

Loss of CIB2 causes profound hearing loss and abolishes mechanoelectrical transduction in mice

Yanfei Wang^{1,2†}, Jie Li^{3†}, Xuerui Yao^{1,2†}, Wei Li^{1,2}, Haibo Du^{1,2}, Mingliang Tang^{4,5}, Wei Xiong³, Renjie Chai^{4,5,6*}, Zhigang Xu^{1,2*}

¹Shandong Provincial Key Laboratory of Animal Cells and Developmental Biology, Shandong University School of Life Sciences, Jinan, China.

²Shandong Provincial Collaborative Innovation Center of Cell Biology, Shandong Normal University, Jinan, China

³School of Life Sciences, IDG/McGovern Institute for Brain Research, Tsinghua University, Beijing, China

⁴Key Laboratory for Developmental Genes and Human Disease, Ministry of Education, Institute of Life Sciences, Southeast University, Nanjing, China

⁵Co-Innovation Center of Neuroregeneration, Nantong University, Nantong, China

⁶Jiangsu Province High-Tech Key Laboratory for Bio-Medical Research, Southeast University, Nanjing, China

†Contributed equally to this work

*Corresponding author:

Renjie Chai, E-mail: renjie@seu.edu.cn, Tel/Fax: 86-25-83790971

Zhigang Xu, E-mail: xuzg@sdu.edu.cn, Tel/Fax: 86-531-88362647

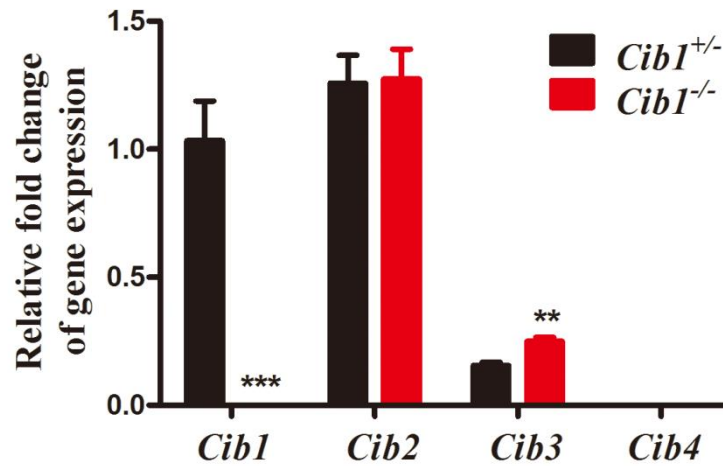


Figure S1. Expression of *Cib1*, *Cib2*, *Cib3*, and *Cib4* in the inner ear of *Cib1* knockout mice. Total RNA of P30 mouse inner ear was extracted and reverse transcribed, and expression of *Cib* genes were examined with quantitative PCR. The differences were evaluated by Student's t-test (** $p < 0.01$; *** $p < 0.001$).

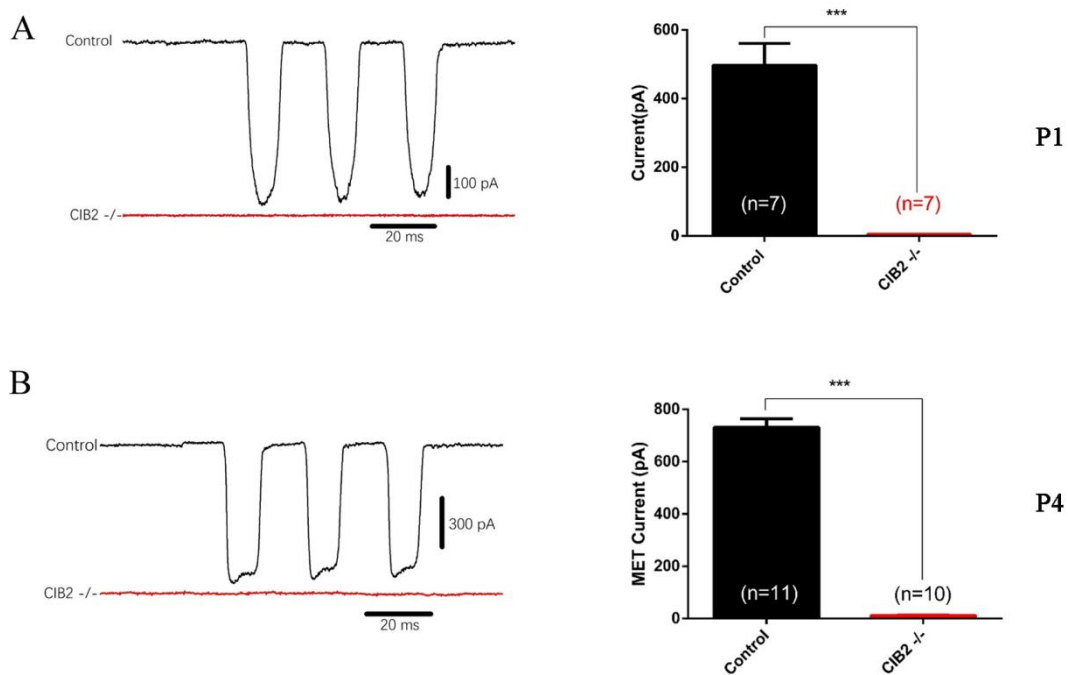


Figure S2. Mechanosensitivity of hair cells is lost in *Cib2* knockout mice. A fluid jet system that drives a sinusoidal deflection of hair bundles was used to evaluate the saturating MET current from hair cells. The average peak current is shown at right. (A) P1 OHCs; (B) P4 OHCs. The differences were evaluated by Student's t-test (** $p < 0.001$).

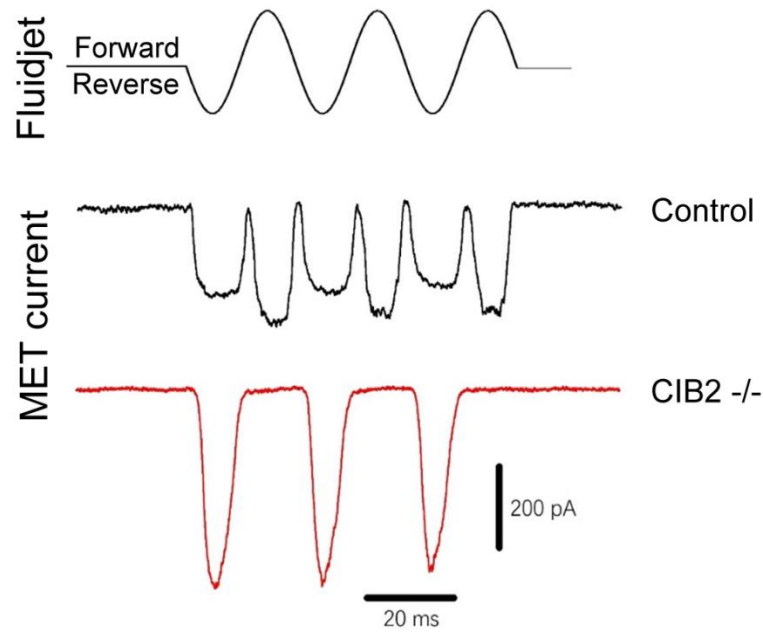


Figure S3. Reverse-polarity mechanosensitivity of hair cells is maintained in *Cib2* knockout mice. A fluid jet system was used to evaluate the conventional as well as reverse-polarity MET current from P4 OHCs.

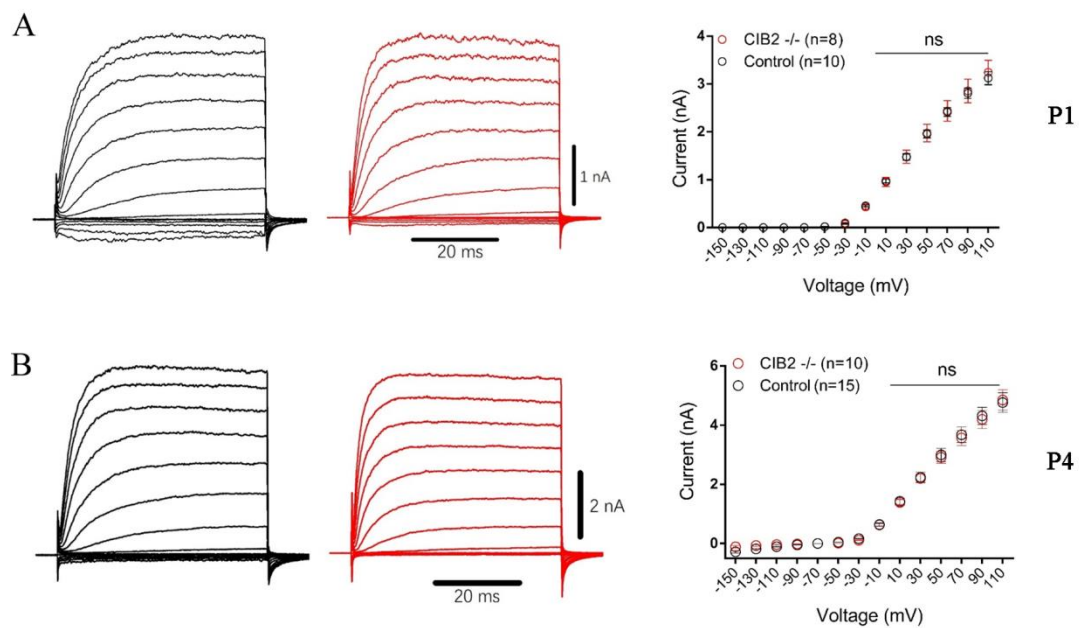


Figure S4. Voltage-gated current is normal in *Cib2* knockout OHCs at early developmental stages. The membrane potential was changed from -150 mV to $+110$ mV in 20 mV steps, and voltage-gated current was recorded from control and *Cib2* knockout OHCs. Current–voltage (I–V) curves were drawn from data collected from multiple cells. (A) P1 OHCs; (B) P4 OHCs. The differences were evaluated by Student's t-test (ns, not significant).