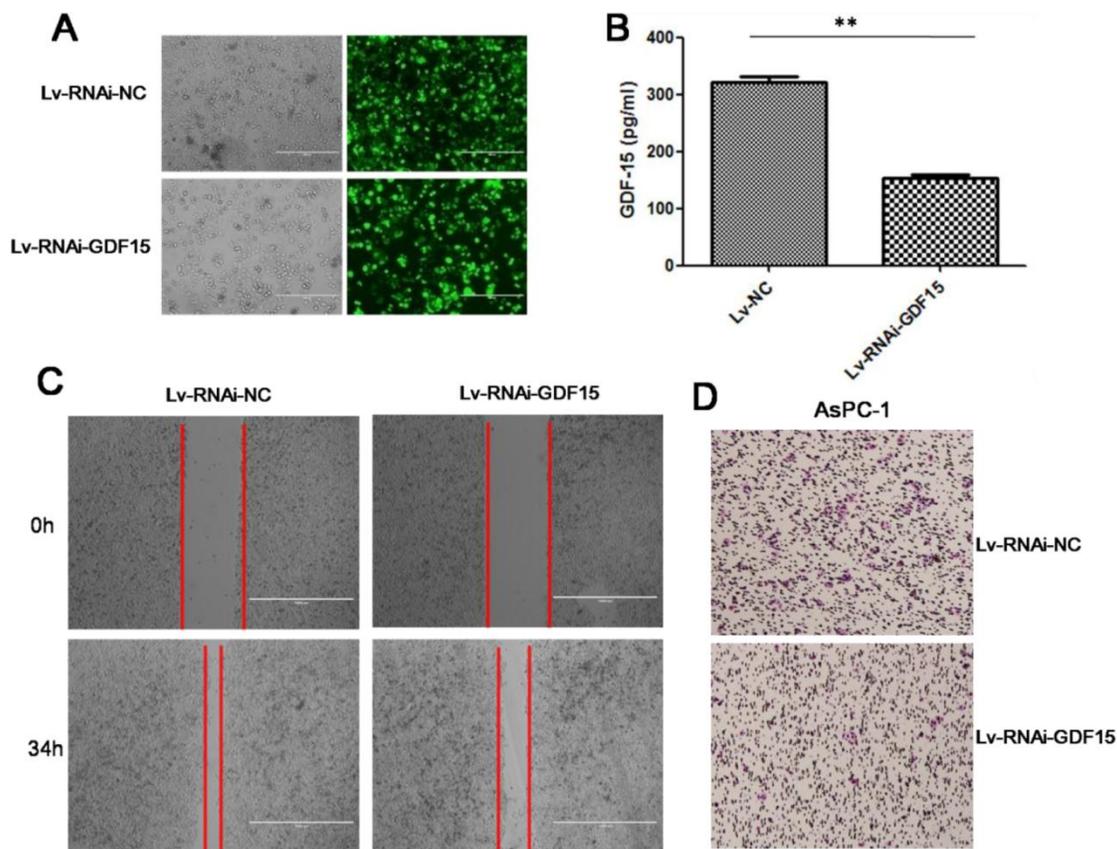


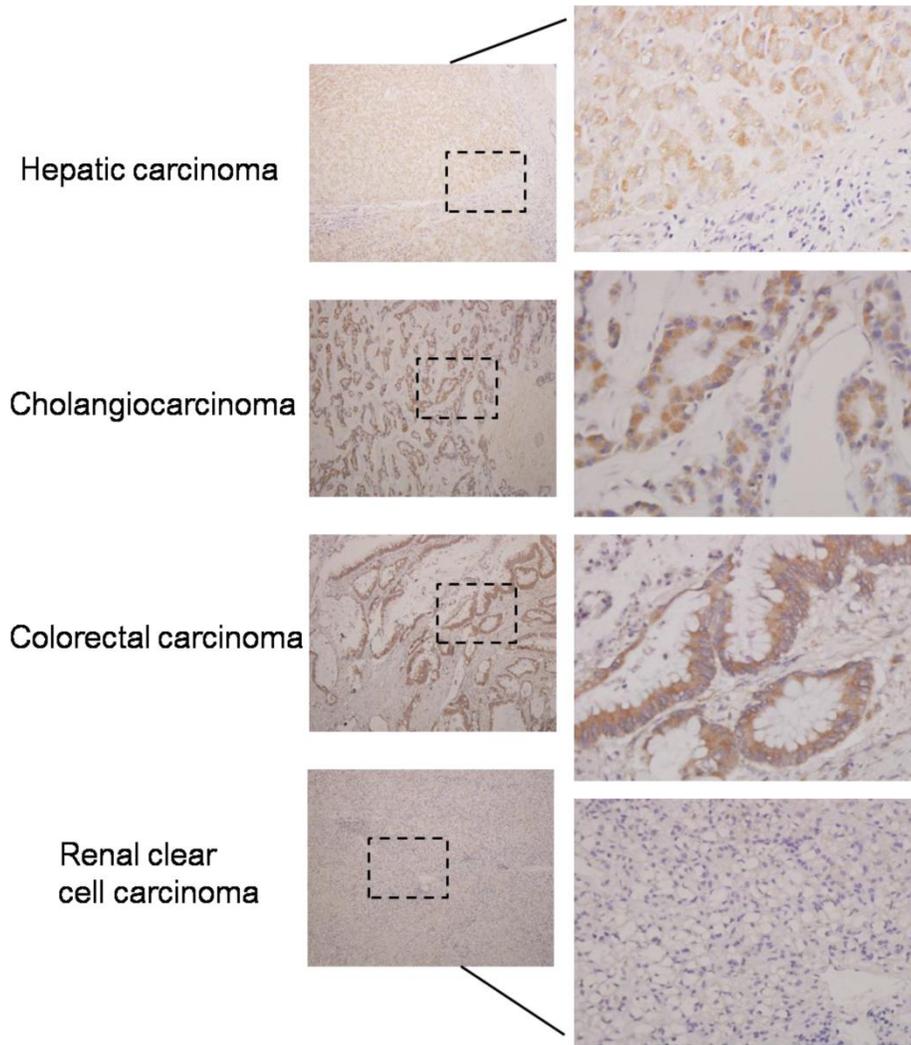
SUPPLEMENTARY FIGURES



**Supplementary Figure 1. Pancreatic cancer cells with higher GFRAL expression are more sensitive to GDF-15 protein.** (A) WB assays find that, compared with the normal pancreatic cell HPDE, GFRAL protein is upregulated in AsPC-1, BxPC-3, and downregulated in Panc-1, Hs766t. (B, C) Pancreatic cancer cells ,AsPC-1 and BxPC-3, are sensitive to GDF-15 protein. (D, E) Panc-1 and Hs766t cells are insensitive to GDF-15 protein.



**Supplementary Figure 2. Pancreatic cancer cell AsPC-1 migration and invasion were significantly decreased after downregulation of GDF-15 expression.** (A) The efficiency of lentivirus infection was detected by fluorescence microscope in AsPC-1 cells. (B) ELISA assays indicated that GDF-15 expression was downregulated by LV-RNAi-GDF15 significantly. (C, D) Wound and transwell assays showed that cell migration and invasion were significantly decreased after downregulation of GDF-15 expression.



**Supplementary Figure 3. Immunohistochemistry (IHC) assays showed that GFRAL protein is expressed in hepatic carcinoma, cholangiocarcinoma, colorectal carcinoma tissues, but renal clear cell carcinoma tissues.**