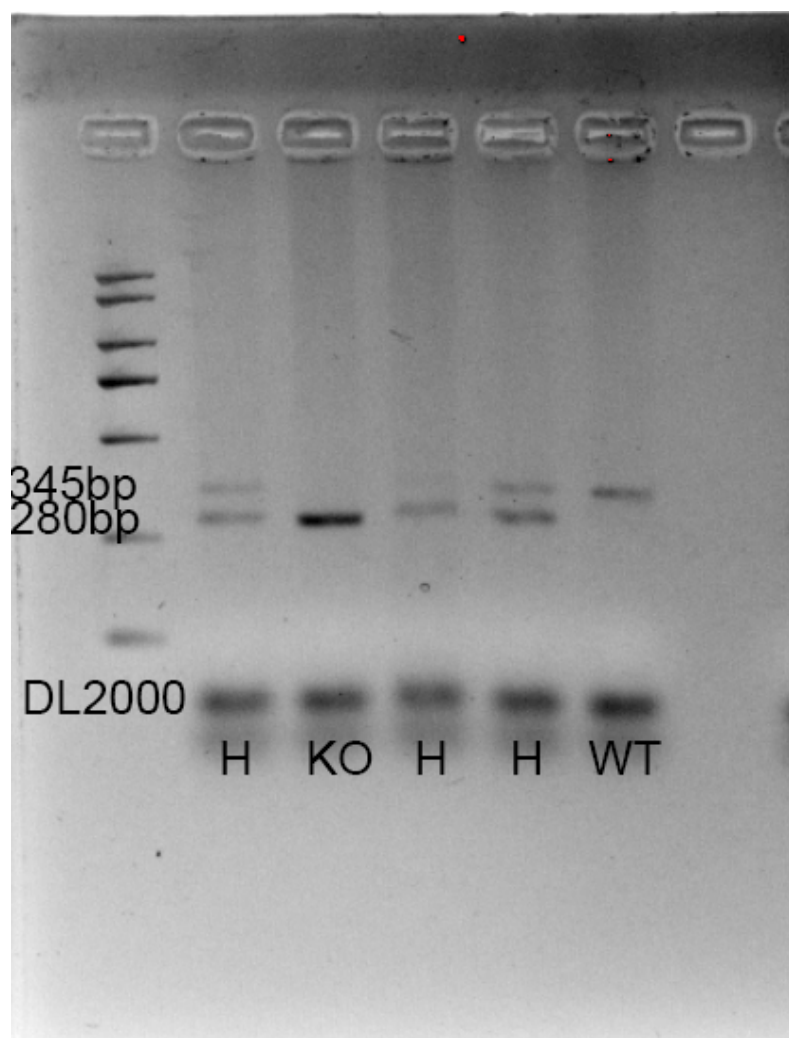
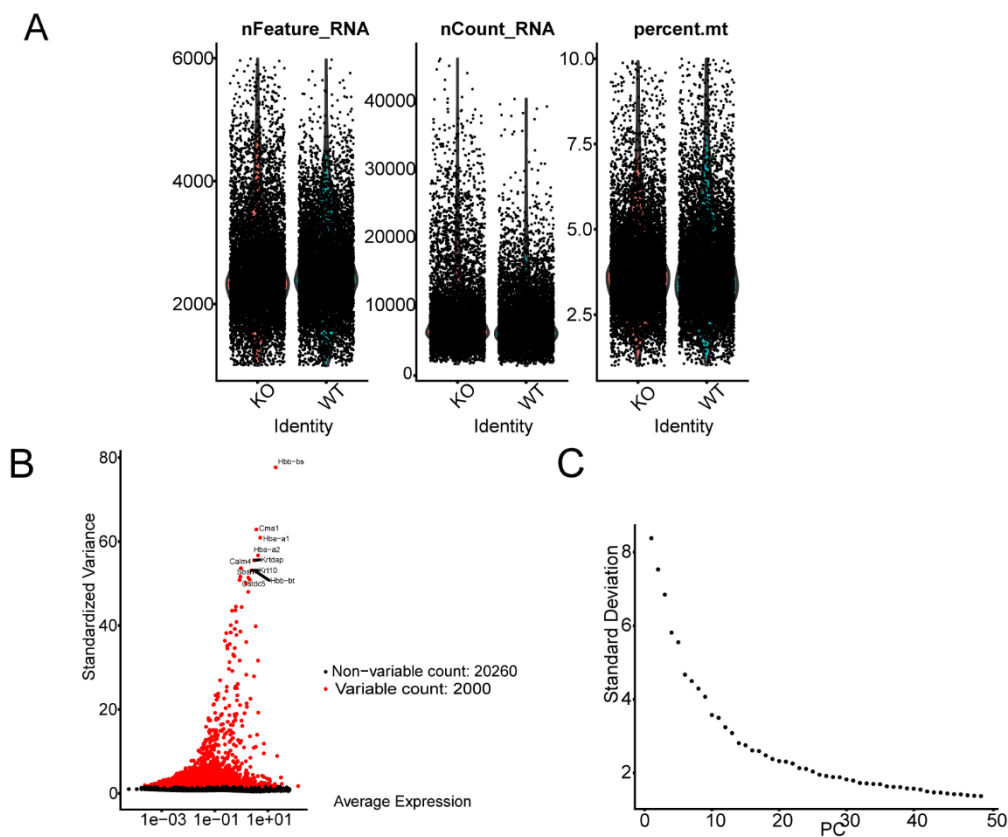




Supplementary Figure 1 The genotype of the mouse embryos. The single band detected at 280 bp was the *Cd271* knockout embryo, and at 345 bp was the wildtype embryo. Two bands appeared simultaneously were *Cd271* heterozygote embryo. KO = *Cd271* knockout, WT = wildtype, H= heterozygote.



Supplementary Figure 2 Quality control of scRNA-seq. A: We filtered poor-quality cells; B: Standard deviation scatterplot showing genes with significantly different cells; C: Using PCA for dimensionality reduction, the number of PCs is determined by the inflection point of the elbow plot.

Supplementary Table 1 The primers sequence

Gene name	Forward primer	Reverse primer
<i>Cd271 wt</i>	TGTTACGTTCTCTGACGTGGTGAG	TCAGCCCAGGGTGTGCACTC
<i>Cd271 mut</i>	VITGGGTGGAGAGGCTATTC	AGGTGAGATGACAGGAGATC
<i>Colla1</i>	GTGTCCCTACTCAGCCGTC	GAGGCCTCGGTGGACATTAG
<i>Col4a1</i>	AACAACGTCTGCAACTTCGC	CTTCACAAACCGCACACCTG
<i>Col6a1</i>	TGGCTCACCTGAGCTCCTAT	ACGGATAGGTTAGGGGCAGT
<i>Mdk</i>	ATCGAGCAGTGAGCGAGATG	GCTGCCCCΠCΠCACCPCT
<i>Ptn</i>	ATGTCGTCCCAGCAATATCA	ΠCTCΠCTTGACTCCGC
<i>Gapdh</i>	AAGAGGGATGCTGCCCTTAC	TACGGCCAAATCCGTTTACA