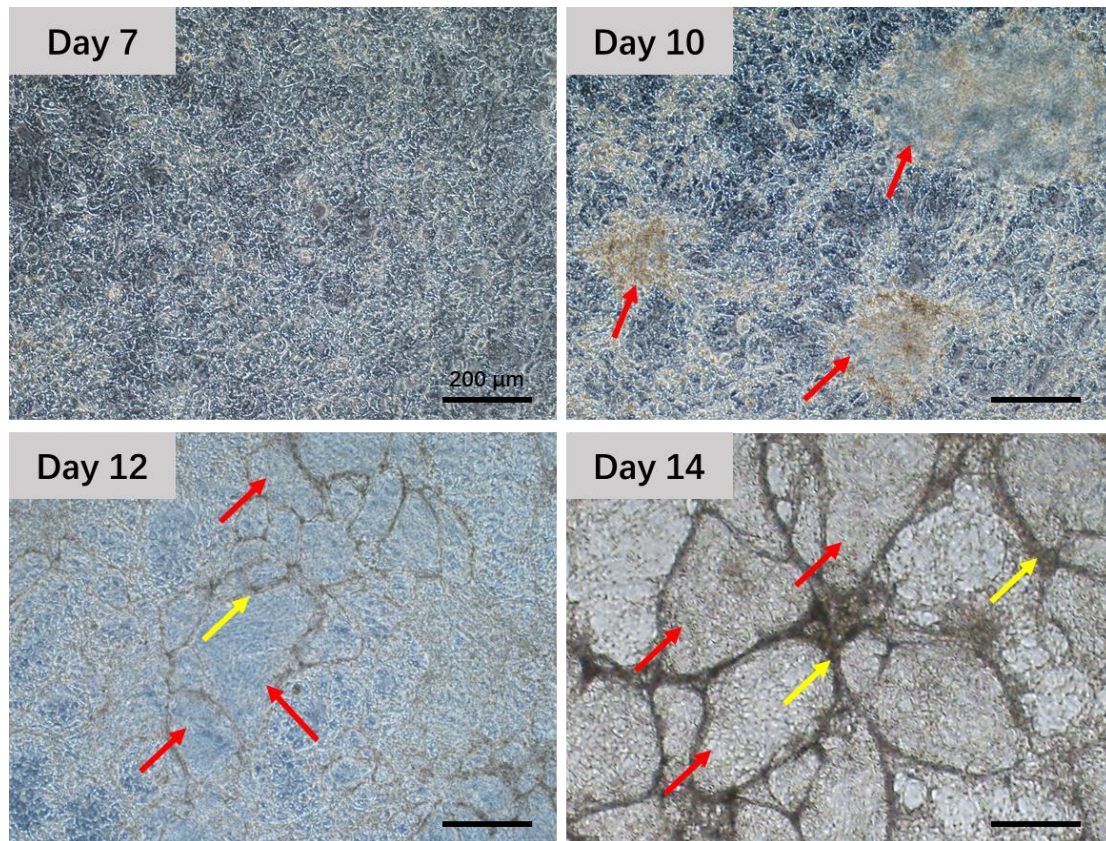
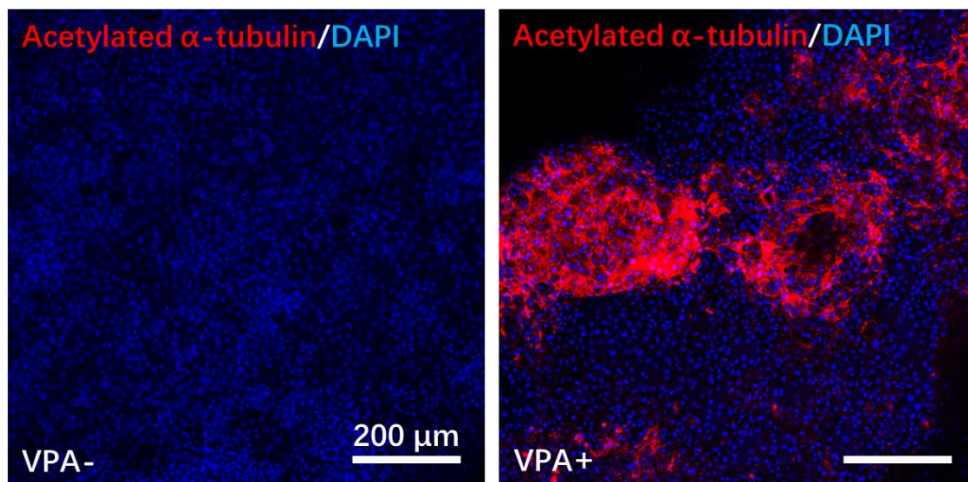


**Effect of valproic acid on promoting the differentiation of human embryonic stem cells into cholangiocyte-like cells**

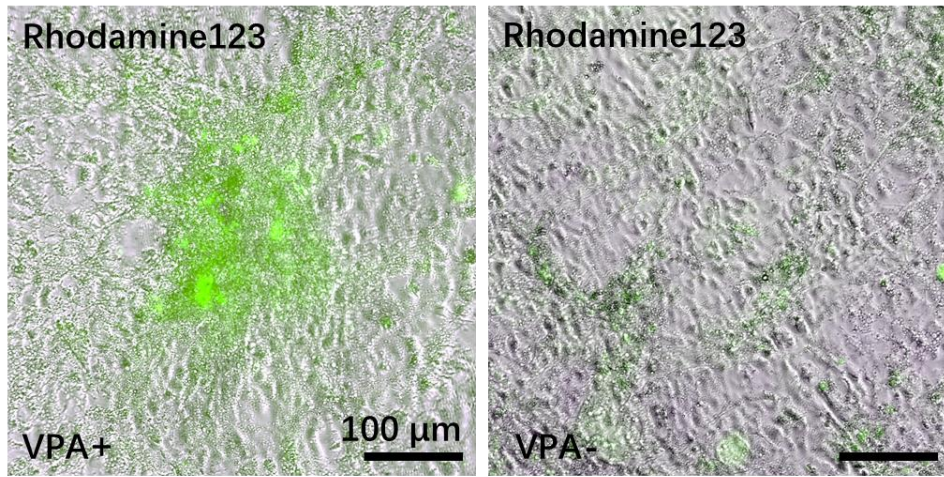
**Supplementary Figures**



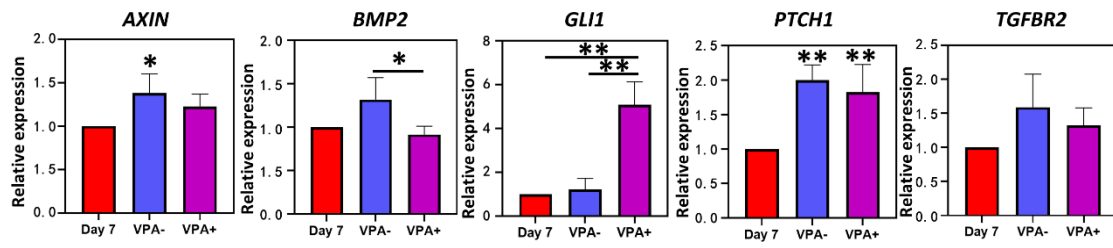
Supplementary Figure 1. Cystic and tubular structures increased during culture. Red arrow: cystic structure. Yellow arrow: tubular structure.



Supplementary Figure 2. Immunostaining of Acetylated  $\alpha$ -tubulin in differentiated cells with or without VPA treatment.



Supplementary Figure 3. The uptake of Rhodamine 123 in differentiated cells with or without VPA treatment.



Supplementary Figure 4. Real-time PCR results of the expression of marker genes of BMP, Hedgehog, TGF- $\beta$  and Wnt signaling pathway. (n=3, \* indicates p < 0.05, \*\* indicates p < 0.01).

## Supplementary Tables

Supplementary Table 1. PCR primer used for the quantification of markers

Gene	Forward (5'-3')	Reverse (5'-3')
<i>OCT4</i>	CTTGAATCCCGAATGGAAAGGG	GTGTATATCCCAGGGTGATCCTC
<i>FOXA2</i>	GCACTCGGCTTCCAGTATGC	GCGTTCATGTTGCTCACGGA
<i>HNF-4<math>\alpha</math></i>	GTACTIONCTGCAGATTTAGCC	CTGTCCTCATAGCTTGACCT
<i>AFP</i>	AAATGCGTTTCTCGTTGCTT	GCCACAGGCCAATAGTTTGT
<i>GAPDH</i>	ACAACCTTTGGTATCGTGGAAGG	GCCATCACGCCACAGTTTC
<i>AE2</i>	TCCTCCCACCACATCCATCA	CTCCTCAATGGTTCGGGGTTTC
<i>AQP1</i>	TAACCTGCTCGGTCCTTTG	AGTCGTAGATGAGTACAGCCAG
<i>CFTR</i>	TGCCCTTCGGCGATGTTTTT	GTTATCCGGGTCATAGGAAGCTA
<i>SSR2</i>	CTTCACCTCGGCAACAATTACT	GGGGAGAATCGCCTGTCAAAC
<i>CK19</i>	GATGCTGTTTGGCATGGGCA	CGTAGATGGGGGTCAGGTCG
<i>NOTCH1</i>	TGGACCAGATTGGGGAGTTC	GCACACTCGTCTGTGTTGAC
<i>NOTCH2</i>	CAACCGCAATGGAGGCTATG	GCGAAGGCACAATCATCAATGTT
<i>HES1</i>	TCAACACGACACCGGATAAAC	GCCGCGAGCTATCTTTCTTCA
<i>HEY1</i>	GAAGTTGCGCGTTATCTGAGC	ATGCGAAACCAGTCGAACTCG
<i>SOX9</i>	AGCGAACGCACATCAAGAC	CTGTAGGCGATCTGTTGGGG

Supplementary Table 2. Antibodies used for the immunostaining

Antibody	Catlog number
OCT4	Abcam: Ab181557
HNF4 $\alpha$	Abcam: Ab41898
AFP	Abcam: Ab253704
CK7	Abclonal: A2574
CK19	Abclonal: A0247
Notch2	Abclonal: A0560
Phalloidin	Abcam: Ab176756
Goat-anti rabbit secondary antibody	Abcam: Ab150077
Goat-anti rat secondary antibody	Abcam: Ab150165