Supporting Material

KCNE1 remodels the voltage sensor of Kv7.1 to modulate channel function

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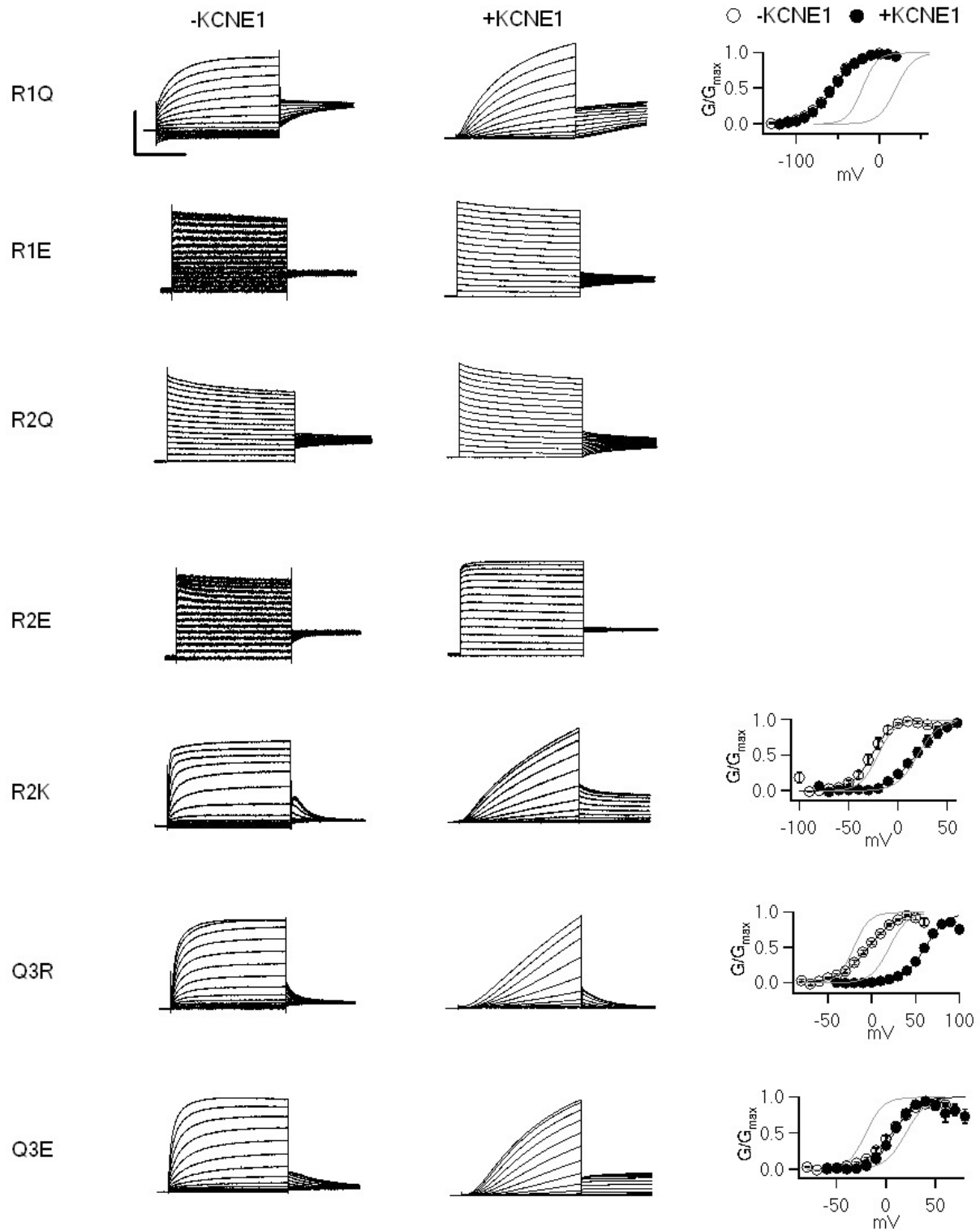
Supporting Material
Figure S1: Current traces and G-V relationships from mutations of R1, R2 and Q3. Scale: R1Q 3 µA, R1Q+KCNE1 15 µA, R1E 1 µA, R1E+KCNE1 20 µA, R2Q 2 µA, R2Q+KCNE1 40 µA, R2E 0.6 µA, R2E+KCNE1 10 µA, R2K 3 µA, R2K+KCNE1 10 µA, Q3R 1.5 µA, Q3R+KCNE1 4 µA, Q3E 6 µA, Q3E+KCNE1 20 µA; 2 s. In this and the Supplementary Fig. 4 G-V plots, the black curves are fittings of the Boltzmann equation to the mutants and the gray curves are G-V relations of WT Kv7.1 (left) and Kv7.1+KCNE1 (right).

Figure S2: Current traces and G-V relationships from mutations of R4, H5 and R6. Scale: R4Q 10 µA, R4Q+KCNE1 40 µA, R4E 2 µA, R4E+KCNE1 3 µA, H5Q 1 µA, H5R 2 µA, H5R+KCNE1 4 µA, H5Q+KCNE1 10 µA, H5E 1.5 µA, H5E+KCNE1 20 µA, R6Q 2 µA, R6Q+KCNE1 1 µA, R6E 2 µA, R6E+KCNE1 1 µA; 2 s.

Figure S3: Current traces of WT and S4 Trp mutations in Kv7.1 channels. Scale: black, red and blue vertical bars represent 1, 2 and 3 µA, respectively; 2 s. The test pulses for different mutants in this and subsequent supplementary figures differ, but are all between the -120 and 100 mV ranges with 10 mV increments.

Figure S4: Current traces of WT and S4 Trp mutations in Kv7.1+KCNE1 channels. Scale: black, red, blue, green and brown vertical bars represent 1, 2, 3, 10 and 15 µA, respectively; 2 s.

Figure S1

Figure S2
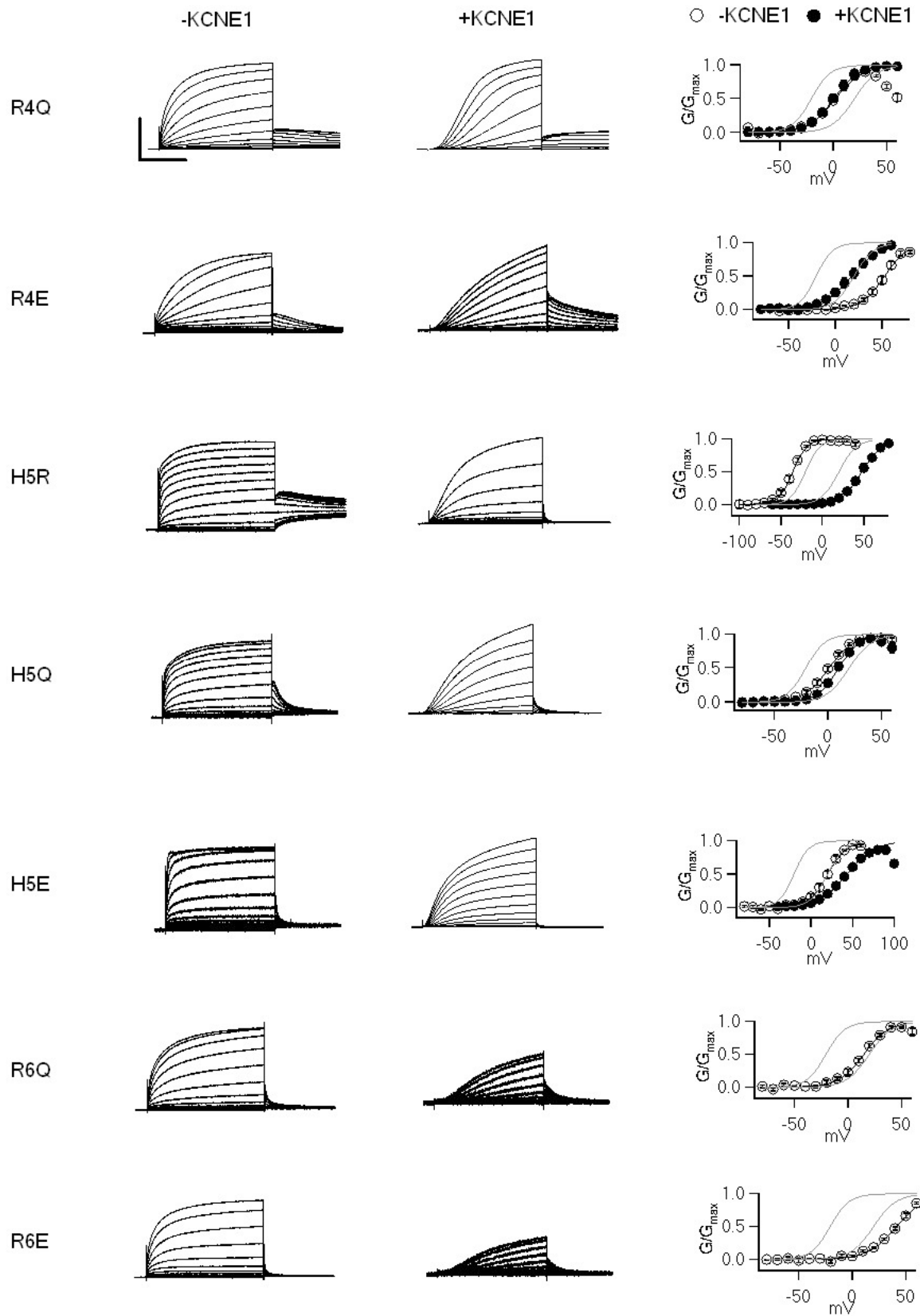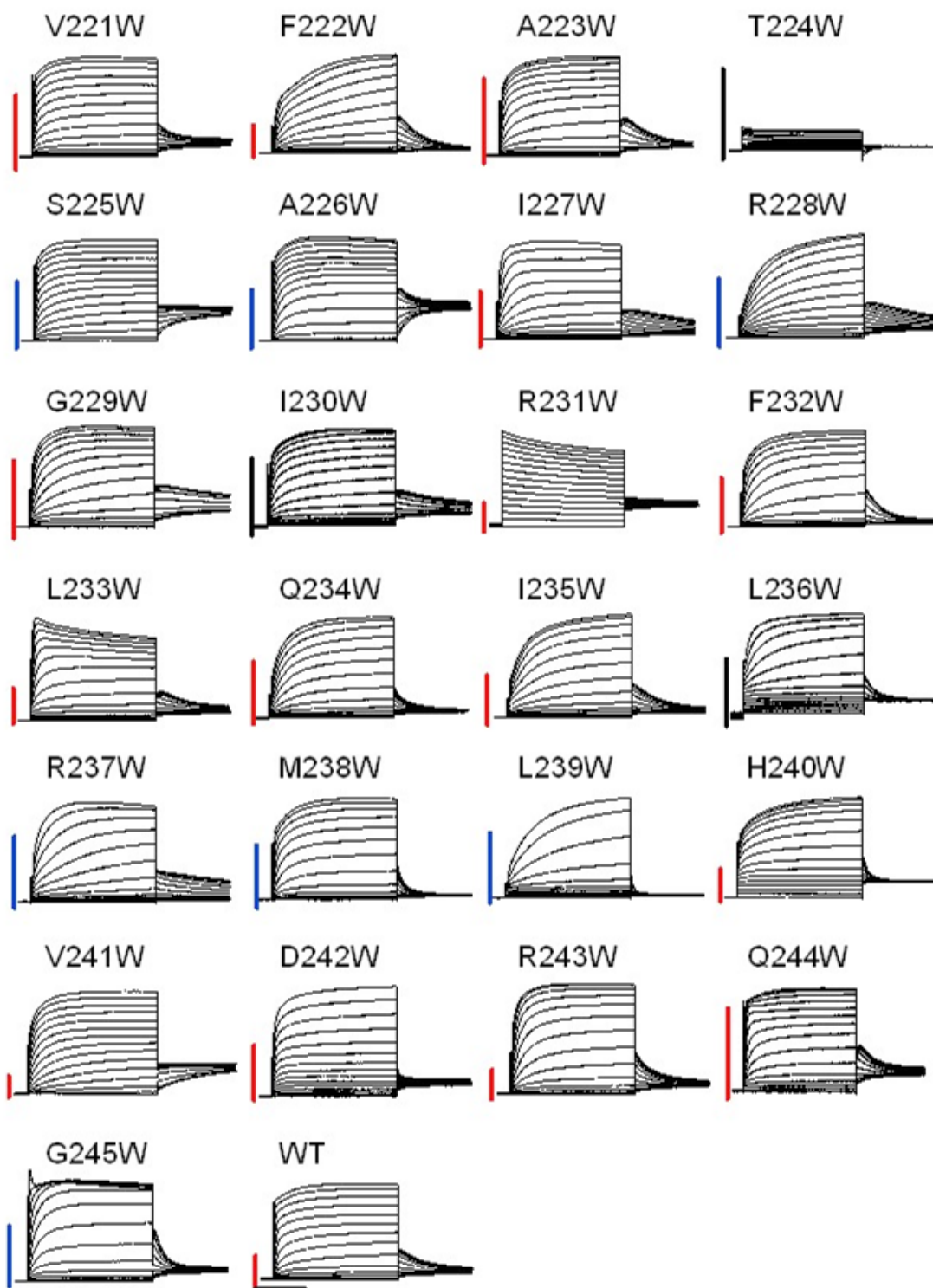
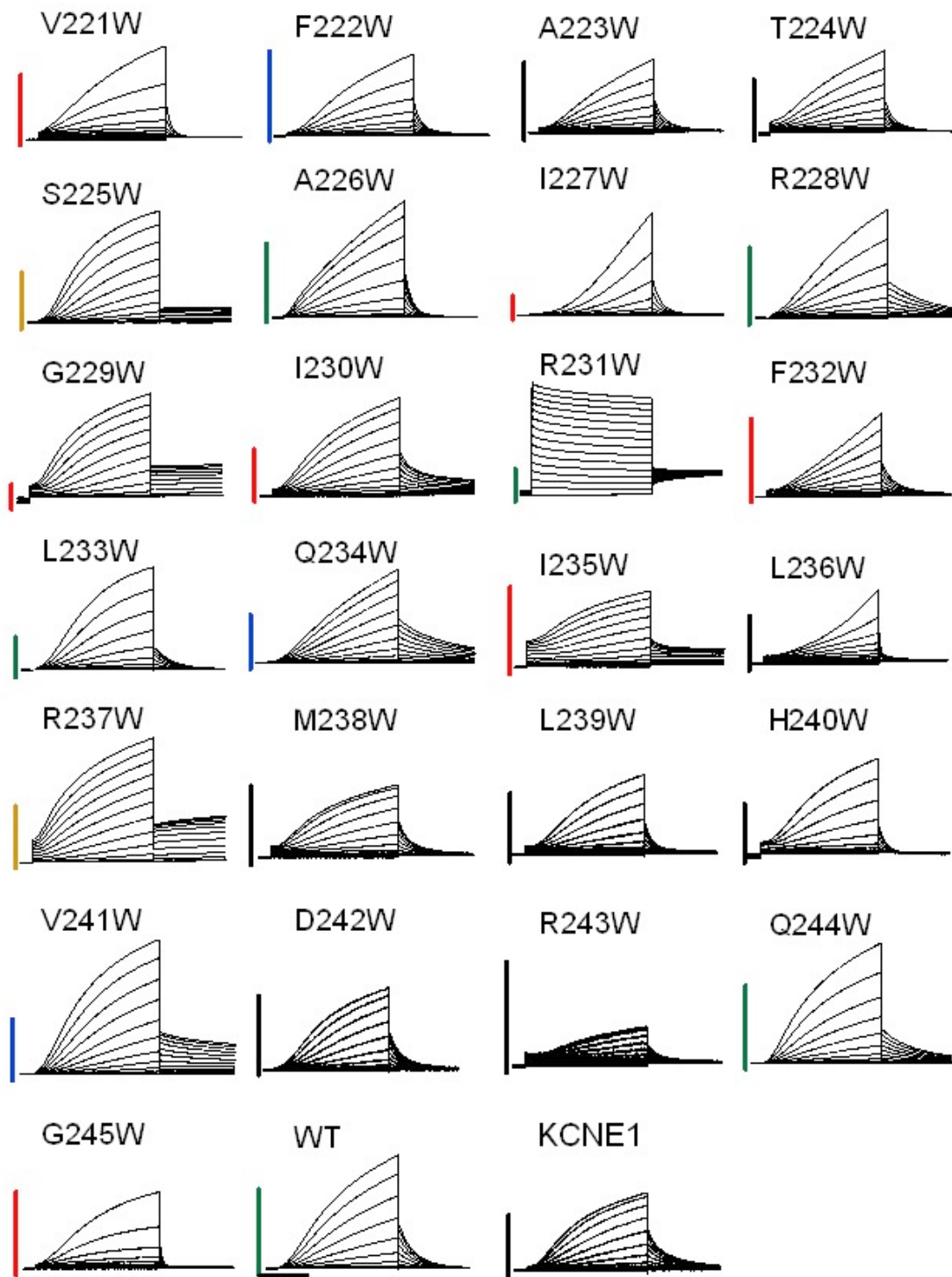**Figure S3**

V221W   F222W   A223W   T224W

S225W   A226W   I227W   R228W

G229W   I230W   R231W   F232W

L233W   Q234W   I235W   L236W

R237W   M238W   L239W   H240W

V241W   D242W   R243W   Q244W

G245W   WT   KCNE1

Figure S4