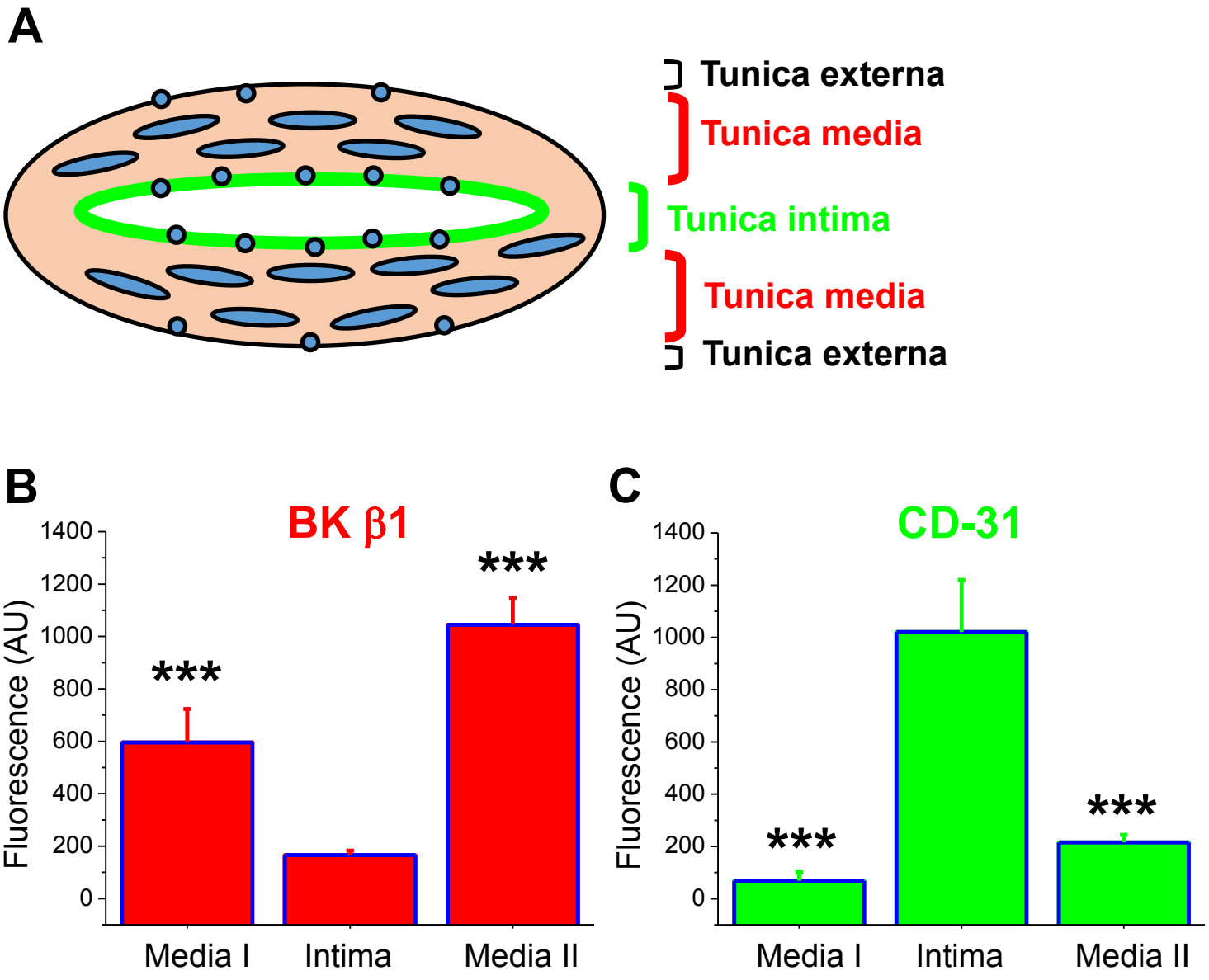
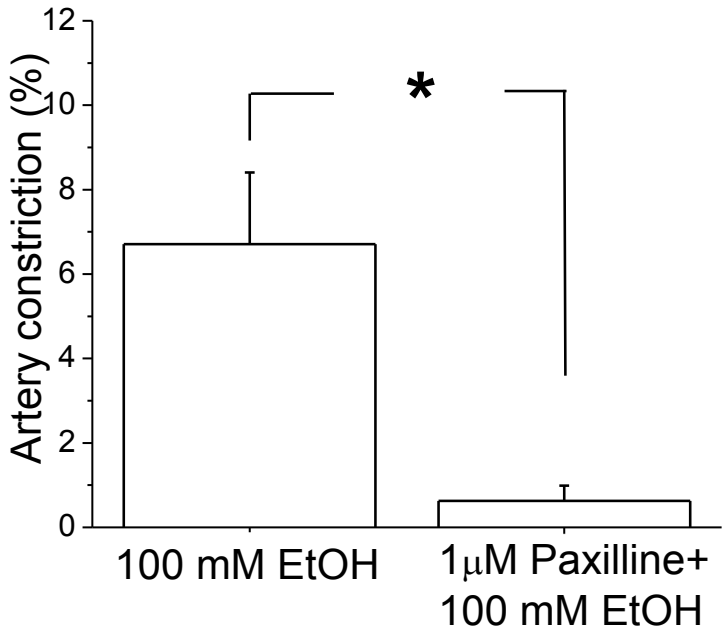


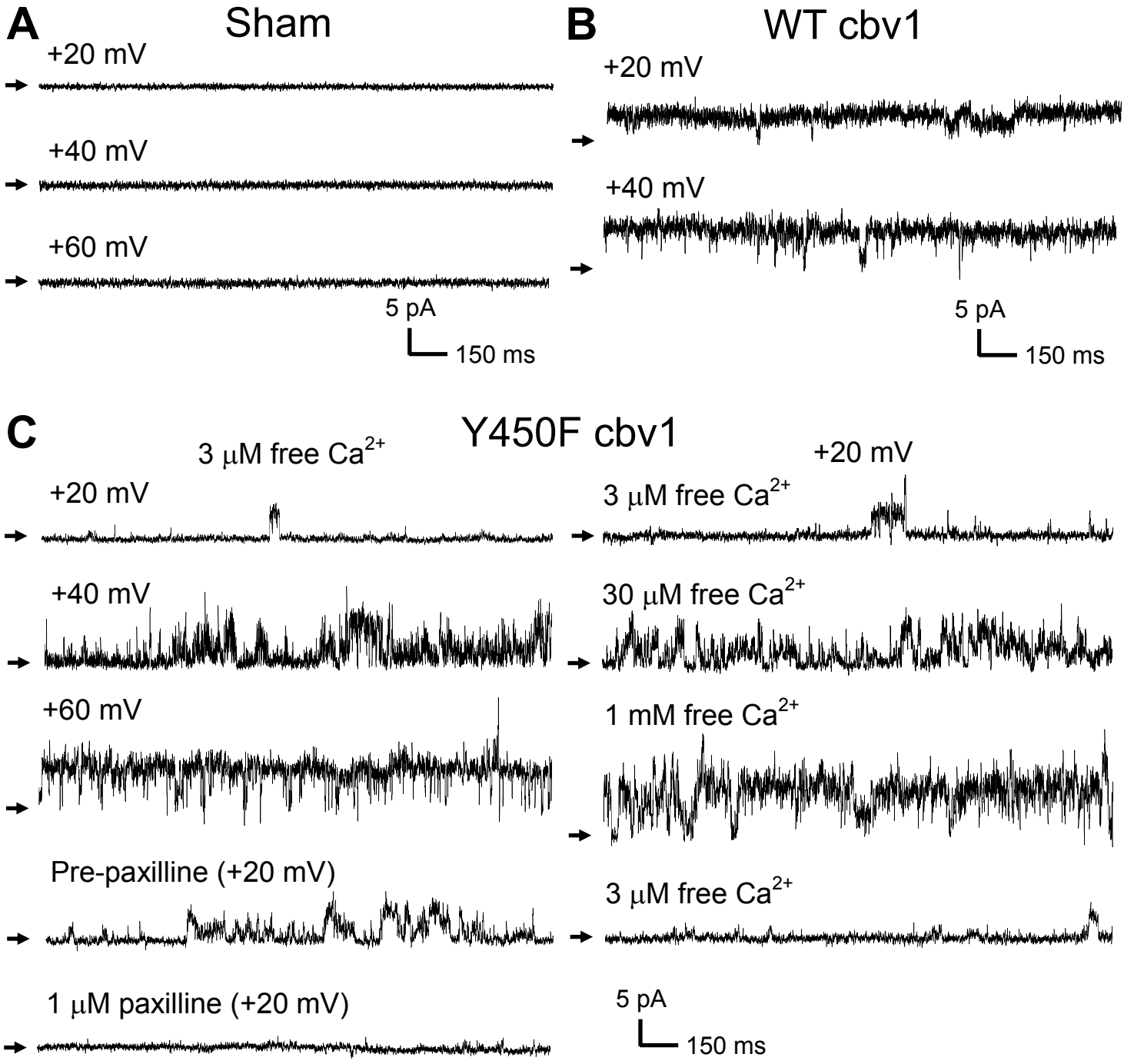
Supplementary Figure 1. Identification of cerebral artery smooth muscle cells. (A). Cartoon depicting cerebral artery layers and orientation of cellular nuclei (blue) within each layer. (B). Fluorescence intensity of different layers within rat cerebral artery following immunostaining with anti-BK β1-specific antibody (Supplementary Material and Methods; Supplementary Movie 1). Here and in (C), AU: arbitrary units. Each bar represents an average from 9 artery segments imaged from 3 separate arteries that were stained on 2 independent experimental occasions. ***Different from tunica intima ($P<0.001$ by one-way ANOVA with Tukey post-test). (C) Fluorescence intensity of different layers within rat cerebral artery following immunostaining with anti-CD-31-specific antibody (Supplementary Material and Methods; Supplementary Movie 2).

Figure S1



Supplementary Figure 2. BK channel block prevents artery diameter modulation by 100 mM EtOH. Averaged data comparing effect of 100 mM EtOH in absence (n=4) versus presence (n=5) of BK channel blocker 1 μM paxilline. *Statistically significant difference (P=0.016 by Mann-Whitney test).

Figure S2



Supplementary Figure 3. Chemical loading of *KCNMA1* knock-out (K/O) mouse middle cerebral arteries with cbv1-coding plasmids renders currents that satisfy characteristics of BK conductance. (A). Original traces showing lack of current in excised membrane patches (3 μM free Ca^{2+}) of myocytes isolated from *KCNMA1* K/O arteries subjected to sham loading. Here and in (B-C), arrows point at baseline (all channels closed). (B). Original traces showing prominent current of large amplitude (5 pA and 8 pA at +20 and +40 mV, respectively) in patches from myocytes of *KCNMA1* K/O arteries subjected to loading with WT cbv1. (C). Original traces showing voltage-, calcium-, and paxilline-sensitivity of currents in excised membrane patches of myocytes from *KCNMA1* K/O arteries subjected to loading with Y450F cbv1.

Figure S3