

Supporting figures

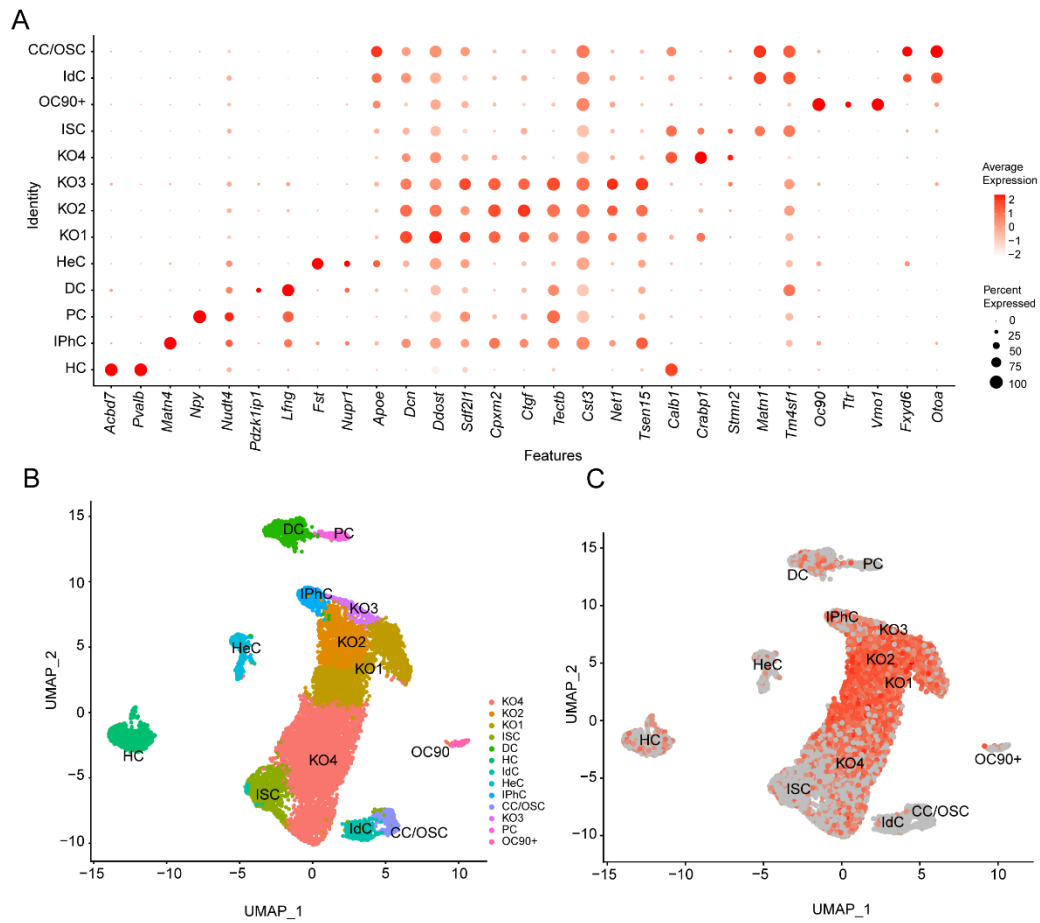


Figure S1. Single-cell transcriptomic analysis reveals the expression pattern of *Dkk3* in the P1 mice cochlea. (A-B) Dot plot (A) and UMAP plot (B) showing 12 identified clusters in the P1 mice cochlea. **(C)** The feature plot highlights the *Dkk3* gene that was distributed in identified clusters in the P1 mice cochlea. KO1/2/3/4, Kölliker’s organ cells 1/2/3/4; ISC, Inner sulcus cells; DC, Deiters' cells; HC, Hair cell; IdC, Interdental cells; HeC, Hensen’s cells; IPhC, Inner phalangeal cells; CC/OSC, Claudius Cells/outer Sulcus Cells; PC, Pillar cells; OC90+, OC90 positive cells.

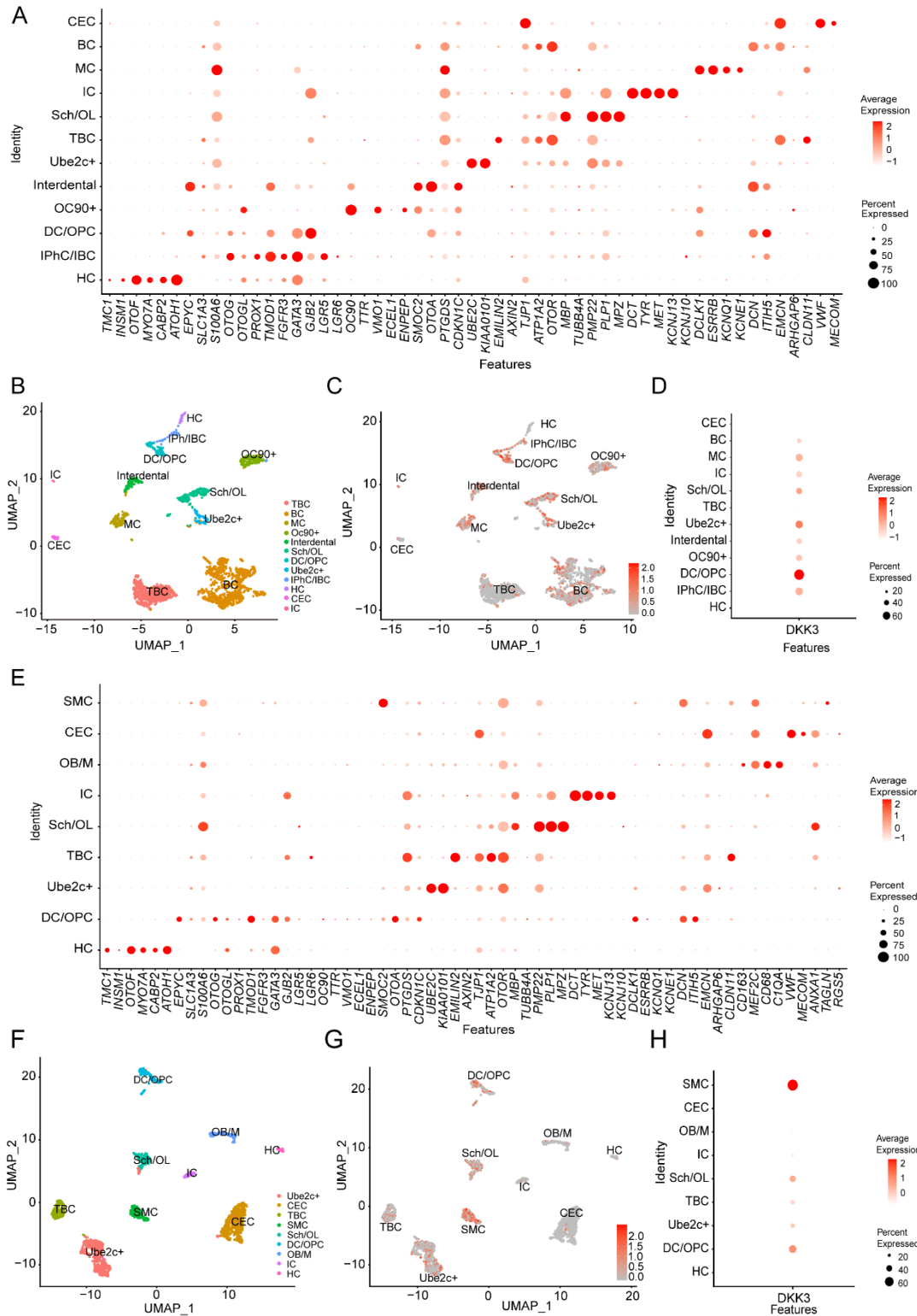


Figure S2. Single-cell transcriptomic analysis reveals the expression pattern of *DKK3* human fetal cochlea. (A-B) Dot plot (A) and UMAP plot (B) showing 12 identified clusters in the 15-week human cochlea. **(C-D)** Feature plot (C) and dot plot (D) highlight the *DKK3* gene that was distributed in identified clusters in the 15-week

human cochlea. **(E-F)** Dot plot (E) and UMAP plot (F) showing 9 identified clusters in the 17-week human cochlea. **(G-H)** Feature plot (G) and dot plot (H) highlight the *DKK3* gene, which was distributed in identified clusters in the 17-week human cochlea. TBC, Tympanic border cells; BC, Basal stria cells; MC, Marginal stria cells; Sch/OL, Schwann cell/ Oligodendrocyte; DC/OPC, Deiters' cells/ outer pillar cells; Ube2c+, Ube2c positive cells; IPhC/IBC, Inner phalangeal cells/ Inner border cells; CEC, Capillary endothelial cells; IC, Intermediate stria cells; SMC, Smooth muscle cells; OB/M, Osteoblast/Macrophage.

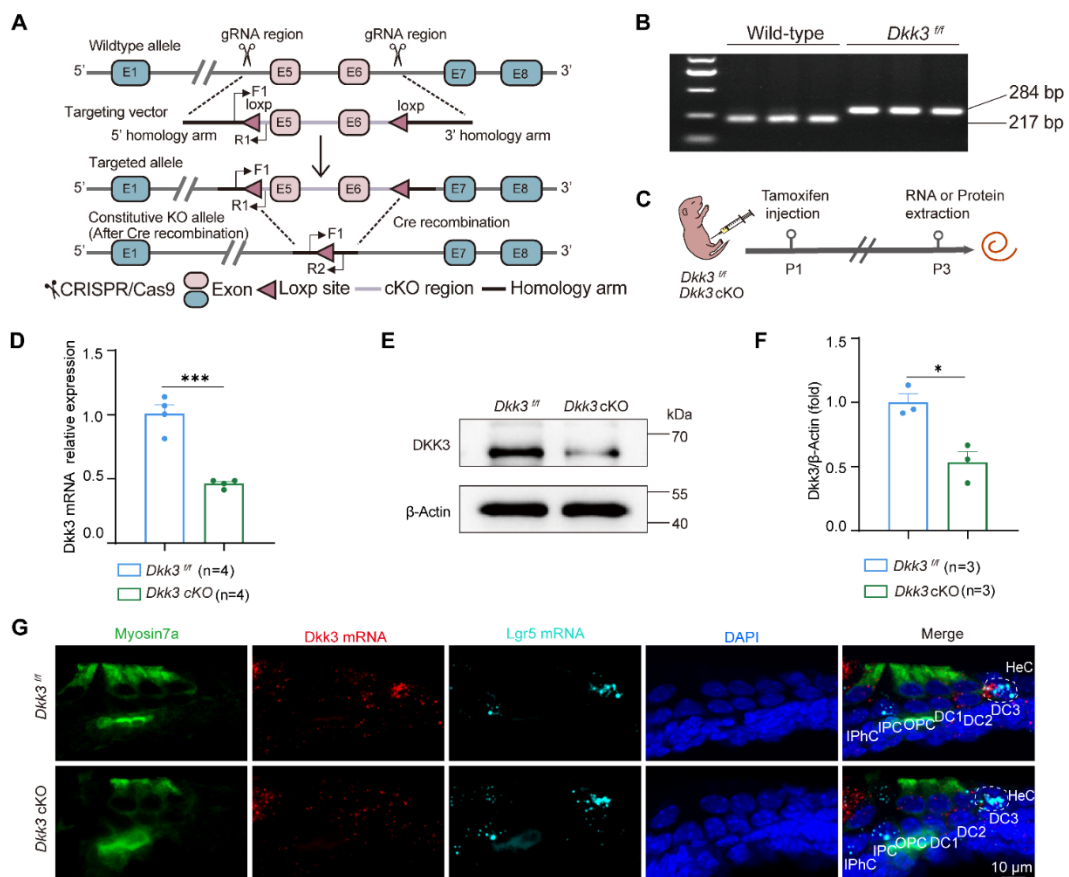


Figure S3. Conditional knockout validation in the *Dkk3* cKO mouse cochlea. (A) Construction strategy of *Dkk3*^{fllox/+} mice. (B) Genotyping of *Dkk3*^{fl/fl} mice. (C) Flow chart of the *Dkk3* expression pattern study in *Dkk3* cKO mice cochlea. (D-F) The *Dkk3* expression in *Dkk3* cKO mice was detected by RT-qPCR (D) and western blotting (E); the quantitative analysis of western blotting is shown in (F). (G) RNAscope *in situ* hybridization of *Dkk3* and *Lgr5* in *Dkk3* cKO mice and *Dkk3*^{fl/fl} cochlea. **p* < 0.05, ****p* < 0.001. “n” means biological replicates.

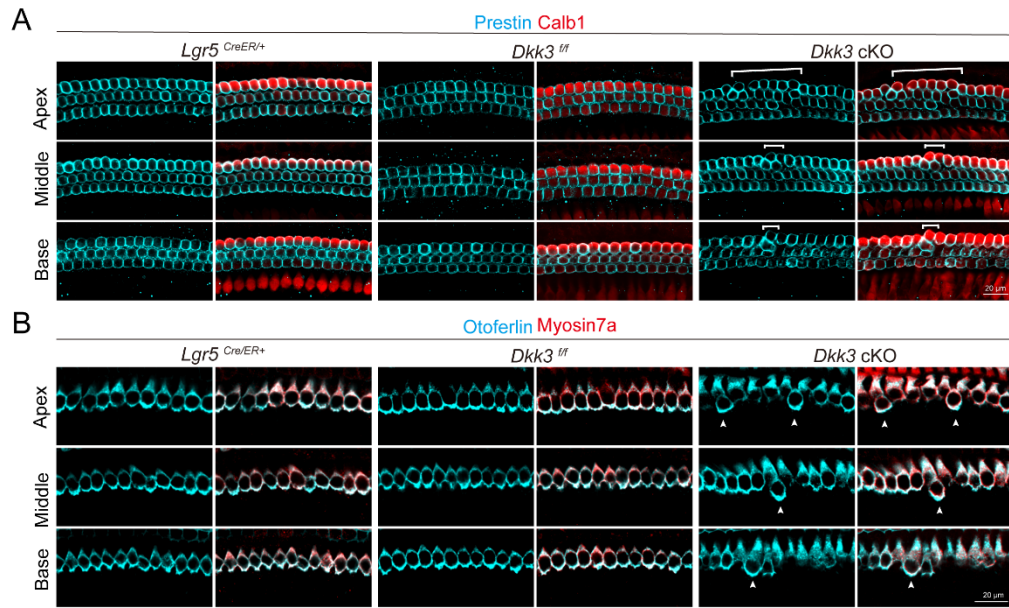


Figure S4. HC makers staining of the P7 ectopic HCs.

(A) Representative confocal images of Calb1 and Prestin (an OHC maker) in the three turns of cochleae between *Dkk3* cKO mice and controls. Scale bars, 20 μm. (B) Representative confocal images of Myosin7a and Otoferlin (an IHC maker) in the three turns of cochleae between *Dkk3* cKO mice and controls.

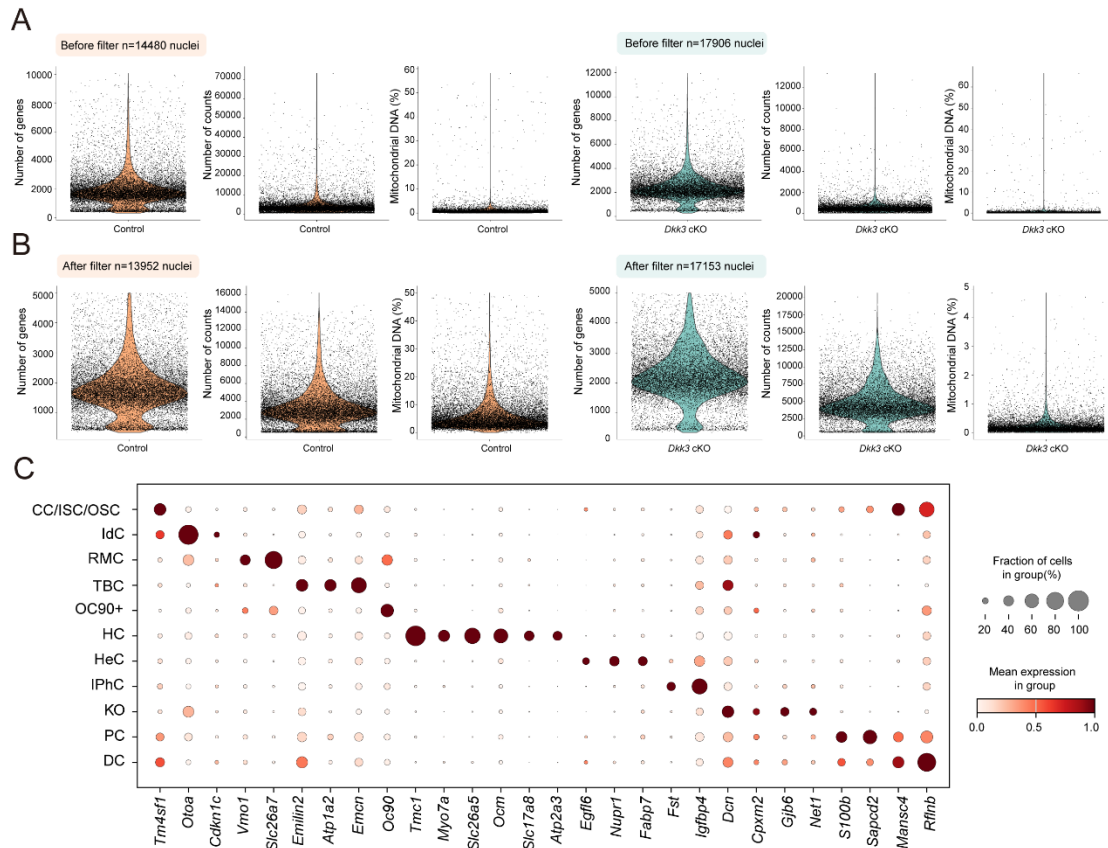


Figure S5. Quality control metrics of snRNA-seq data from control and *Dkk3* cKO groups.

(A–B) Violin plots showing the distribution of counts, genes, and mitochondrial (mt) DNA content per nucleus. (A) Before quality filtering: 14,480 nuclei in the control group and 17,906 nuclei in the *Dkk3* cKO group. (B) After quality filtering, 13,952 nuclei were retained in the control group and 17,153 nuclei in the *Dkk3* cKO group. (C) Canonical marker genes used for annotation of cochlear cell types.

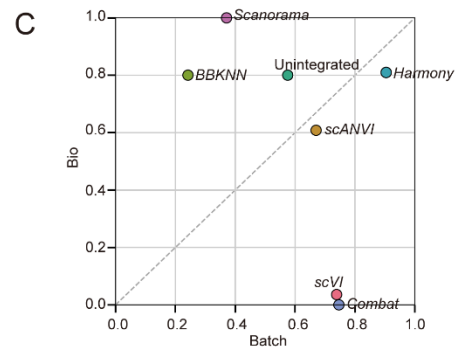
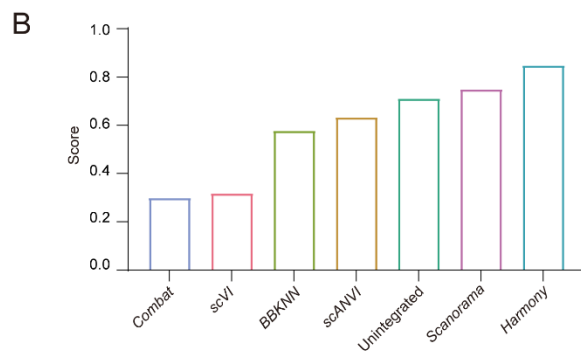
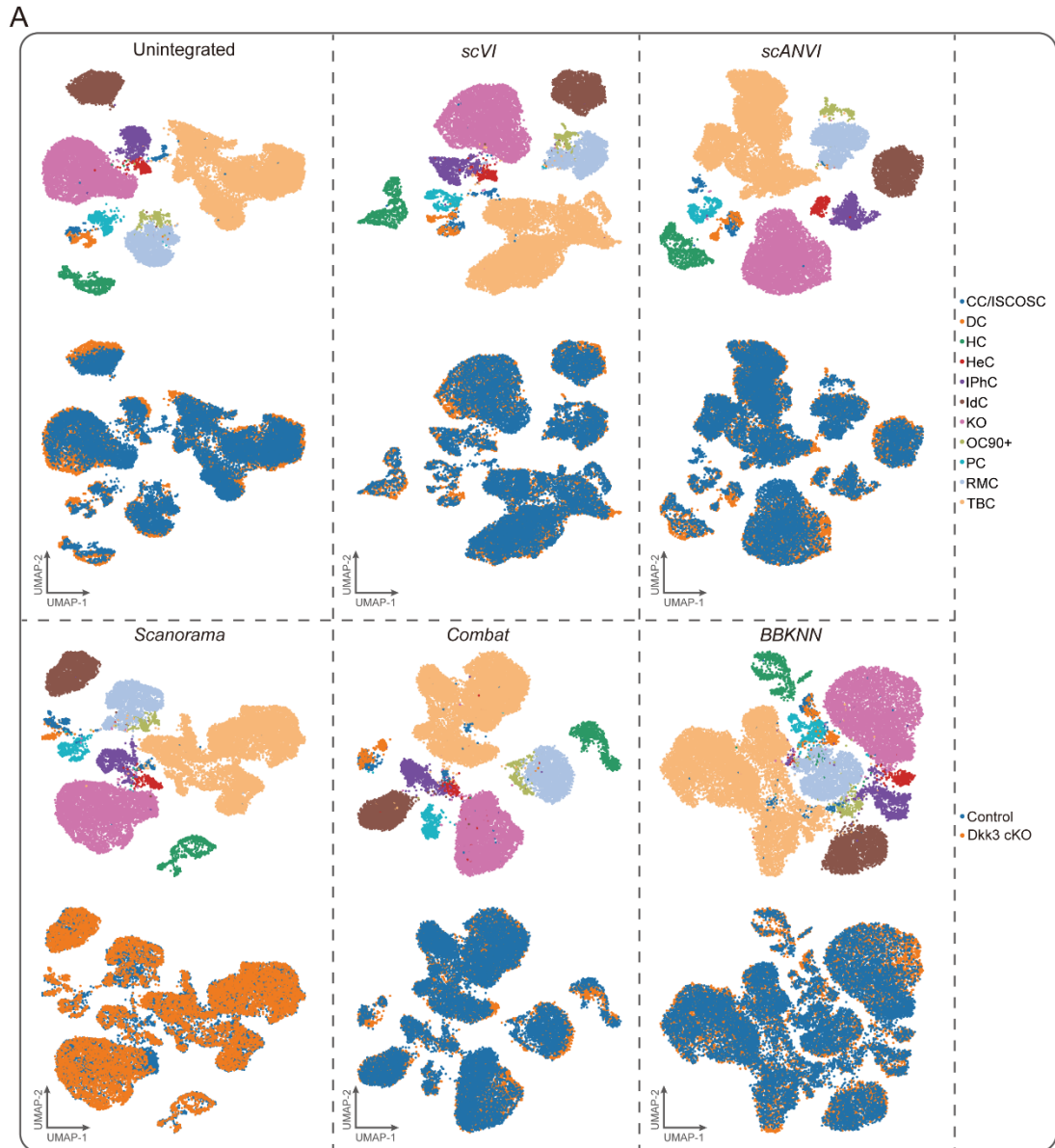


Figure S6. Evaluation of integration algorithms for combining single-cell data from Control and *Dkk3* cKO groups

(A) The UMAP showed that *scVI*, *scANVI*, *Scanorama*, *ComBat*, and *BBKNN* algorithms integrate the clustering and distribution of cell types in the control and *Dkk3*

cKO groups. **(B-C)** The scores of different algorithms for removing batches between samples while retaining biological significance.

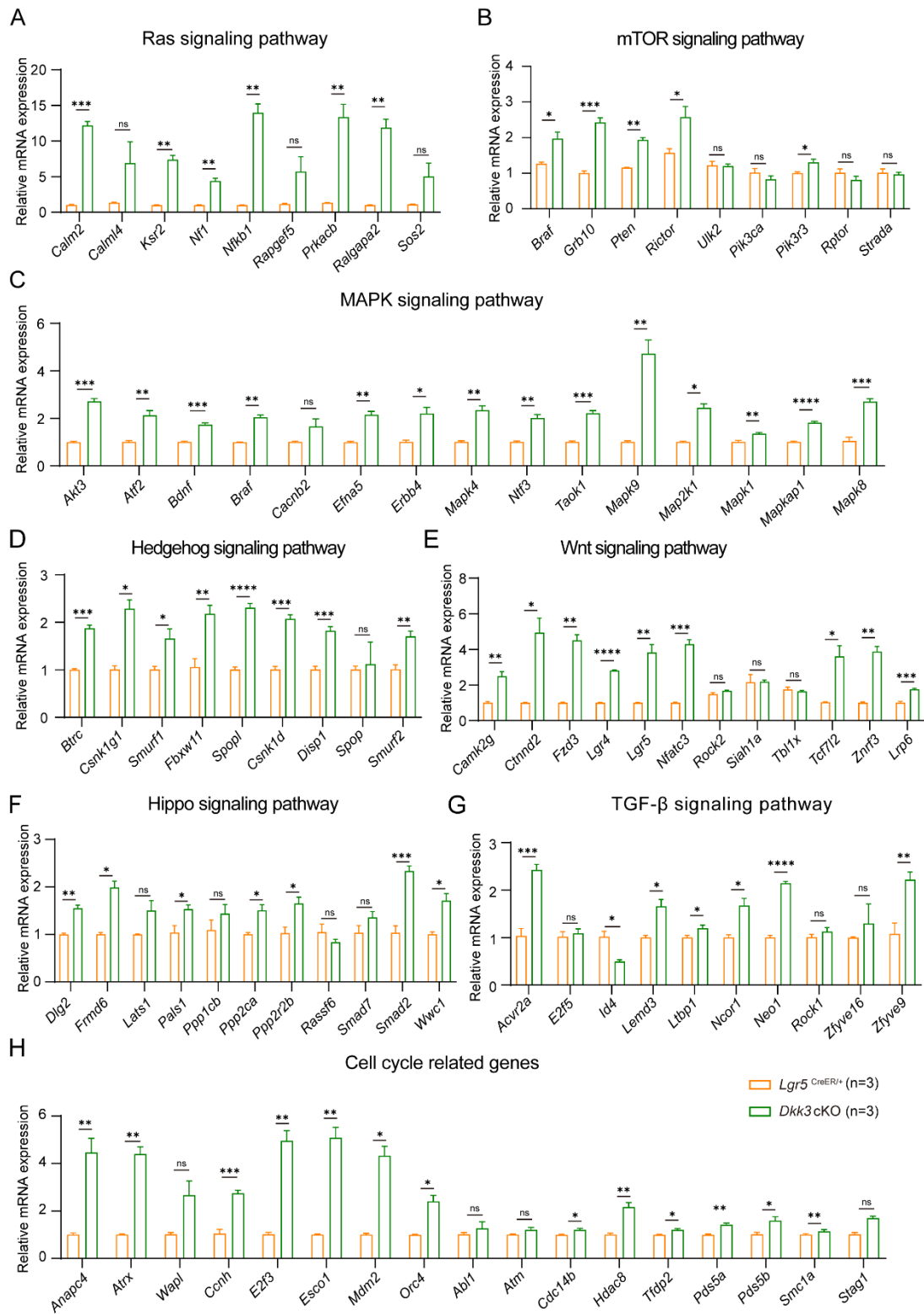


Figure S7. RT-qPCR analysis of signaling pathways in *Dkk3* cKO mouse cochlea.

(A-H) RT-qPCR quantification of the expression of Ras signaling pathway genes (A),

mTOR signaling pathway genes (B), MAPK signaling pathway genes (C), Hedgehog signaling pathway genes (D), Wnt signaling pathway genes (E), Hippo signaling pathway genes (F), TGF- β signaling pathway genes (G), and cell cycle related genes (H) in the BM of P7 *Lgr5*^{CreER/+} and *Dkk3* cKO mouse cochleae.

Supporting tables

Supplementary Table 1. 14 DEGs

Abbreviation	Full Name
<i>Capsl</i>	Calcyphosine like
<i>Cntn1</i>	Contactin 1
<i>Col9a1</i>	Collagen type IX alpha 1
<i>Cyr61</i>	Cysteine rich angiogenic inducer 61
<i>Dkk3</i>	Dickkopf WNT signaling pathway inhibitor 3
<i>Fos</i>	FBJ osteosarcoma oncogene
<i>Fosb</i>	FosB proto-oncogene
<i>Mme</i>	Membrane metallo endopeptidase
<i>Ndrp2</i>	NDRG family member 2
<i>Net1</i>	Neuroepithelial cell transforming 1
<i>Otoa</i>	Otoancorin
<i>Serpine2</i>	Serpin family E member 2
<i>Slc6a11</i>	Solute carrier family 6-member 11
<i>Ugdh</i>	UDP-glucose dehydrogenase

Supplementary Table 2. Genotyping primer sequence

Genotyping primers	Sequence
<i>Lgr5</i> Forward	5'-CTGCTCTCTGCTCCCAGTCT-3'
<i>Lgr5</i> WT Reverse	5'-ATACCCCATCCCTTTTGA GC-3'
<i>Lgr5</i> Mut Reverse	5'-GAACTTCAGGGTCAGCTTGC-3'
<i>tdTomato</i> WT Forward	5'-AAGGGAGCTGCAGTGGAGTA-3'
<i>tdTomato</i> WT Reverse	5'-CCGAAAATCTGTGGGAAGTC-3'
<i>tdTomato</i> Mut Forward	5'-GGCATTAAAGCAGCGTATCC-3'
<i>tdTomato</i> Mut Reverse	5'-CTGTTCCCTGTACGGCATGG-3'
<i>Dkk3</i> Forward	5'-GGTCTGACTCACAGATGGACAAA-3'
<i>Dkk3</i> Reverse	5'-CTCTGCTGCCTAGGAAGATACCA-3'

Supplementary Table 3. The antibodies for Western blot and immunofluorescence

Antibody	Source	Cat#	Application
Anti-Dkk3	Proteintech	10365-1-AP	WB
Anti-beta Actin antibody	Abcam	ab119716	WB
Anti-Myosin7a	Proteus Bioscience	25-6790	IF
Anti-Sox2	R&D systems	AF2018	IF
Anti-CtBP2	BD Biosciences	BD612044	IF
Anti-Prestin	Abcam	ab242128	IF
Anti-Otoferlin	Abcam	ab53233	IF
Anti-Calb1	Abeomics	34-1020	IF
Alexa Fluor™ 488 Phalloidin	Invitrogen	A12379	IF
DAPI	Solarbio	C0060	IF
Alexa Fluor 488	Invitrogen	A-11008	IF
Alexa Fluor 555	Invitrogen	A-21428	IF
Alexa Fluor 568	Invitrogen	A-21124	IF
Alexa Fluor 647	Invitrogen	A-21447	IF

IF: immunofluorescence; WB: Western blot

Supplementary Table S4. Sequences of siRNA for *Dkk3*.

siRNA	Sequence
NC sense	5' -UUCUCCGAACGUGUCACGUTT- 3'
NC antisense	5' -ACGUGACACGUUCGGAGAATT- 3'
<i>Dkk3</i> -281 sense	5' -GGAAGACACUCAGCACAAATT- 3'
<i>Dkk3</i> -281 antisense	5' -UUUGUGCUGAGUGUCUUCCTT- 3'
<i>Dkk3</i> -419 sense	5' -GGGAAUAACACAGUCCAUTT- 3'
<i>Dkk3</i> -419 antisense	5' -AUGGACUGUGUUAUUUCCCTT- 3'
<i>Dkk3</i> -937 sense	5' -GCCACAGUCUGGUGUACAUTT- 3'
<i>Dkk3</i> -937 antisense	5' -AUGUACACCAGACUGUGGCTT- 3'

Supplementary Table S5. Sequences of RT-qPCR primers.

RT-qPCR primers	Sequence
<i>Gapdh</i> Forward	5'-AGGTCGGTGTGAACGGATTTG-3'
<i>Gapdh</i> Reverse	5'-TG TAGACCATGTAGTTGAGGTCA-3'
<i>β-actin</i> Forward	5'-ACGGCCAGGTCATCACTATTG-3'
<i>β-actin</i> Reverse	5'-AGGGGCCGGACTCATCGTA-3'
<i>Dkk3</i> Forward	5'-CTCGGGGGTATTTTGCTGTGT-3'
<i>Dkk3</i> Reverse	5'-TCCTCCTGAGGGTAGTTGAGA-3'
<i>Calm2</i> Forward	5'-GATTAGAGAAGCATTCCGTGTGTT-3'
<i>Calm2</i> Reverse	5'-CCGTCAATGTCTGCTTCCCTGA-3'
<i>Calml4</i> Forward	5'-GATCTTCTGGTGTCCATGAGGTG-3'
<i>Calml4</i> Reverse	5'-GATGGTCAGGAAGGTGGAGAAG-3'
<i>Ksr2</i> Forward	5'-G TACTGGATGTCTCAGACGTGC-3'
<i>Ksr2</i> Reverse	5'-CTCGGTGGATAATCAGGAGGTG-3'
<i>Nf1</i> Forward	5'-CGGCTGCTTTGGAACAATCAGG-3'
<i>Nf1</i> Reverse	5'-GTGTATCTGCCACAGGCTTGTG-3'
<i>Nfkb1</i> Forward	5'-GCTGCCAAAGAAGGACACGACA-3'
<i>Nfkb1</i> Reverse	5'-GGCAGGCTATTGCTCATCACAG-3'
<i>Rapgef5</i> Forward	5'-AACTGGCTCCAGCACAGAGGAA-3'
<i>Rapgef5</i> Reverse	5'-TCAGGATCTCCTGGGCTGTACT-3'
<i>Prkacb</i> Forward	5'-CTGAAGAACGGCGTGAGTGACA-3'
<i>Prkacb</i> Reverse	5'-CGAAGTTGCTGGTATCGCCAGA-3'
<i>Ralgapa2</i> Forward	5'-CACAGATGCTGTGGCTGACTCT-3'
<i>Ralgapa2</i> Reverse	5'-CCAACCAGTGAGGTTTCCTCCA-3'
<i>Sos2</i> Forward	5'-CACCAGTGAATGGCACATCAG-3'
<i>Sos2</i> Reverse	5'-CTTTGGTCCAGACACTCCCTAC-3'
<i>Braf</i> Forward	5'-CGCCAAGTCAATCATCCACAGAG-3'
<i>Braf</i> Reverse	5'-CACCGAGATTTCACTGTGGCTAG-3'
<i>Grb10</i> Forward	5'-GGTGAAAGAGGTAGGACGCAAG-3'
<i>Grb10</i> Reverse	5'-GATGCTGCTTTCTTCCAGGTCAG-3'
<i>Pten</i> Forward	5'-TGAGTTCCCTCAGCCATTGCCT-3'
<i>Pten</i> Reverse	5'-GAGGTTTCCTCTGGTCCTGGTA-3'
<i>Rictor</i> Forward	5'-CAGTGTGAGGTCCTTTCCATCC-3'
<i>Rictor</i> Reverse	5'-GCCATAGATGCTTGCGACTGTG-3'
<i>Ulk2</i> Forward	5'-GAGGACGAAGACTCTCTACTGG-3'

<i>Ulk2</i> Reverse	5'-GAGTGCCTACTCCTGGCTTCAT-3'
<i>Pik3ca</i> Forward	5'-CACCTGAACAGACAAGTAGAGGC-3'
<i>Pik3ca</i> Reverse	5'-GCAAAGCATCCATGAAGTCTGGC-3'
<i>Pik3r3</i> Forward	5'-ACCACGAGTCTCTCGCTCAGTA-3'
<i>Pik3r3</i> Reverse	5'-CCTGATACTGAGAGTGGA ACTCC-3'
<i>Rptor</i> Forward	5'-CTTCCTATCCGTCTTGGCAGAC-3'
<i>Rptor</i> Reverse	5'-CTCCAGACAGATGGCAATCAGG-3'
<i>Strada</i> Forward	5'-ACCGAACCTTCTCGCCTCACTT-3'
<i>Strada</i> Reverse	5'-AGAAGGAGTGGTTCAGCAGGGT-3'
<i>Akt3</i> Forward	5'-GAGATGGATGCGTCTACAACCC-3'
<i>Akt3</i> Reverse	5'-TCCACTTGCCTTCTCTCGAACC-3'
<i>Atf2</i> Forward	5'-CTTCCTCTCCTCAACCAGTCCA-3'
<i>Atf2</i> Reverse	5'-GAGTCCTAACCAATCCACTGCC-3'
<i>Bdnf</i> Forward	5'-GGCTGACACTTTTGAGCACGTC-3'
<i>Bdnf</i> Reverse	5'-CTCCAAAGGCACTTGACTGCTG-3'
<i>Cacnb2</i> Forward	5'-CAACTCAGTAAGACCTCTTTGGC-3'
<i>Cacnb2</i> Reverse	5'-CTGCTACCATCTGGACATTGAGG-3'
<i>Efna5</i> Forward	5'-TACGCCGTCTACTGGAACAGCA-3'
<i>Efna5</i> Reverse	5'-GTCTTCTGGGACAGAGTCCTCA-3'
<i>ErbB4</i> Forward	5'-CAAAGCCAACGTGGAGTTCATGG-3'
<i>ErbB4</i> Reverse	5'-CTGCGTAACCAACTGGATAGTGG-3'
<i>Mapk4</i> Forward	5'-CGCCAACATCTTCATCAGCACG-3'
<i>Mapk4</i> Reverse	5'-CCACTTTGTCACCAACCCTTCTG-3'
<i>Mapk8</i> Forward	5'-CGCCTTATGTGGTGA CTGCTA-3'
<i>Mapk8</i> Reverse	5'-TCCTGGAAAGAGGATTTTGTGGC-3'
<i>Ntf3</i> Forward	5'-CTACTACGGCAACAGAGACGCT-3'
<i>Ntf3</i> Reverse	5'-GGTGAGGTTCTATTGGCTACCAC-3'
<i>Taok1</i> Forward	5'-GGCGACATAACTTGGAACAGGAC-3'
<i>Taok1</i> Reverse	5'-GTGTTGAGATGGCGAAACTCCAG-3'
<i>Mapk9</i> Forward	5'-GTCAGTGGGTTGCATCATGGGA-3'
<i>Mapk9</i> Reverse	5'-ACTCTGCGGATGGTGTTCTTAG-3'
<i>Map2k1</i> Forward	5'-AAGGTCTCCCACAAGCCATCTG-3'
<i>Map2k1</i> Reverse	5'-AGTTGCACTCGTGCAGTACCTG-3'
<i>Mapk1</i> Forward	5'-TCAAGCCTTCCAACCTCCTGCT-3'
<i>Mapk1</i> Reverse	5'-AGCTCTGTACCAACGTGTGGCT-3'

<i>Mapkap1</i> Forward	5'-CTGGAGAAGCAGAGTGAGCCTA-3'
<i>Mapkap1</i> Reverse	5'-CGAAAACCTCCGTCTGCCCTTGA-3'
<i>Mapk8</i> Forward	5'-CGCCTTATGTGGTGA CT CGCTA-3'
<i>Mapk8</i> Reverse	5'-TCCTGGAAAGAGGATTTTGTGGC-3'
<i>Btrc</i> Forward	5'-GCAGTACGATGAGAGGGTGATC-3'
<i>Btrc</i> Reverse	5'-CAGAACGGCTTCACAGTGGTGA-3'
<i>Csnk1g1</i> Forward	5'-TACTTCCTCCGAGGCAGCCTAC-3'
<i>Csnk1g1</i> Reverse	5'-TCGAAGGTAGGTTGCCATCTCC-3'
<i>Smurf1</i> Forward	5'-GGAGGAAGGTTTGGACTATGGTG-3'
<i>Smurf1</i> Reverse	5'-CCGTGGAATACTGGAAGAGTCC-3'
<i>Fbxw11</i> Forward	5'-TGCCTCCAGTATGATGAGCGAG-3'
<i>Fbxw11</i> Reverse	5'-GTCCATTGCTGAAGCGTAAGTGC-3'
<i>Spopl</i> Forward	5'-GGTCTCCTTCCAGATGACAAGC-3'
<i>Spopl</i> Reverse	5'-CTGCTAGTCGACATTCTGGCAC-3'
<i>Csnk1d</i> Forward	5'-CCATCAACACGCACCTTGGCAT-3'
<i>Csnk1d</i> Reverse	5'-CATACTTCTGCCTCTTGGTGGC-3'
<i>Disp1</i> Forward	5'-GGTCAGACGATCACCATGAGAG-3'
<i>Disp1</i> Reverse	5'-CCTCCTGCTGAAGCAAACACTAC-3'
<i>Spop</i> Forward	5'-GCTGTCCAAAGAGTGAAGTTCGG-3'
<i>Spop</i> Reverse	5'-GCACGAACCTATAAGCTCGCTG-3'
<i>Smurf2</i> Forward	5'-CCAATGCCATCAACCGCCTCAA-3'
<i>Smurf2</i> Reverse	5'-GTGCCTATTCGGTCTCTGGACT-3'
<i>Camk2g</i> Forward	5'-GGACACAGTCACTCCTGAAGCT-3'
<i>Camk2g</i> Reverse	5'-TCTACCGTCTCTTGGCGATGCA-3'
<i>Ctnnd2</i> Forward	5'-GTGAGACTCCTTCGCAAGACCA-3'
<i>Ctnnd2</i> Reverse	5'-GGATAATCACCGCATTGGTCAGC-3'
<i>Fzd3</i> Forward	5'-GCAAAGTGAGCAGCTACCATGG-3'
<i>Fzd3</i> Reverse	5'-AGCCGATGAGAACTACTGTGCC-3'
<i>Lgr4</i> Forward	5'-CAAATGCCACCAGCACTGCTGA-3'
<i>Lgr4</i> Reverse	5'-CCACACTGTAAGGCGAATCATCC-3'
<i>Lgr5</i> Forward	5'-AGAGCCTGATACCATCTGCAAAC-3'
<i>Lgr5</i> Reverse	5'-TGAAGGTCGTCCACACTGTTGC-3'
<i>Nfatc3</i> Forward	5'-CAGTTGCTCTGTCAATGGAGGC-3'
<i>Nfatc3</i> Reverse	5'-TTCCTTCAGCCTCCCAATGAGG-3'
<i>Rock2</i> Forward	5'-GTGACCTCAAACAGTCTCAGCAG-3'

<i>Rock2</i> Reverse	5'-GACAACGCTTCTGAGTTTCCTGC-3'
<i>Siah1a</i> Forward	5'-ACTCTGCCACACACCGAAAAGG-3'
<i>Siah1a</i> Reverse	5'-ATGACGGCATCCAAGGAGCCTT-3'
<i>Tbl1x</i> Forward	5'-CCGAGTAAAGCCACAGTCCTTC-3'
<i>Tbl1x</i> Reverse	5'-TATCCTCGCAGTGGAGTCTCCA-3'
<i>Tcf7l2</i> Forward	5'-CGCTGACAGTCAACGCATCTATG-3'
<i>Tcf7l2</i> Reverse	5'-GGAGGATTCCTGCTTGACTGTC-3'
<i>Znrf3</i> Forward	5'-CTCATCGGTTCCACAGGAAGTG-3'
<i>Znrf3</i> Reverse	5'-CGTGTAAGGTTGCTTGTCTCCAC-3'
<i>Lrp6</i> Forward	5'-CTGAATGCTGACAACAGGACCTG-3'
<i>Lrp6</i> Reverse	5'-GACGTTCCGAAGGCTGTGGATA-3'
<i>Dlg2</i> Forward	5'-TGCTTCTCCCAGGCACTATTCC-3'
<i>Dlg2</i> Reverse	5'-CGTTGGAGAGTCACTGAAGGCT-3'
<i>Frmd6</i> Forward	5'-GTTGAGAGTGGAGGCAAAGACC-3'
<i>Frmd6</i> Reverse	5'-CACATCTCTGGGCTGACTTCCA-3'
<i>Lats1</i> Forward	5'-TGGGACAACCTCCTTTCTTGGC-3'
<i>Lats1</i> Reverse	5'-TGAGGTCAGAGGCTTCAGGACT-3'
<i>Pals1</i> Forward	5'-GCGTTGTTAGCCAAGGAAGGCA-3'
<i>Pals1</i> Reverse	5'-CGAAGTAGTGTCCGTTGTTCTGC-3'
<i>Ppp1cb</i> Forward	5'-CTCGTGAAATCTTTCTCAGCCAG-3'
<i>Ppp1cb</i> Reverse	5'-TGGCTTCTGGTGGAAAACCTCC-3'
<i>Ppp2ca</i> Forward	5'-TCTTCCTCTCACTGCCTTGGTG-3'
<i>Ppp2ca</i> Reverse	5'-GAGGAACTTCCTGTAGGCGATC-3'
<i>Ppp2r2b</i> Forward	5'-AGTCAGTGAGCGGGATAAGAGG-3'
<i>Ppp2r2b</i> Reverse	5'-GCATTGGCAAACACTCTTCGTGG-3'
<i>Rassf6</i> Forward	5'-GACCTTTACCGTATCAGCGAGC-3'
<i>Rassf6</i> Reverse	5'-GCTCTTCGTCTGCGTATGGTGT-3'
<i>Smad7</i> Forward	5'-GTCCAGATGCTGTACCTTCCTC-3'
<i>Smad7</i> Reverse	5'-GCGAGTCTTCTCCTCCCAGTAT-3'
<i>Smad2</i> Forward	5'-CCA ACTGTA ACCAGAGATACGGC-3'
<i>Smad2</i> Reverse	5'-AACCCTGGTTGACAGACTGAGC-3'
<i>Wwc1</i> Forward	5'-AGCCATCACCTGCGGAGAAAAG-3'
<i>Wwc1</i> Reverse	5'-TGGACCATAGGTTCGGAGTGTGA-3'
<i>Acvr2a</i> Forward	5'-AAGTTCGAGGCTGGCAAGTCTG-3'
<i>Acvr2a</i> Reverse	5'-CCTCAGAAATGCGTCCCTTTGG-3'

<i>E2f5</i> Forward	5'-AGAAGTTGTGGCTACAGCAAAGC-3'
<i>E2f5</i> Reverse	5'-AGCTGTGTACCAGAAGGTGCCT-3'
<i>Id4</i> Forward	5'-AGTGCGATATGAACGACTGCTAC-3'
<i>Id4</i> Reverse	5'-AGCAAAGCAGGGTGAGTCTCCA-3'
<i>Lemd3</i> Forward	5'-AGATGCCCTTCTGGTGCCGTTT-3'
<i>Lemd3</i> Reverse	5'-CCTCCTTAGTCCAGCGGTATCT-3'
<i>Ltbp1</i> Forward	5'-TGCCTGTGGAAGTAGCTCCTGA-3'
<i>Ltbp1</i> Reverse	5'-AGTGTCCCTGCTCCGCAAATGTC-3'
<i>Ncor1</i> Forward	5'-GCCAGCAAAATCTCAGTGGAGAC-3'
<i>Ncor1</i> Reverse	5'-CCTCTGTTGGTATTCCAGCCTG-3'
<i>Neol</i> Forward	5'-TGACATGGCGTACACCTGCATC-3'
<i>Neol</i> Reverse	5'-GGCTGGTATTCTCAACACGCTC-3'
<i>Rock1</i> Forward	5'-CACGCCTAACTGACAAGCACCA-3'
<i>Rock1</i> Reverse	5'-CAGGTCAACATCTAGCATGGAAC-3'
<i>Zfyve16</i> Forward	5'-CAGCCACTTCAGGAGACCCAAA-3'
<i>Zfyve16</i> Reverse	5'-CTTCACCATTCGGCAGTATGCC-3'
<i>Zfyve9</i> Forward	5'-TGTAGCCACCAGTCCTCTTCCA-3'
<i>Zfyve9</i> Reverse	5'-ACACCAGTGGAGATGAGGATGG-3'
<i>Anapc4</i> Forward	5'-GGCTGCTAGAAAGCATGAGAGC-3'
<i>Anapc4</i> Reverse	5'-CTCCTCATCGTCTGAAGACTCG-3'
<i>Atrx</i> Forward	5'-GTGAATCTGAGGATGAACAGCGG-3'
<i>Atrx</i> Reverse	5'-CCTCTTGAACCTTAATGCGCCG-3'
<i>Wapl</i> Forward	5'-TGCCTGAGAGTGTGAAGAAGCC-3'
<i>Wapl</i> Reverse	5'-GTCTGGATGGTTCCAATGCCTG-3'
<i>Ccnh</i> Forward	5'-ACTTGCCTGTCACAGTTACTGGA-3'
<i>Ccnh</i> Reverse	5'-GAATGACACCGCTCCAGCTTCT-3'
<i>E2f3</i> Forward	5'-GTCCAGAAGAGACGGAAACACAC-3'
<i>E2f3</i> Reverse	5'-GCTGTAGAAACCGAGCAGTCAC-3'
<i>Esco1</i> Forward	5'-GCACCTGCTTTTCCACAACCAG-3'
<i>Esco1</i> Reverse	5'-CAGGGCATACTTTGGGTCTTCAG-3'
<i>Mdm2</i> Forward	5'-CCGAGTTTCTCTGTGAAGGAGC-3'
<i>Mdm2</i> Reverse	5'-GTCTGCTCTCACTCAGCGATGT-3'
<i>Orc4</i> Forward	5'-AGTCCACATAGCAACCTCTTTGG-3'
<i>Orc4</i> Reverse	5'-GTGGTCTTTCCCTGATCCTCGTG-3'
<i>Abl1</i> Forward	5'-TGAGCAGAAAGATGCGCCTGAC-3'

<i>Abl1</i> Reverse	5'-CGCTCATCTTCATTTAGGCTGCC-3'
<i>Atm</i> Forward	5'-CCAAGATGGCAGTGAACCAGAC-3'
<i>Atm</i> Reverse	5'-ATGCTGGACAGCTATGGTGGAG-3'
<i>Cdc14b</i> Forward	5'-GACACAAGGAGACAGACTTCGG-3'
<i>Cdc14b</i> Reverse	5'-CACAATCCACCAGATGGCAACAC-3'
<i>Hdac8</i> Forward	5'-GTCAGCCAAGAAGGTGATGAGG-3'
<i>Hdac8</i> Reverse	5'-ACACTTCCCCTCAATCAGGCAC-3'
<i>Tfdp2</i> Forward	5'-GTCATAGACTGCAGCATCTCCAG-3'
<i>Tfdp2</i> Reverse	5'-GAGCATTTCCTGACTCCAGAC-3'
<i>Pds5a</i> Forward	5'-GCTCAGGAACCTTGCTACCATG-3'
<i>Pds5a</i> Reverse	5'-GGAGAAGCAACTTCACAAGTGCC-3'
<i>Pds5b</i> Forward	5'-ATGTCACGCCTGAGACTTGCTG-3'
<i>Pds5b</i> Reverse	5'-GTTTCTGAGCGAACACCTGCCT-3'
<i>Smc1a</i> Forward	5'-ACGCATTGCCTTTGGAGGTCAC-3'
<i>Smc1a</i> Reverse	5'-GCCGTGCTTTTGCCTTGAGATC-3'
<i>Stag1</i> Forward	5'-GAACATGCAGCCTACTTGGTGG-3'
<i>Stag1</i> Reverse	5'-AGAGCACTCTCTTGACGGTCAG-3'
