Hoshi et al., http://www.jgp.org/cgi/content/full/jgp.201311061/DC1

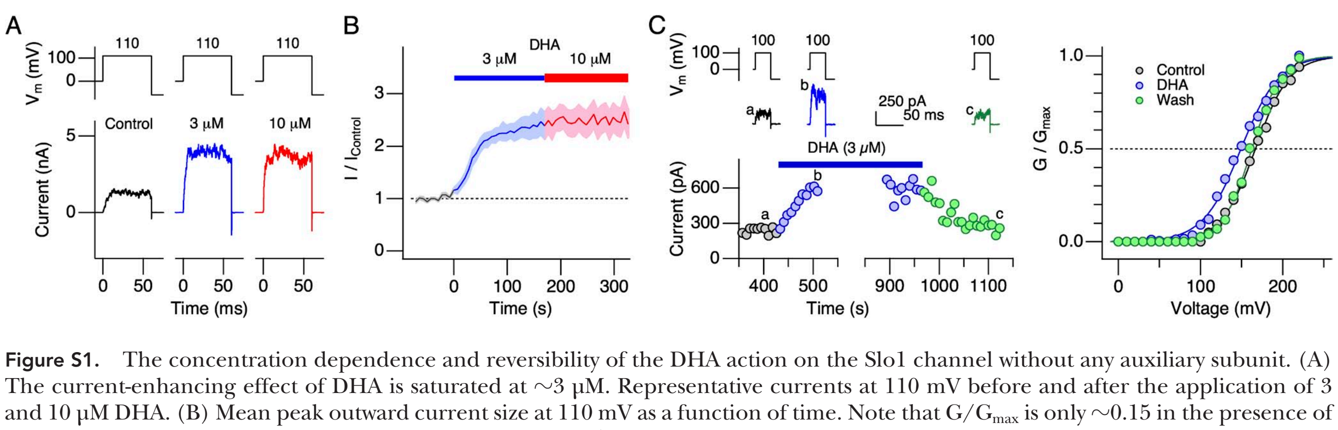

Figure S1. The concentration dependence and reversibility of the DHA action on the Slo1 channel without any auxiliary subunit. (A) The current-enhancing effect of DHA is saturated at ~3 µM. Representative currents at 110 mV before and after the application of 3 and 10 µM DHA. (B) Mean peak outward current size at 110 mV as a function of time. Note that G/G_{max} is only ~0.15 in the presence of 3 µM DHA (see Fig. 1 C). The line width indicates SEM. *n* = 7. (C) Sample currents (left), peak outward currents (left), and G-V curves (right) recorded before the application of DHA (black), in the presence of 3 µM DHA (blue) and after wash out of DHA (green). The patch was excised at t = 0 s. The smooth curves in C (right) are Boltzmann fits to the results. Their $V_{0.5}$ and Q_{app} values are 166.9 ± 1.1 mV and 1.21 ± 0.06, 149.3 ± 2.0 mV and 1.08 ± 0.08, and 162.7 ± 1.1 mV and 1.39 ± 0.07 for the results before the application of DHA, in the presence of DHA, and after wash-out, respectively. Currents were recorded without Ca^{2+}.

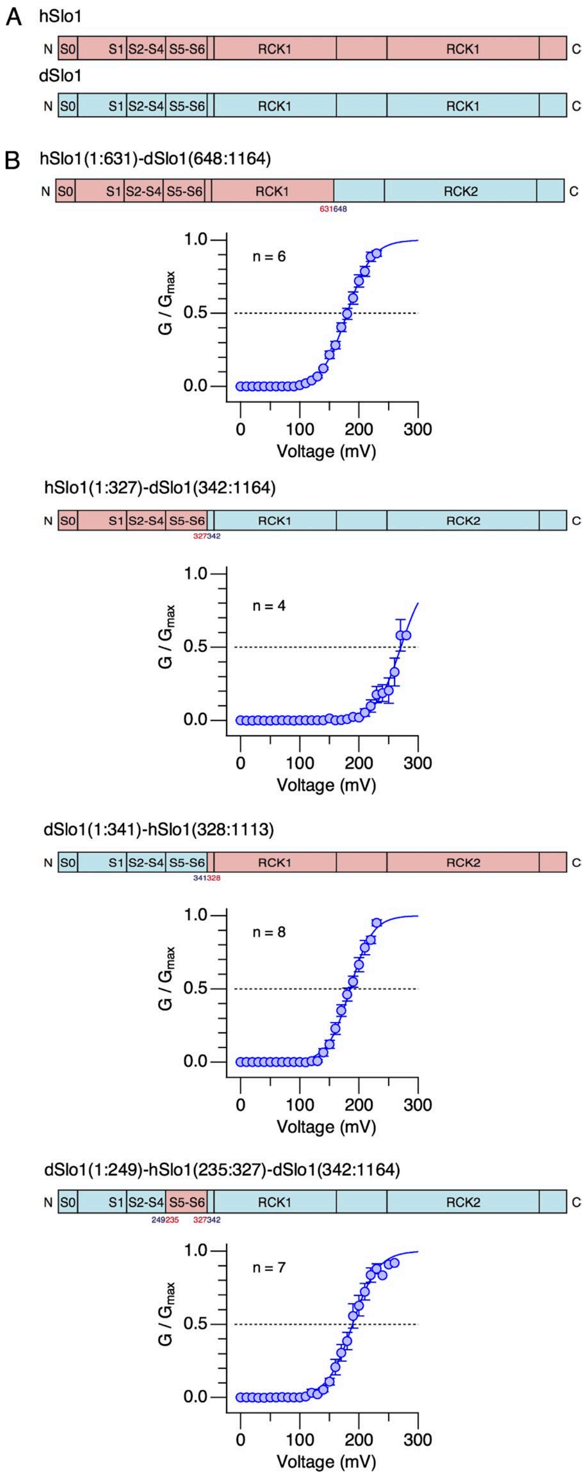

Figure S2. Voltage dependence of activation of human-*Drosophila* chimeric Slo1 channels. (A) Schematic organizational diagrams of hSlo1 (pink) and dSlo1 (light blue). (B) G-V curves of the chimeric channels indicated. The smooth curves represent Boltzmann fits to the results. From top to bottom, the $V_{0.5}$ and Q_{app} values are 180.0 ± 0.9 mV and 1.18 ± 0.05, 270.8 ± 2.6 mV and 1.20 ± 0.15, 185.0 ± 1.5 mV and 1.31 ± 0.09, and 189.1 ± 2.0 mV and 1.17 ± 0.10.

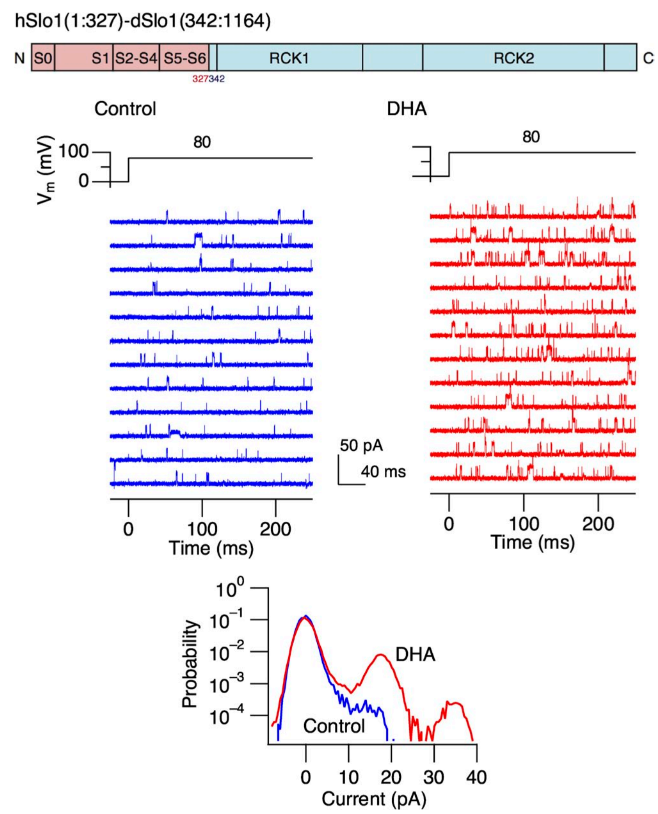

Figure S3. DHA increases P_o in hSlo1(1:327)–dSlo1(342:1164). Representative openings before (blue, left) and after (red, right) the application of 3 µM DHA in the absence of Ca^{2+}. Current responses to consecutive voltage pulses are shown. The normalized amplitude histogram below compares P_o.

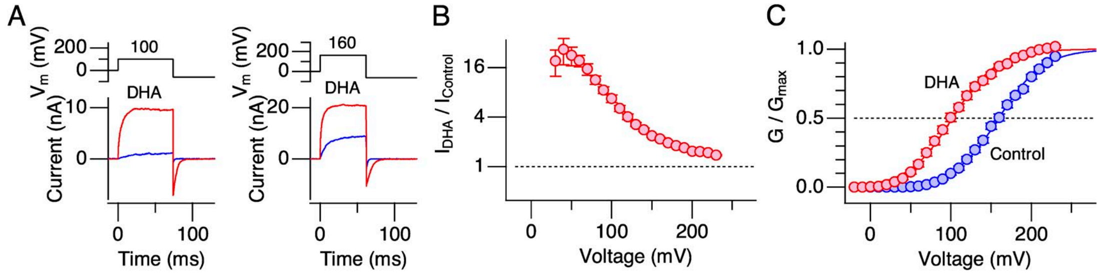

Figure S4. Enhancement of currents through wild-type hSlo1+hβ1 channels by DHA in the absence of intracellular Ca^{2+}. (A) Representative currents before (blue) and after (red) the addition of DHA to the intracellular side at 100 mV (G/G_{max} = ∼0.1) and 160 mV (G/G_{max} = ∼0.5). (B) Fractional increases in peak outward currents at different voltages by DHA. n = 13. (C) G-V curves before (blue) and after (red) the application of DHA. The smooth curves represent Boltzmann fits to the data. The $V_{0.5}$ and Q_{app} values are 160.0 ± 1.2 mV and 0.90 ± 0.03 for the control group and 102.1 ± 1.7 mV and 0.91 ± 0.05 for the DHA group. n = 13. DHA was applied at 3 μM. The results include those reported in Hoshi et al. (2013. *Proc. Natl. Acad. Sci. USA*. 110:4816–4821) and additional measurements.

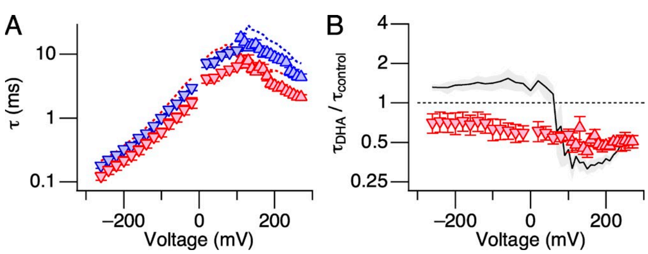

Figure S5. Effects of 3 μM DHA on current kinetics of hSlo1 Y318S+hβ1. (A) Voltage dependence of current relaxation time constant before (blue) and after (red) the application of DHA in hSlo1 Y318S+hβ1. The average results obtained from wild-type hSlo1+hβ1 are also shown using dashed traces (red, before DHA; blue, after DHA application). (B) Voltage dependence of fractional changes in the time constant of current relaxation in hSlo1 Y318S+hβ1 (red) and wild-type hSlo1+hβ1 (gray). All results were obtained without Ca^{2+}. n = 13–16, depending on the voltage. The wild-type results are from Hoshi et al. (2013. *Proc. Natl. Acad. Sci. USA*. 110:4816–4821).