

## **Description of Additional Supplementary Files**

File Name: Supplementary Data 1

Description: Candidate list emerged from the proteomic mapping of protein complexes surrounding TMEM16K via in situ BioID-catalyzed biotin labeling

File Name: Supplementary Movie 1

Description: Representative hindlimb clasping of neuron specific TMEM16K WT and KO animal at 24 months of age.

File Name: Supplementary Movie 2

Description: Live imaging of COS7 cells transfected with mClover3- TMEM16K (pseudocolored in magenta) and ER-tdTomato (pseudocolored in cyan). Video presents overlay of the two channels.

File Name: Supplementary Movie 3

Description: Live imaging of COS7 cell transfected with TMEM17K-V5- mNeonGreen (pseudocolored in magenta), tdTomato-Rab7 (pseudocolored in yellow) and EGF-Alexa647 incubated for 45 min (pseudocolored in cyan) on spinning disk confocal. Video presents overlay of the three channels.