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Revised version

The homeostatic effects of the RE-1 Silencing Transcription Factor on cortical networks are altered under pro-epileptic conditions in the mouse

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SUPPLEMENTARY MATERIALS

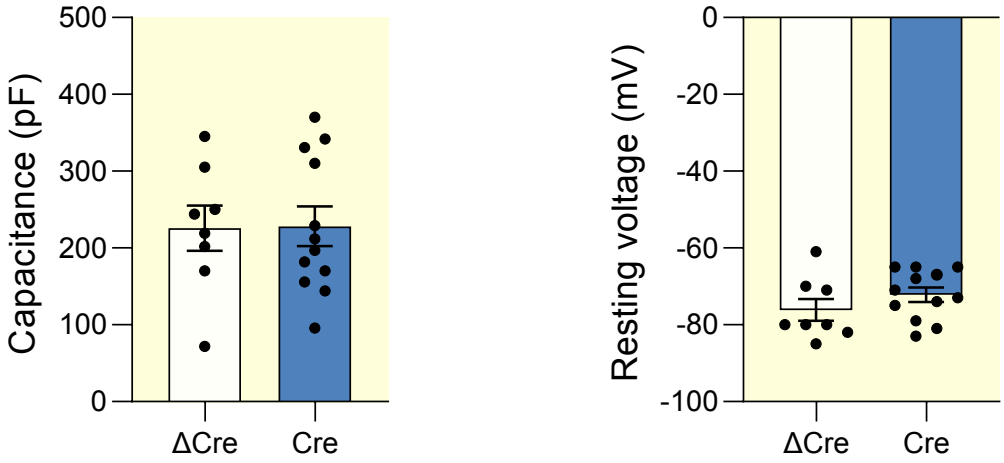

Figure S1. REST knockout does not affect membrane capacitance and resting membrane potential in layer II/III pyramidal neurons of V1 cortex.

Bar plots of the mean (± SEM) membrane capacitance (*left*) and resting membrane potential (*right*) with superimposed individual experimental points. p>0.05, two-tailed unpaired Student's *t*-test (ΔCre n = 8, Cre n = 12).

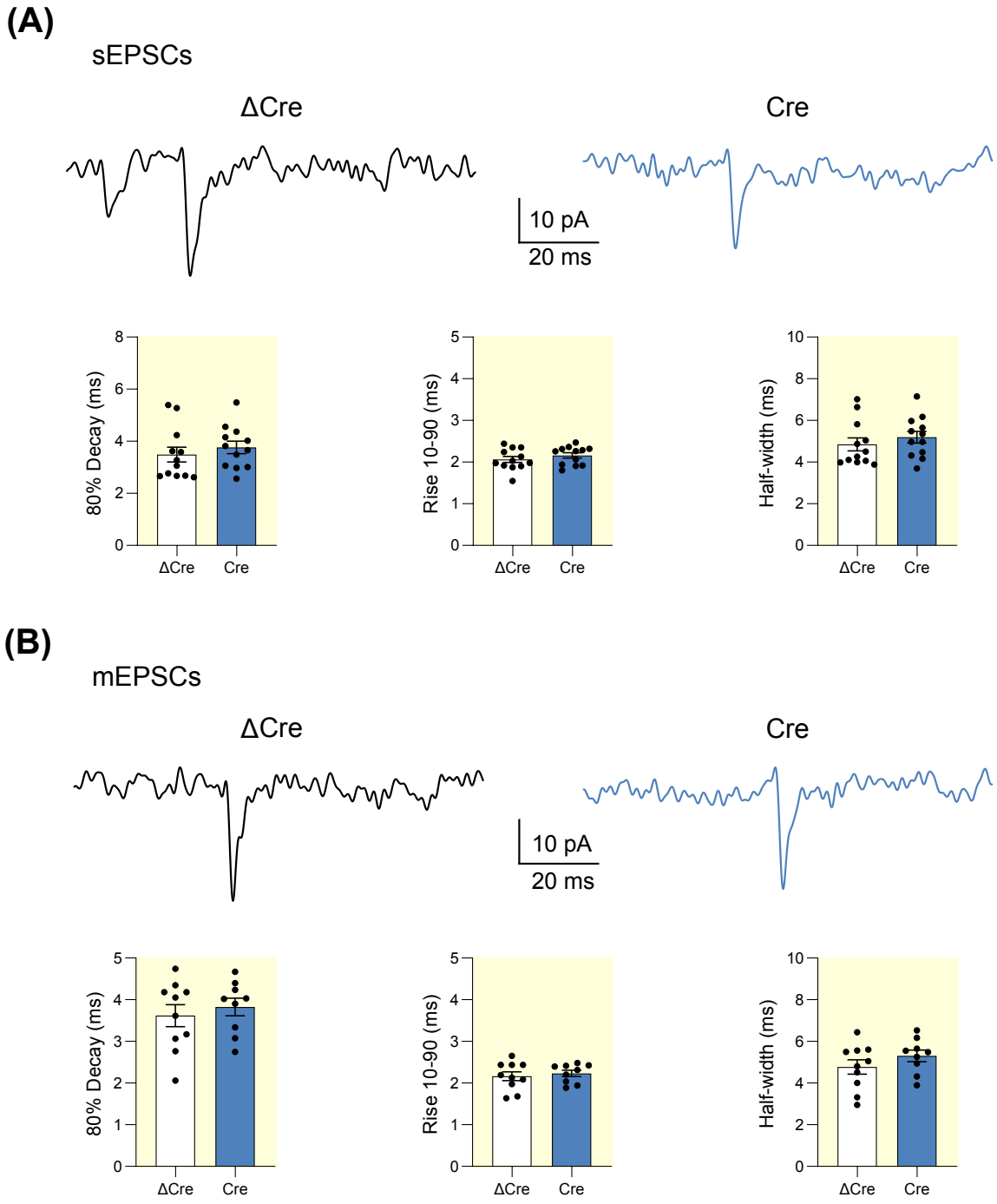

Figure S2. REST knockout does not affect the kinetics of spontaneous and miniature EPSCs. (**A**) sEPSC kinetics. *Top:* Representative traces of sEPSCs recorded in ΔCre- (red) and Cre- (blue) transduced mice. *Bottom:* Bar plots of the mean ± SEM 80% decay, 10-90 rise and half-width of sEPSCs with superimposed individual experimental points. (**B**) mEPSC kinetics. *Top:* Representative traces of mEPSCs recorded in ΔCre- (red) and Cre- (blue) transduced mice. *Bottom:* Bar plots of the mean ± SEM 80% decay, 10-90 rise and half-width of mEPSCs with superimposed individual experimental points. $p>0.05$, two-tailed unpaired Student's *t*-test (sEPSCs: n=12 for both ΔCre and Cre; mEPSCs: n=10 and n=9 for ΔCre and Cre, respectively).

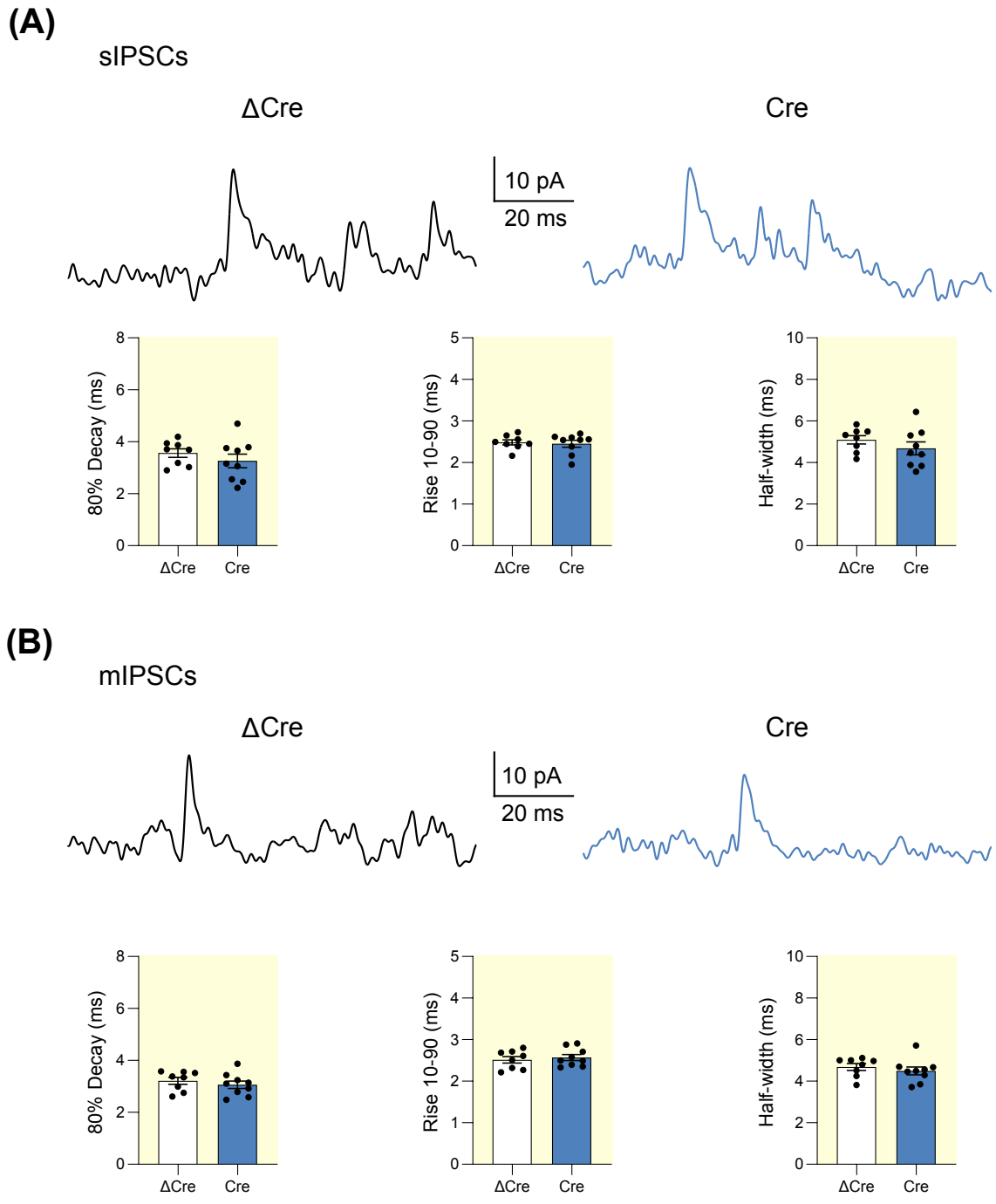

Figure S3. REST knockout does not affect the kinetics of spontaneous and miniature IPSCs. (**A**) sIPSC kinetics. *Top:* Representative traces of sIPSCs recorded in ΔCre- (red) and Cre- (blue) transduced mice. *Bottom:* Bar plots of the mean ± SEM 80% decay, 10-90 rise and half-width of sIPSCs with superimposed individual experimental points. (**B**) mIPSC kinetics. *Top:* Representative traces of mIPSCs recorded in ΔCre- (red) and Cre- (blue) transduced mice. *Bottom:* Bar plots of the mean ± SEM 80% decay, 10-90 rise and half-width of mIPSCs with superimposed individual experimental points). p>0.05, two-tailed unpaired Student's *t*-test (sIPSCs and mIPSCs: n=8 and n=9 for ΔCre and Cre, respectively).

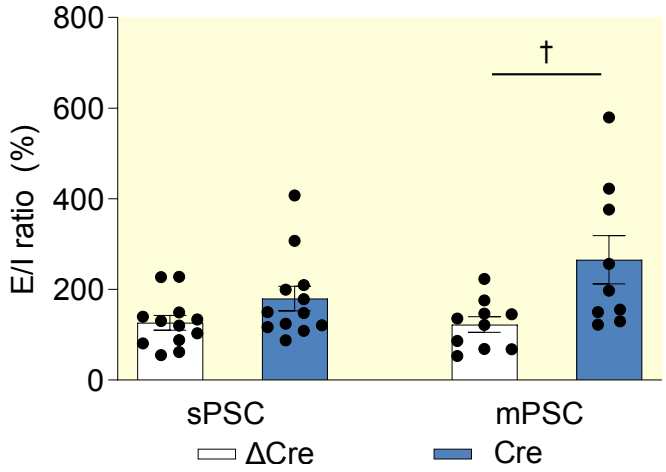

Figure S4. Increased excitation/inhibition (E/I) ratio in *Rest*-KO pyramidal neurons.
The E/I ratio was assessed by the analysis of the frequency of sEPSCs (*left)* and mEPSCs (*right*) of individual *Rest*-KO pyramidal neurons normalized over the average frequency of sIPSCs and mIPSCs, respectively. * $p<0.05$, two-tailed unpaired Student's *t*-test (sPSCs: n=12; mPSCs: n=10 and n=9, for ΔCre and Cre, respectively).

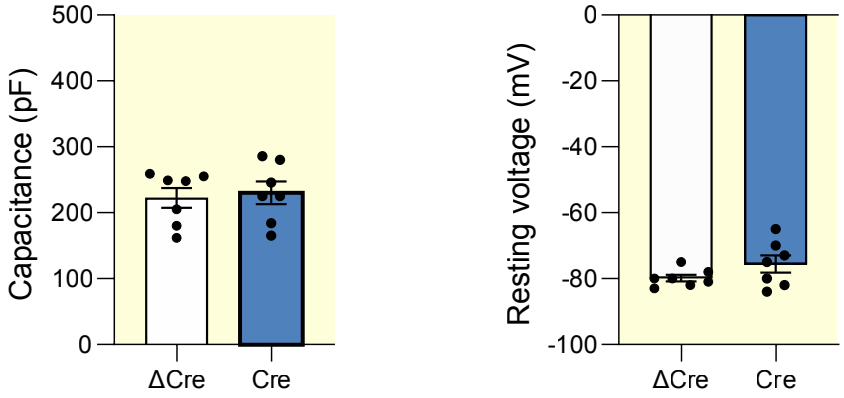

Figure S5. Administration of a tandem dose of PTZ in *Rest*-KO mice does not affect membrane capacitance and resting membrane potential in layer II/III pyramidal neurons of V1 cortex.

Bar plots of the mean (± SEM) membrane capacitance (*left*) and resting membrane potential (*right*) with superimposed individual experimental points. $p>0.05$, two-tailed unpaired Student's *t*-test (n=7 for both PTZ Cre and ΔCre).

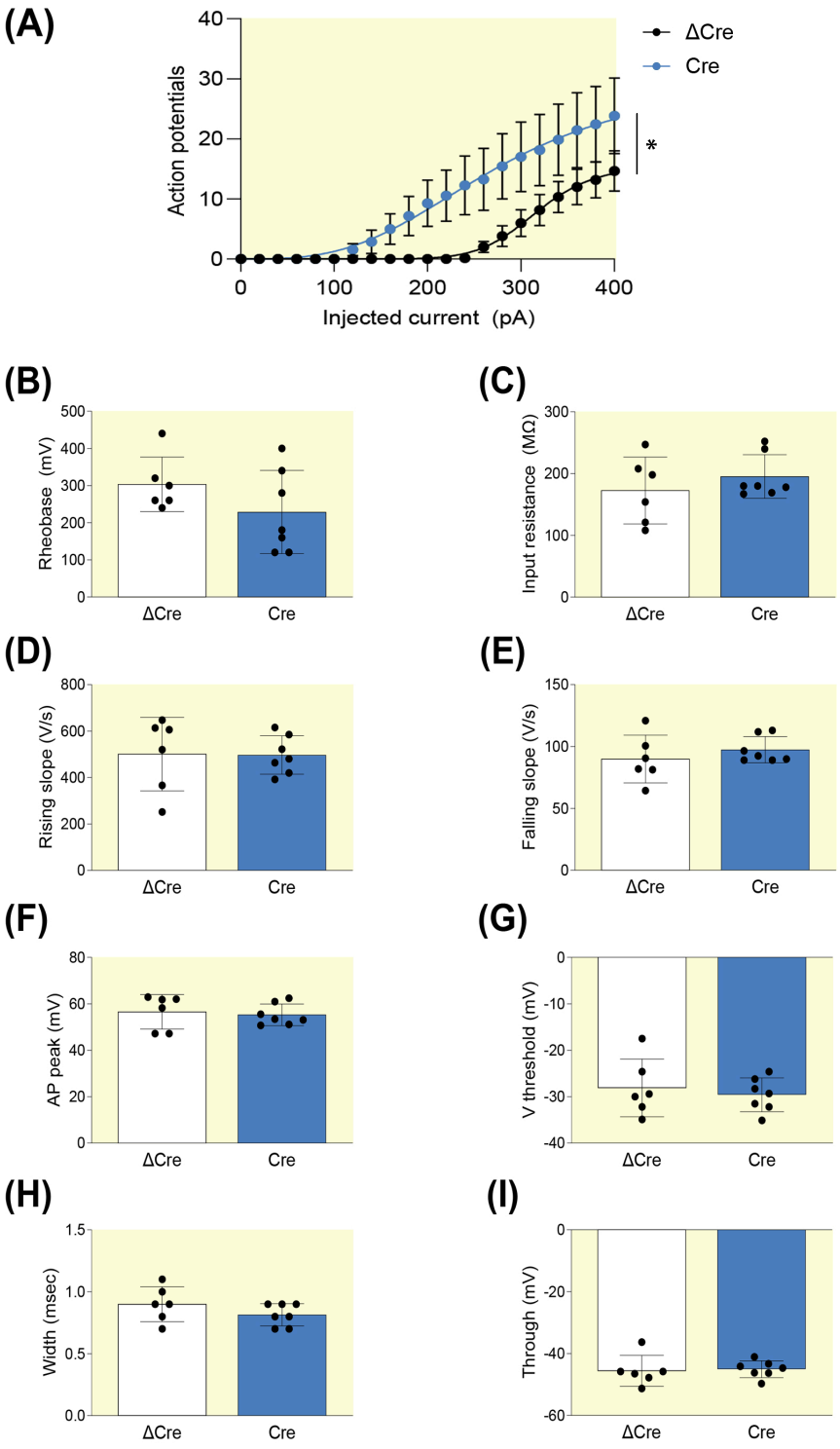

Figure S6. *Rest*-KO V1 pyramidal neurons display similarly increased intrinsic excitability and action potential firing after the administration of a tandem dose of PTZ.

(**A**) Number of elicited action potentials *versus* injected current in V1 pyramidal neurons from ΔCre- (red) and Cre- (blue) transduced *Rest*^{GTi} mice. Points in the plot (means ± SEM) were fitted according to a logistic function. * $p<0.05$ for genotype effect; two-way repeated measures ANOVA. (**B-I**) Bar plots showing rheobase (**B**), input resistance (**C**), rising slope (**D**), falling slope (**E**), AP peak (**F**), V threshold (**G**), width (**H**), and trough (**I**). Bar plots represent the means ± SEM with superimposed individual experimental points (n=6 for both ΔCre and Cre).

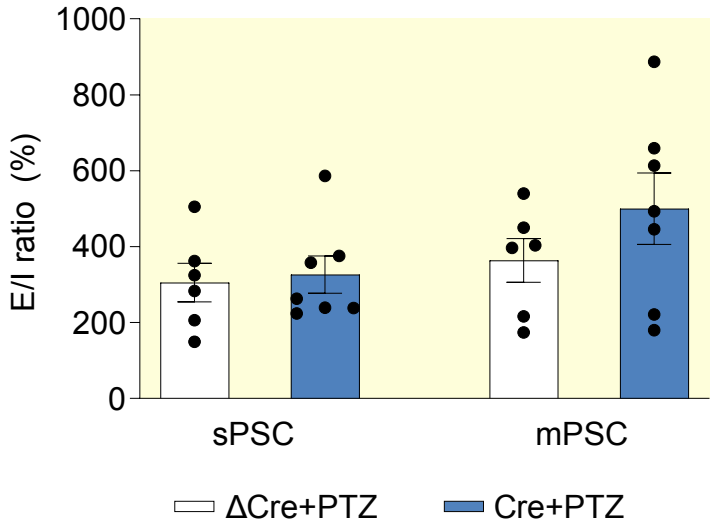

Figure S7. Excitation/inhibition (E/I) ratio in *Rest*-KO pyramidal neurons after a tandem dose of PTZ.

The E/I ratio was assessed by the analysis of the frequency of sEPSCs (left) and mEPSCs (right) of individual *Rest*-KO pyramidal neurons normalized over the average frequency of sIPSCs and mIPSCs, respectively. $p>0.05$; two-tailed unpaired Student's *t*-test (sEPSCs and mEPSCs: n=7 for both PTZ Cre and ΔCre).