**Inactivation of cyclin-dependent kinase 5 in hair cells causes hearing loss in mice**

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**Fig. S1**. **CDK5 is expressed in mouse auditory hair cells.** Cryosection immunostaining of CDK5 in *Cdk5lox/lox* (A) and *Atoh1Cre/+*;*Cdk5lox/lox* (B) cochleae at P8. Nuclei were visualized by DAPI. Images were taken from the middle turn of mouse cochlea using a confocal microscope. Asterisks indicate unspecific staining of tectorial membrane. Scale bar, 10 μm.

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**Fig. S2. Hair cells of *Cdk5* cko mice are functionally normal.** FM1-43FX uptake by auditory hair cells of P8 *Atoh1Cre/+*;*Cdk5lox/lox* (A), *Cdk5lox/lox* (B), and *Cib2-/-* (C)mice were examined using an epifluorescence microscope. CIB2 is indispensable for mechanoelectrical transduction of hair cells, hence *Cib2-/-* mice was included in this experiment as negative control. Scale bar, 10 μm.

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**Fig. S3. ERM phosphorylation is reduced by *Cdk5* inactivation.** Whole-mount immunostaining of phosphorylated ERM (pERM) in P4 *Atoh1Cre/+*;*Cdk5lox/lox* and *Cdk5lox/lox* organ of Corti. F-actin core of stereocilia was visualized by TRITC-conjugated phalloidin. Images were taken from the middle turn of cochleae using a confocal microscope. Scale bar, 5 μm.