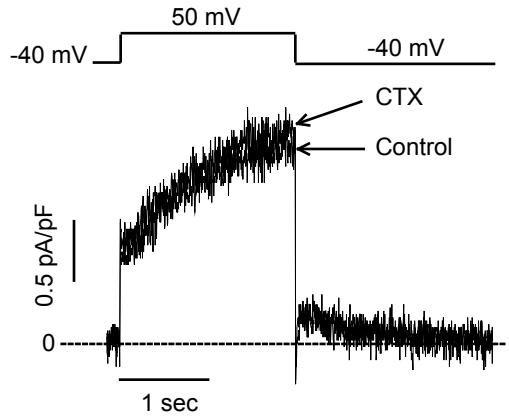

Figure S1. CTX does not block endogenous I_{Ks} in hESC-CM. I_{Ks} traces recorded in hESC-CMs depolarized to 50 mV (2 sec-test pulse from Holding Potential of -40 mV) in the absence and presence of CTX (70 nmol/L) overlapped with each other as indicated by arrows. Stimulation protocol is shown above current traces. Dashed line indicates zero current.

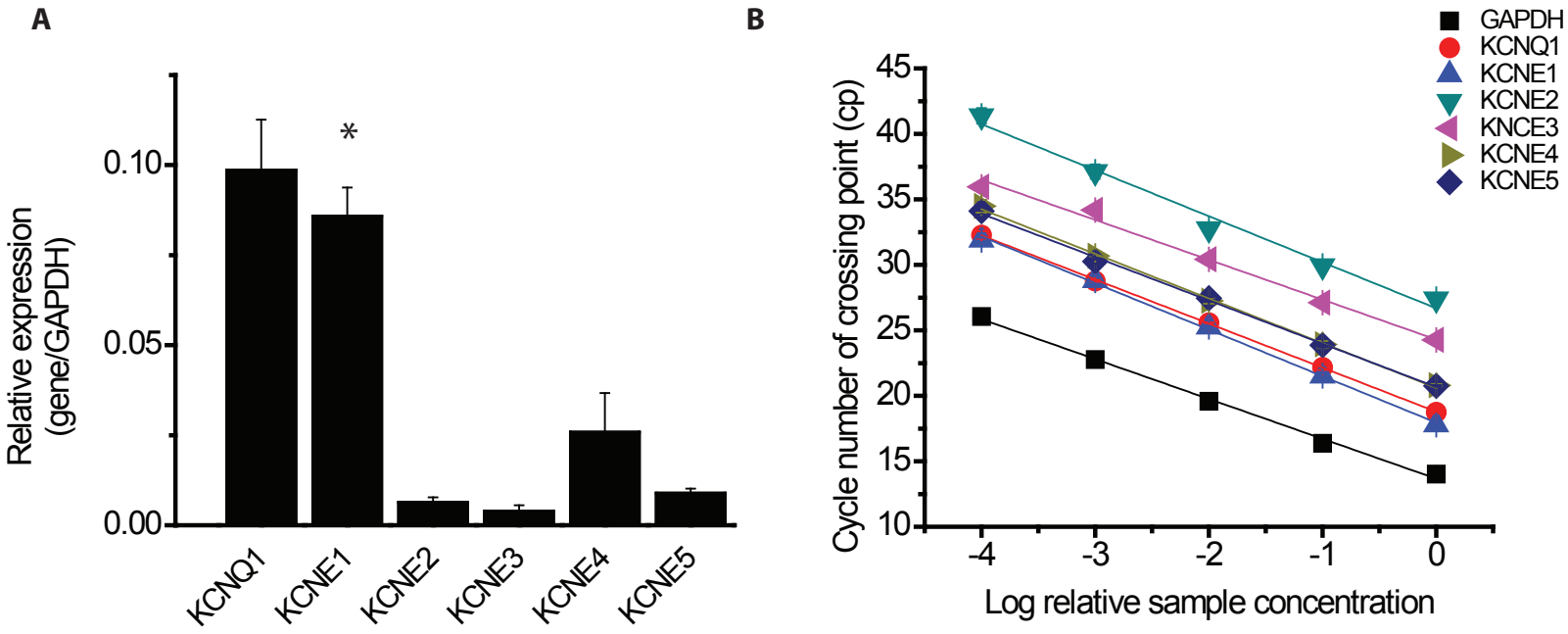

Figure S2: Quantitative RT-PCR detection of message for KCNQ1 and β- subunit variants. A, Relative mRNA expression of KCNQ1 and KCNE1-5 subunits in hESC-CMs on differentiation day 50 calculated by gene-specific standard curves and normalized to GAPDH. B, Standard curves of real-time PCR reactions generated from dilutions of the sample cDNA. The cycle numbers of crossing point (cp) were plotted against the common log of the relative concentrations to calculate the slope. The corresponding real-time PCR efficiencies of GAPDH, KCNQ1 and KCNE1-5 were 2.06, 1.98, 1.91, 1.90, 2.13, 1.96 and 2.00 respectively, calculated with the formula of Efficiency=$10^{(-1/slope)}$. Asterisk (*) indicates significant difference between KCNE1 and KCNE2-KCNE5 assessed by One-way ANOVA test.

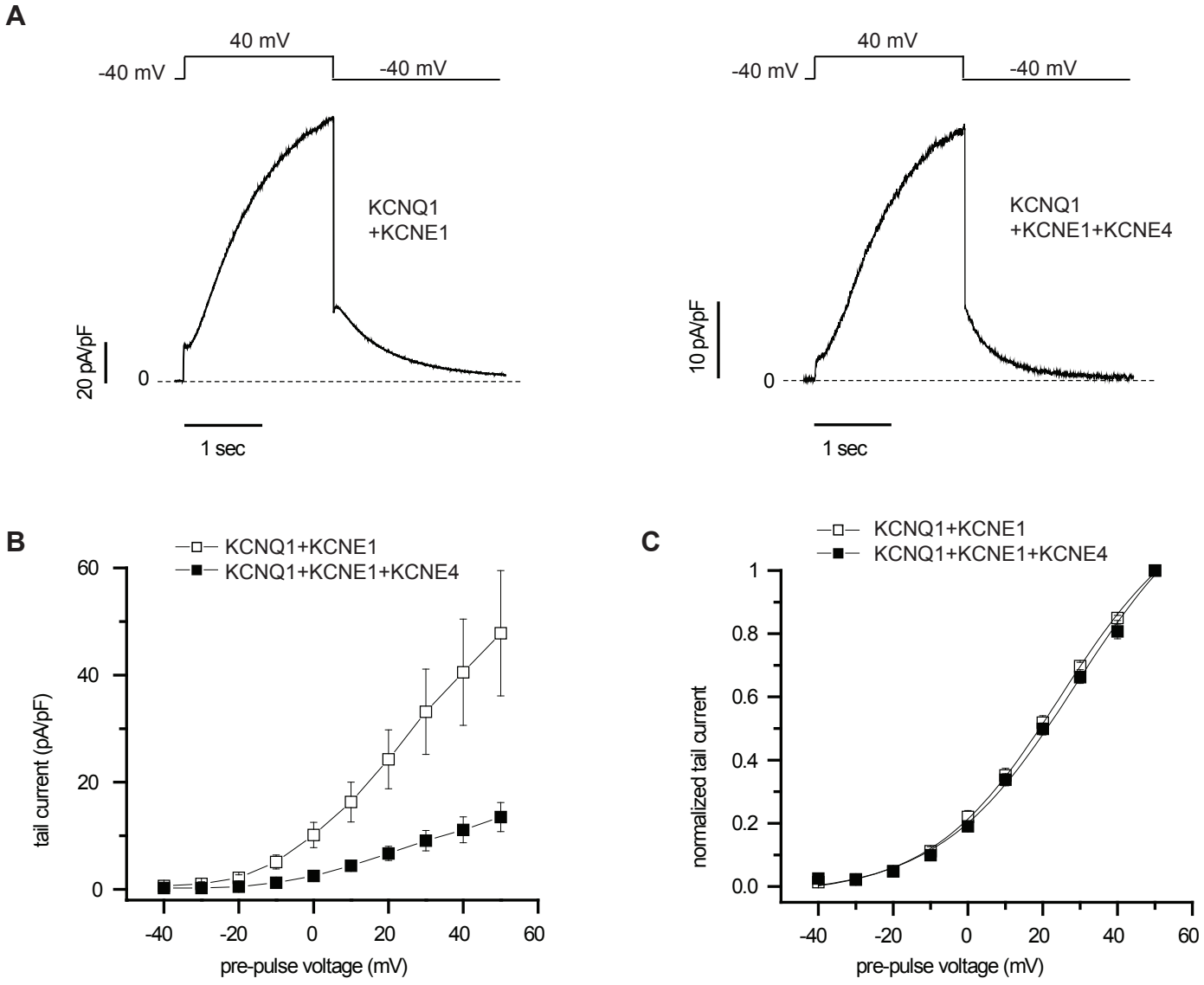

Figure S3. KCNE4 expression reduces I_{Ks} amplitude but not $V_{1/2}$. A. I_{Ks} (averaged traces) recorded in HEK293 cells transfected with either KCNQ1+KCNE1 (left, n=5) or with KCNQ1+KCNE1+KCNE4 (right, n=5). In both cases cells were depolarized every 10 seconds to +40 mV for 2 seconds and then repolarized to -40 mV for 2 seconds (holding potential was -40 mV). **B**. I_{Ks} tail current densities plotted vs. test pulse voltage for KCNQ1/KCNE1 (open symbols) and KCNQ1/KCNE4 (filled symbols), n=5 for both. **C**, I_{Ks} tail current was normalized (to tail current after +50mV activating pulse) and plotted vs. pre-pulse voltage. Data are expressed as mean +/- S.E.M.