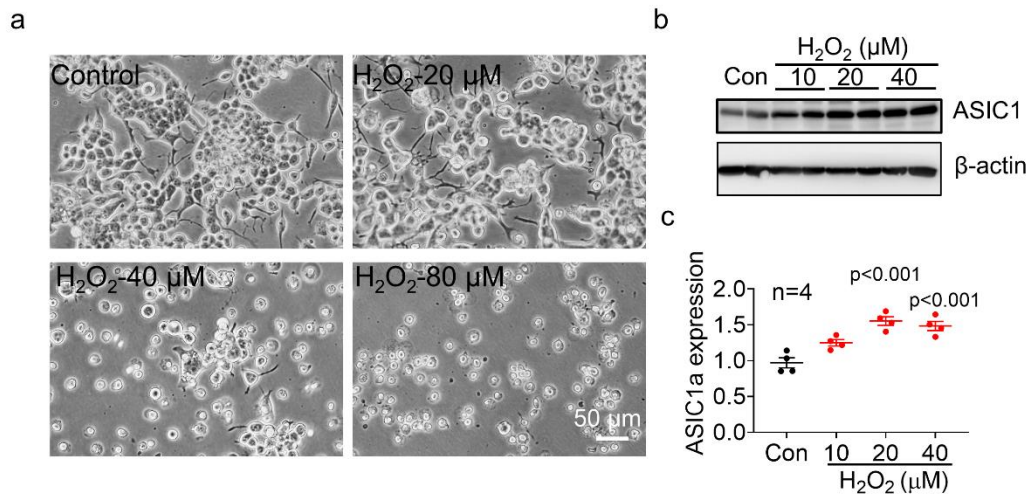
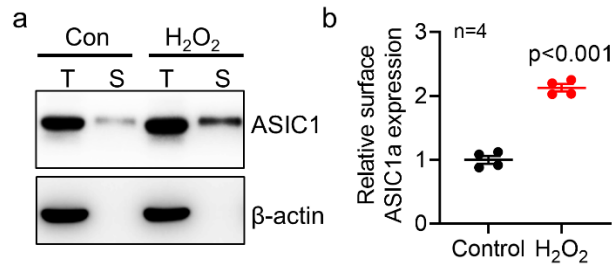


Supplementary Fig. 1



Supplementary Fig 1. Concentration-dependent effect of H₂O₂ on ASIC1a protein expression in NS20Y cells. **a** Representative images show the morphological change of NS20Y cells with or without different concentrations of H₂O₂ (20, 40 and 80 μM) treatment for 24h. **b** Representative blots and **c** quantification of ASIC1a protein expression with or without the treatment of H₂O₂ (10, 20 and 40 μM) in NS20Y cells (n=4, *p*<0.001 versus control, one-way ANOVA).

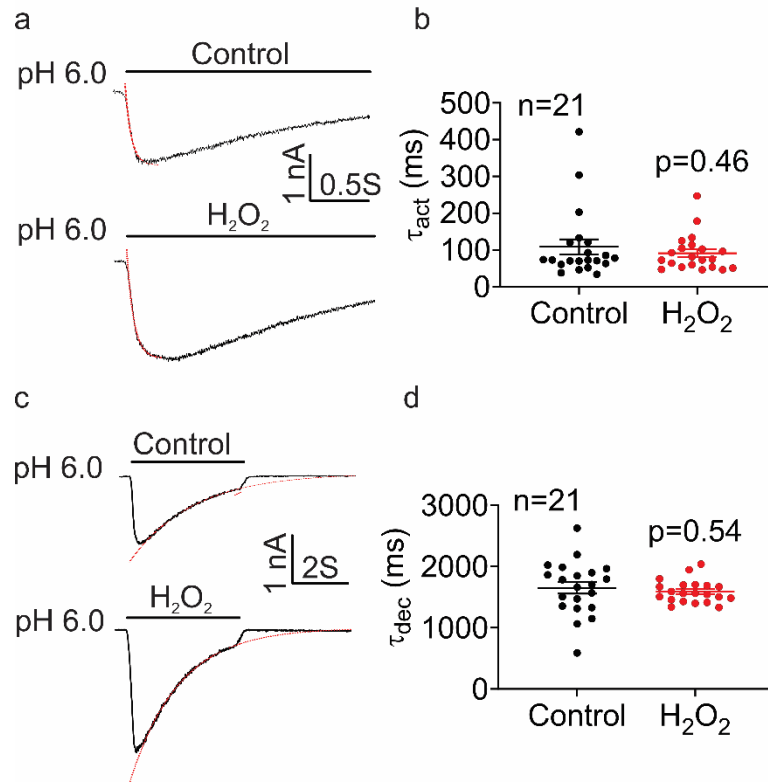
Supplementary Fig. 2



Supplementary Fig 2. Effect of H₂O₂ on surface ASIC1a protein expression in NS20Y cells.

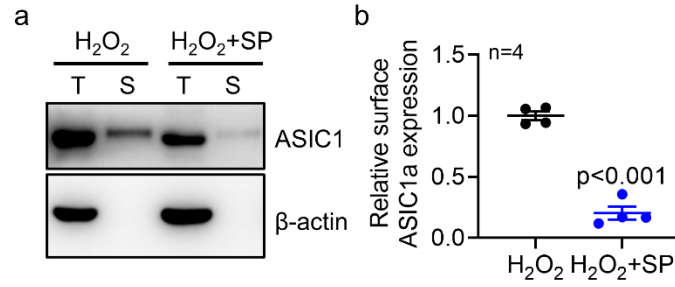
a, Representative blots showing the total (T) and surface (S) ASIC1a protein expression with or without 20 μM H₂O₂ treatment for 24h. **b**, summary data showing the relative surface ASIC1a expression. Results are expressed as the mean ± SEM. Unpaired Student t-test was used for statistical analysis.

Supplementary Fig. 3



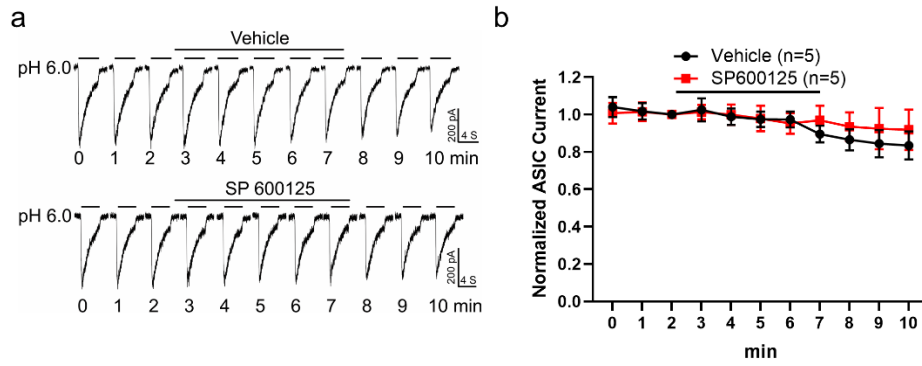
Supplementary Fig 3. Effect of H₂O₂ on the kinetics of ASIC currents in NS20Y cells. a Representative fitted current traces and **b** summary data showing the activation kinetics of the ASIC currents with or without H₂O₂ treatment for 24h. The time constants of activation (τ_{act}) were 108 ± 21 for control and 91 ± 11 ms for H₂O₂ (n=21 cells, $p=0.46$, unpaired Student's *t* test). **c** Representative fitted current traces and **d** summary data showing the desensitization kinetics of the ASIC currents with or without H₂O₂ treatment for 24h. The time constants of desensitization (τ_{dec}) were 1652 ± 96 and 1588 ± 40 ms for control and H₂O₂, respectively (n=21 cells, $p=0.54$, unpaired Student's *t* test). Time constants were determined using standard exponential fit.

Supplementary Fig. 4



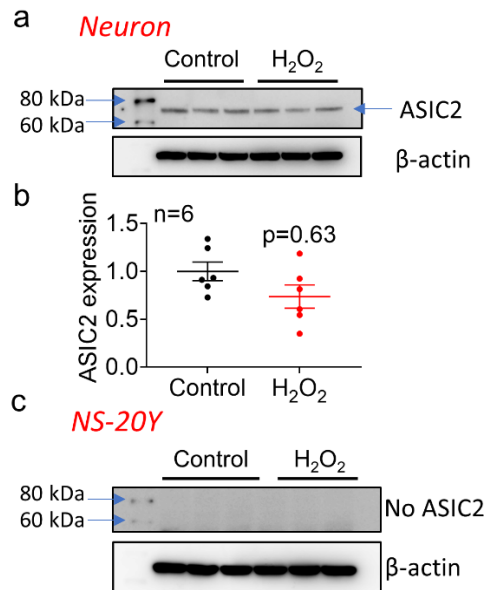
Supplementary Fig 4. Effect of SP600125 on H₂O₂ induced surface ASIC1a protein expression in NS20Y cells. **a**, Representative blots showing the total (T) and surface (S) ASIC1a protein expression with or without 20 μM H₂O₂ treatment for 24h. **b**, Summary data showing the relative surface ASIC1a expression. Results are expressed as the mean ± SEM. Unpaired Student t-test was used for statistical analysis.

Supplementary Fig. 5



Supplementary Fig 5. Acute effect of SP600125 on ASIC currents in NS20Y cells. a Representative recordings of ASIC currents and **b** summary data showing the lack of effect of acute perfusion of SP600125 (10 μ M, 5 min) on ASIC currents in NS-20Y cells (n=5 cells, two-way ANOVA).

Supplementary Fig. 6



Supplementary Fig 6. Effect of H₂O₂ on ASIC2 expression. **a** Representative blots and **b** quantification of ASIC2 protein expression in primary cultured cortical neurons, with or without H₂O₂ (20 μM) treatment for 24 h (n=6, unpaired Student's *t* test). **c** Representative blots showing no expression of ASIC2 protein in NS20Y cells.