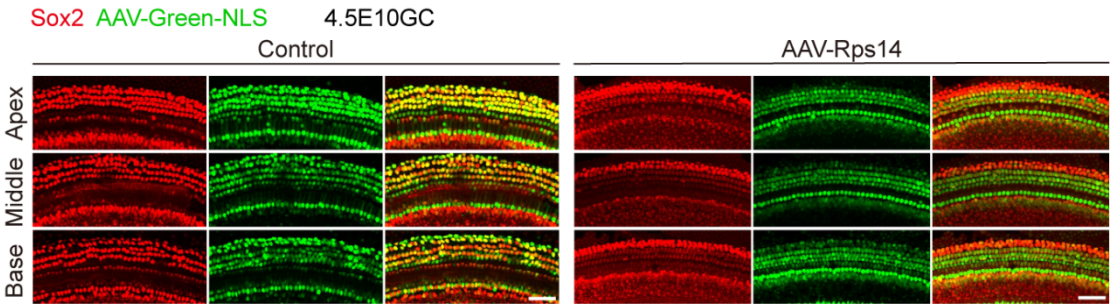

Figure S1. AAV-mNeonGreen and AAV-*Rps14* efficiently transduced supporting cells in vivo.

Representative confocal images of supporting cells from mice injected with AAV-mNeoGreen-NLS. NLS is the nuclear localization signal, guiding mNeoGreen transport into the nuclei.

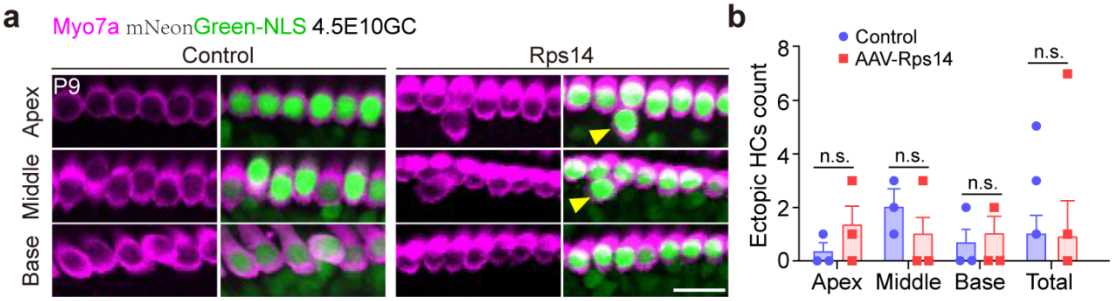

Figure S2. Low dose of AAV-*Rps14* has an effect on hair cell reprogramming in postnatal cochleas.

(a) Representative Myosin7a immunostaining (magenta) in the apical, middle, and basal turns of cochleae transduced by AAV-mNeonGreen and AAV-*Rps14* at the same dose (4.5×10^{10} GC per cochlea). Myosin7a (magenta) marks hair cells. Cochleae were harvested at P9 after microinjection with 1.5 µL of AAV stock solution in the left ear at P2. Scale bar, 50 µm. Yellow triangles indicate the ectopic hair cells. **(b)** The number of ectopic hair cells in P9 cochleae corresponding to **(a)**. The results are shown as the mean ± SEM. The *p*-value was calculated by Student's *t*-test. n.s. refers to no significance.

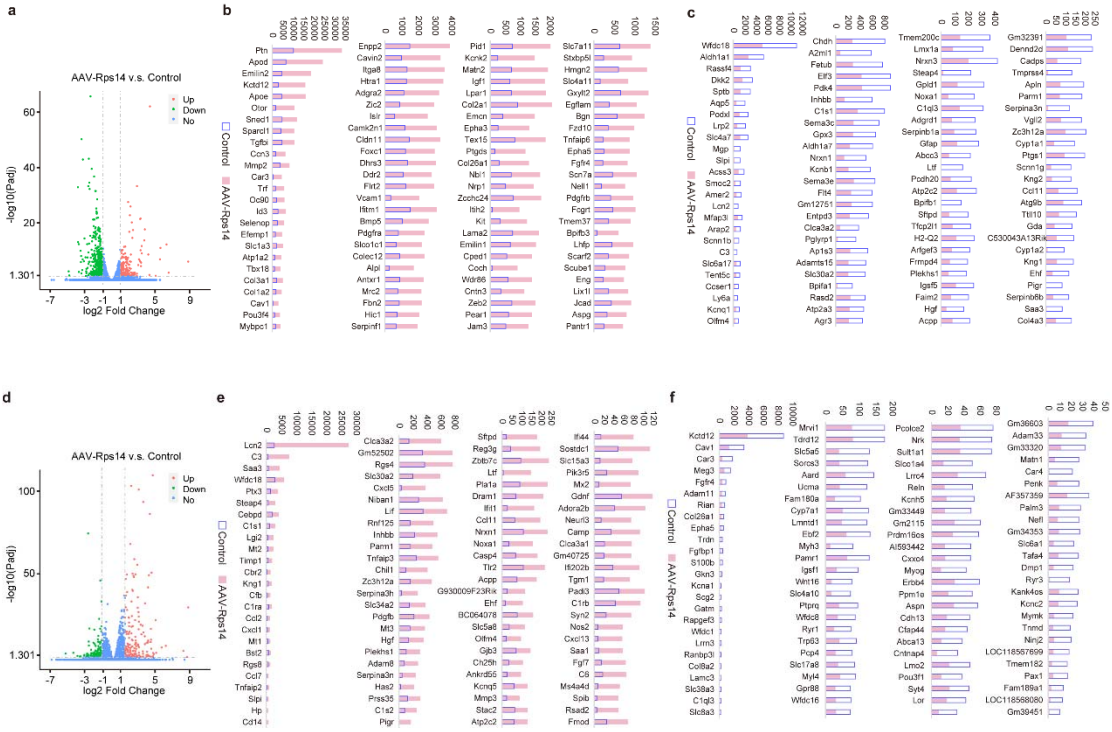

Figure S3. The top 100 differentially expressed genes in AAV-mNeonGreen and AAV-*Rps14*–transduced organoids in the sphere-forming assay and the differentiation assay.

(a) All expressed transcripts from the organoids in the sphere-forming assay transduced by AAV-mNeonGreen and AAV-*Rps14*. **(b)** The top 100 genes that were highly expressed in AAV-*Rps14*–transduced organoids ranked in descending order. **(c)** The top 100 genes that were highly expressed in AAV-mNeonGreen–transduced organoids ranked in descending order. **(d to f)** Similar to (a to c), but organoids in the differentiation assay were analyzed. All AAVs were used at a dose of 2×10^{10} GCs per well.

Table S1. Primers used for quantitative real-time PCR.

Gene name	Forward primer (5′-3′)	Reverse Primer (5′-3′)
Gapdh	TGACCTCAACTACATGGTCTACA	CTTCCCATTCTCGGCCTTG
Rps14	TGCCACATCTTTGCATCCTTC	ACTCATCTCGGTCAGCCTTCA
Lgr5	TCTTCACCTCCTACCTGGACCT	GGCGTAGTCTGCTATGTGGTGT
Fgfr4	GACCAAACCAGCACCGTGGCTGTGAAGATG	GTTTCCCTTGGCGGCACATTCCACAATCAC
Inhbb	CGCGTCTCCGAGATCATCAG	AGCTGGCTGGTCCTCACAG
Fzd10	AAGAGAGTCACTTCCCCAGC	TGTTTTGCTAGGGAGAGGGG
Id3	GCTCTTCAGTTCGTGTGTGGA	CGACTGCTGGAGCCATACC
Fzd9	TTATGGTTGCTCCCTCCTTG	CACTCCCTGCATGAGACAGA
Wnt6	CCATACTTTTCGGTGGCGAG	ATCACAGTGAACAGGAGGGG
Smad9	AGGGAGGCCTTCTAGACAGA	ACGTTCAATGGGGCCTAGAA
Sfrp2	GCCACGGCATCGAATACCAGAA	CGAAGAGCGAGCACAGGAACTT
Nkd2	ACCTCAATTGGCCCCATGTA	AGCTGGCCTTTTGTCCCTAT
Wnt16	AGGCTGCTTGTGTGGTCTAT	AATCTGATTGGCTGGGGTGA
Fmod	ACACACCTCTCCCTCCAATG	TTCCTCAAGCCCACAGTAGG
Cav1	TCATGGGGAAGAAATGGGCT	ATGGTCACAGGCATGGAA
Dlk1	TCATGGGGAAGAAATGGGCT	ATGGTCACAGAGGCATGGAA