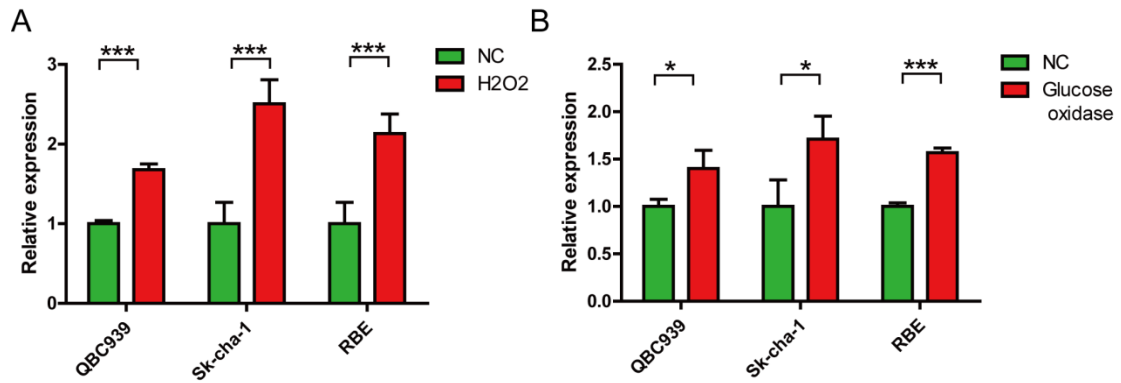
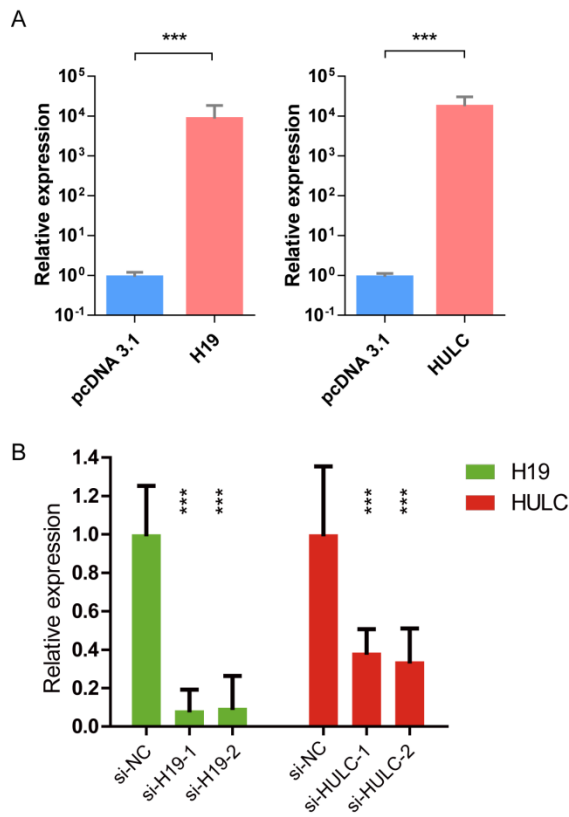


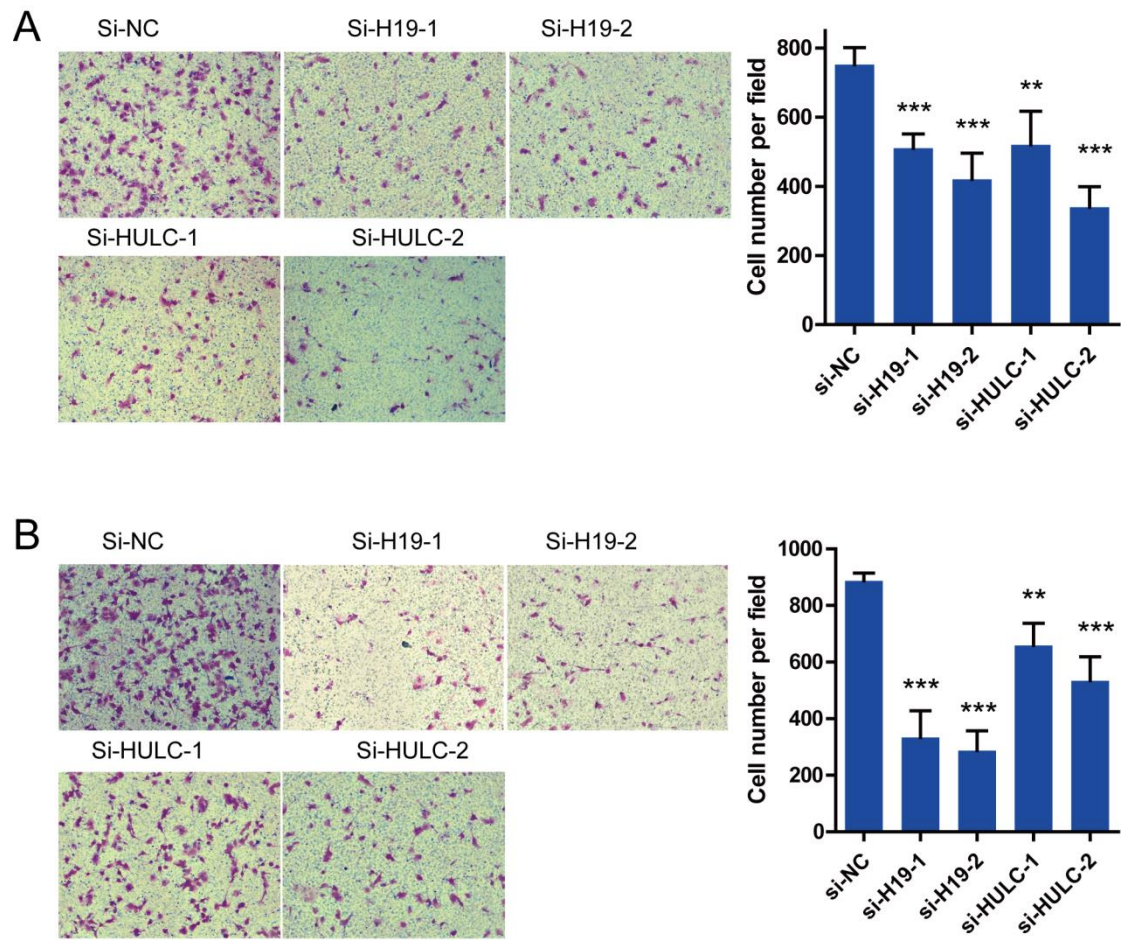
LncRNAs H19 and HULC, activated by oxidative stress, **promote** cell migration and invasion in cholangiocarcinoma through a ceRNA manner



**Figure S1.** The expression of heme oxygenase-1(HO-1) had increased significantly under the oxidative stress condition. HO-1 stimulated by short-term oxidative stress using H<sub>2</sub>O<sub>2</sub> (A) and long-term oxidative stress using glucose oxidase (B) in QBC939, SK-cha-1 and RBE cells.

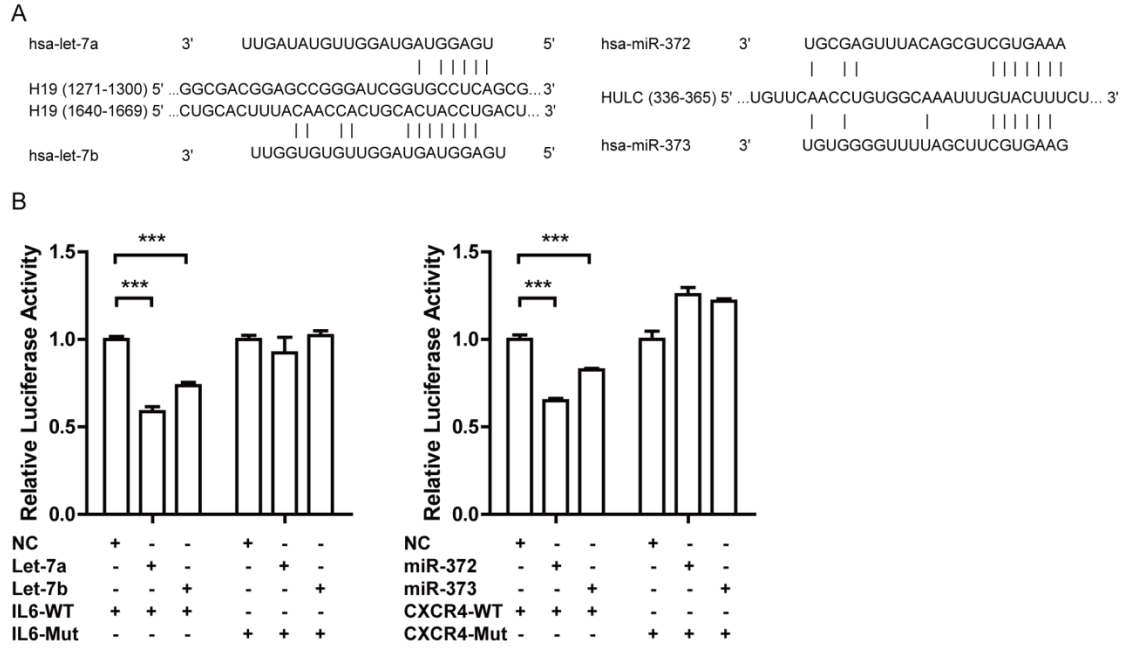


**Figure S2.** qPCR validations of forced expressed H19 and HULC in CCA cells (A), and knockdown of lncRNAs, H19 and HULC in RBE cells by SiRNAs.

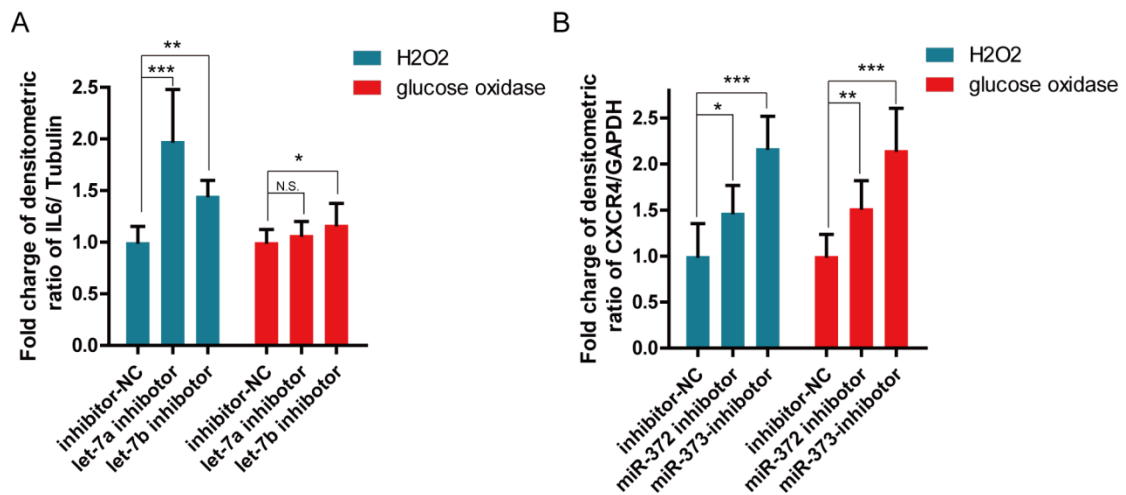


**Figure S3. Knockdown of H19 and HULC expression decreased the ability of migration and invasion in CCA cells.**

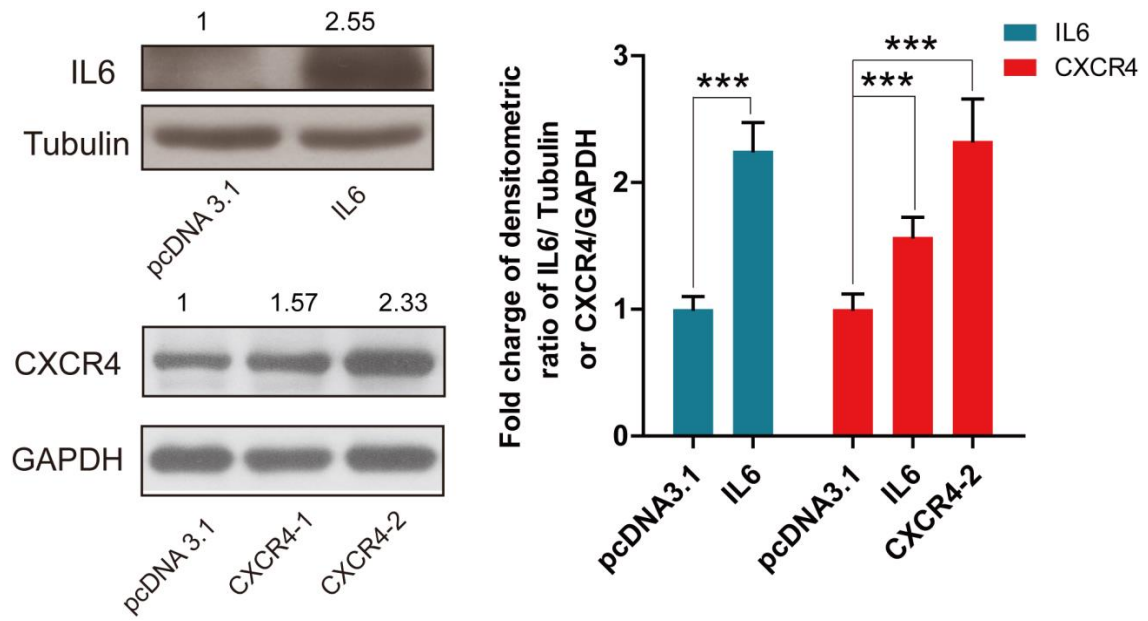
A. Migration assays of CCA cells. B. Invasion assays of CCA cells.



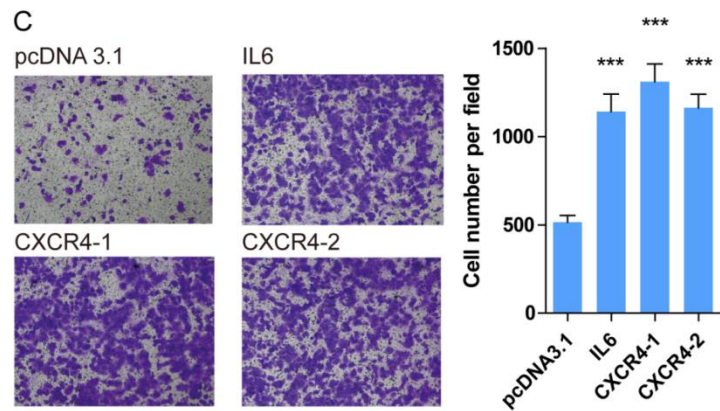
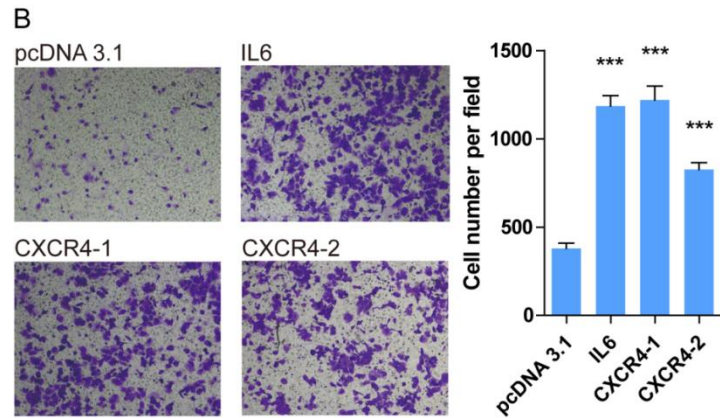
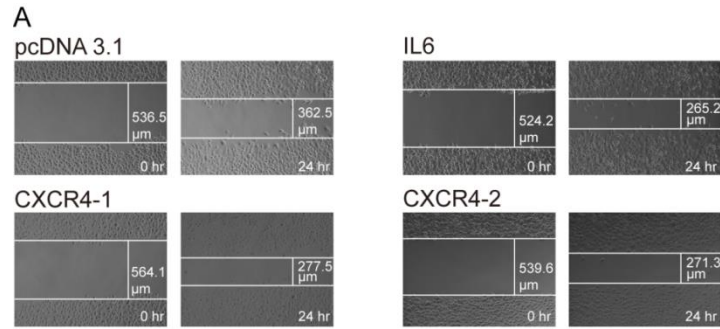
**Figure S4.** MiRNAs targeted Inflammation associated genes, IL6 and CXCR4. A. Schematic representation of the interaction between miRNAs and H19 or HULC. B. Let-7a/let-7b and miR-372/miR-373 suppressed luciferase activity of vectors with 3' UTR of IL6 and CXCR4 in RBE cells.



**Figure S5.** The histogram of miRNA downregulation by transfecting the miRNA inhibitors into RBE cells under oxidative stress. The expression levels of IL6 (A) and CXCR4 (B) increased significantly.



**Figure S6.** Western Blot validations of forced expressed IL6 and CXCR4 in CCA cells. CXCR4-1 and CXCR4-2 represent two alternative splicing of CXCR4. The right histogram of relative gray values represented the protein level.



**Figure S7.** Enforced IL6 and CXCR4 expression increased the ability of invasion in CCA cells. A Scratch wound healing assays of CCA cells. B Migration assays of CCA cells. C Invasion assays of CCA cells.

**Table S1.** Primer sequence for qPCR and vector construction.

Primer Name	Sequence 5' to 3'
<b>Primers for qPCR</b>	
qHULC-Forward	GCAAGCCAGGAAGAGTCGTC
qHULC-Reverse	GCTGTGCTTAGTTTATTGCCAGG
qH19-Forward	TTCCAGGCAGAAAGAGCAAGAGGGC
qH19-Reverse	AGACGTCCTGCTGCAACTCCCGAG
qIL6-Forward	GGTACATCCTCGACGGCATCTC
qIL6-Reverse	CTCTGGCTTGTTCTCACTACT

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qCXCR4-Forward	CACGCCACCAACAGTCAGA
qCXCR4-Reverse	ACAATACCAGGCAGGATAAGG
qGAPDH-Forward	GCTGAACGGGAAGCTCACTG
qGAPDH-Reverse	GTGCTCAGTGTAGCCCAGGA
qHO-1- Forward	CAACATTGAGCTGTTTGAGG
qHO-1- Reverse	TGGTCTTTGTGTTCTCTGTC

**Primers for full-length amplification**

HULC-Forward	AGTCGAATTCATGGGGGTGGAACCTCATGATGGAAT
HULC-Reverse	GATCCTCGAGTTAAGAATGGACATCATTTTATTTTC
IL6-Forward	CGCGGATCCAGGACTGGAGATGTCTGAGGCT
IL6-Reverse	CCGGAATTCTGATCTGGCTCTGAAACAAAGG
CXCR4-1-Forward	AGTCGAATTCATGGAGGGGATCAGTATA
CXCR4-2-Forward	AGTCGAATTCATGTCCATTCCTTTGCCT
CXCR4-Reverse	GATCCTCGAGTTAGCTGGAGTGAAAACCTTG

**Oligonucleotides for 3' UTR construction**

CXCR4-miR372373-WT-Sense	TCGAGCTTAAGACGTGATTTTGCTGTAGAAGATGGCAC TTATAACCAAAGCCCAAAGGC
CXCR4-miR372373-WT-Antisense	GGCCGCCTTTGGGCTTTGGTTATAAGTGCCATCTTCTA CAGCAAATCACGTCTTAAGC
CXCR4-miR372373-Mut-Sense	TCGAGCTTAAGACGTGATTTTGCTGTAGAAGATGGTAT TCATAACCAAAGCCCAAAGGC
CXCR4-miR372373-Mut-Antisense	GGCCGCCTTTGGGCTTTGGTTATGAATACCATCTTCTA CAGCAAATCACGTCTTAAGC
IL6-let7ab-WT-Sense	TCGAGCCAGATCATTTCTTGAAAGTGTAGGCTTACCT CAAATAAATGGCTAACTTAGC
IL6-let7ab-WT-Antisense	GGCCGCTAAGTTAGCCATTTATTTGAGGTAAGCCTACA CTTTCCAAGAAATGATCTGGC
IL6-let7ab-Mut-Sense	TCGAGCCAGATCATTTCTTGAAAGTGTAGGCTTTTCGT GAAATAAATGGCTAACTTAGC
IL6-let7ab-Mut-Antisense	GGCCGCTAAGTTAGCCATTTATTTACGAAAGCCTACA CTTTCCAAGAAATGATCTGGC

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