

**SUPPLEMENTARY FIG. S2.** The ability of hepatoblasts to develop into duct-like cells. (**A**) Morphology and behavior of hepatoblasts cultured on Matrigel. The cells were plated onto 12-well plates coated with a thin layer of Matrigel and examined at the selected time intervals by phase-contrast microscopy. Scale bar =  $100 \, \mu m$ . The graph is representative of three separate experiments. (**B**) Immunocytochemical detection of ductal cell markers. The hepatoblasts were cultured on Matrigel for 7 days and stained with antibodies against CK-18, CK-19, and GGT, and the nuclei (*blue*) were stained with DAPI. Scale bar =  $100 \, \mu m$ . The graph is representative of three separate experiments. (**C**) Expression of cholangiocyte marker genes in the Matrigel-embedded culture. Expression of the cholangiocyte markers (*CK-7*, *CK-18*, and *CK-19*) and immature hepatocyte markers (*AFP* and *DLK*) was detected using qRT-PCR. The results are the means  $\pm$  SDs (n=4). \*P<0.05 compared with the cells at day 0 without Matrigel.