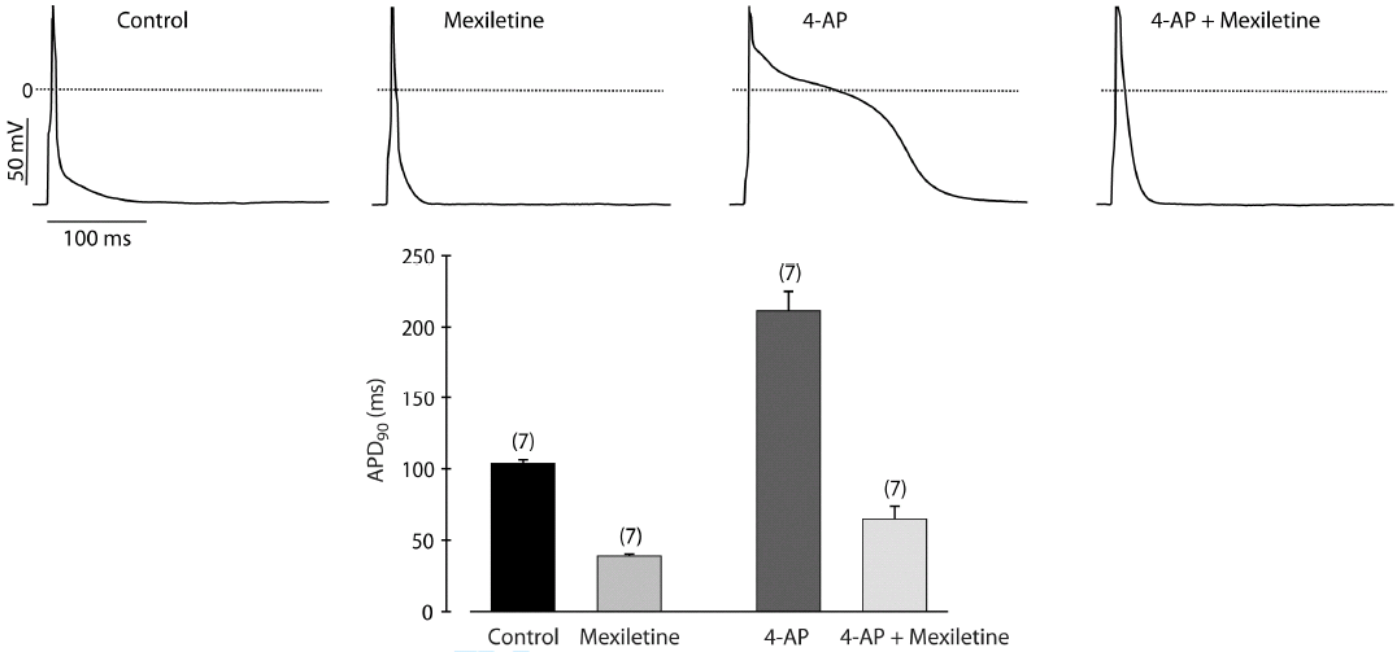
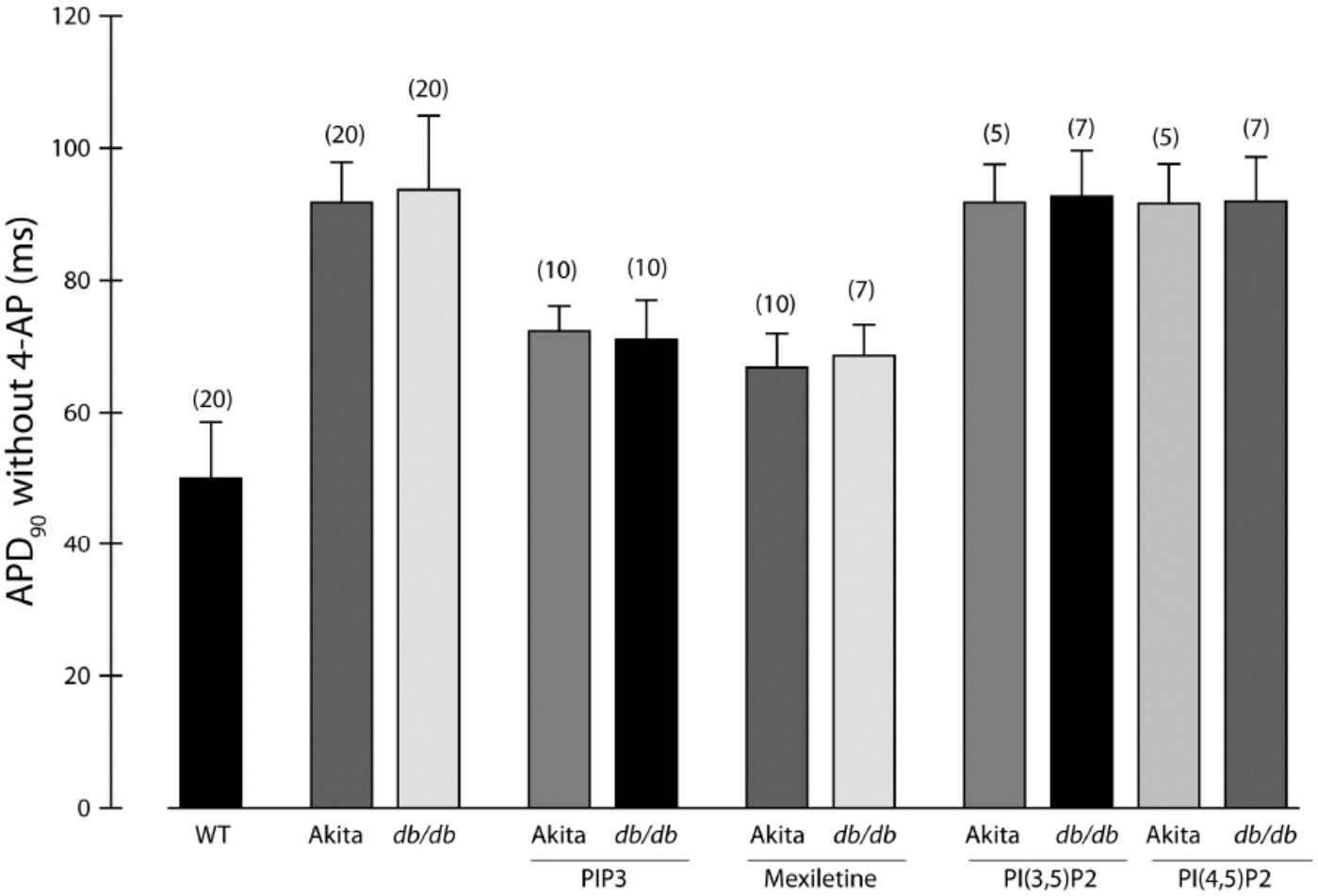
SUPPLEMENTARY DATA

Supplementary Figure 1. APD measured in *Ins2*^{Akita} myocytes perfused with mexiletine. Upper panels: Representative action potential traces recorded from *Ins2*^{Akita} myocytes in the presence or absence of 4-AP (4 mM) at baseline or 5 min after perfusion with mexiletine (4 μg/ml). Lower panel: Summary data (mean ± SE) of APD_{90} in *Ins2*^{Akita} myocytes. N = 7 cells in each group.



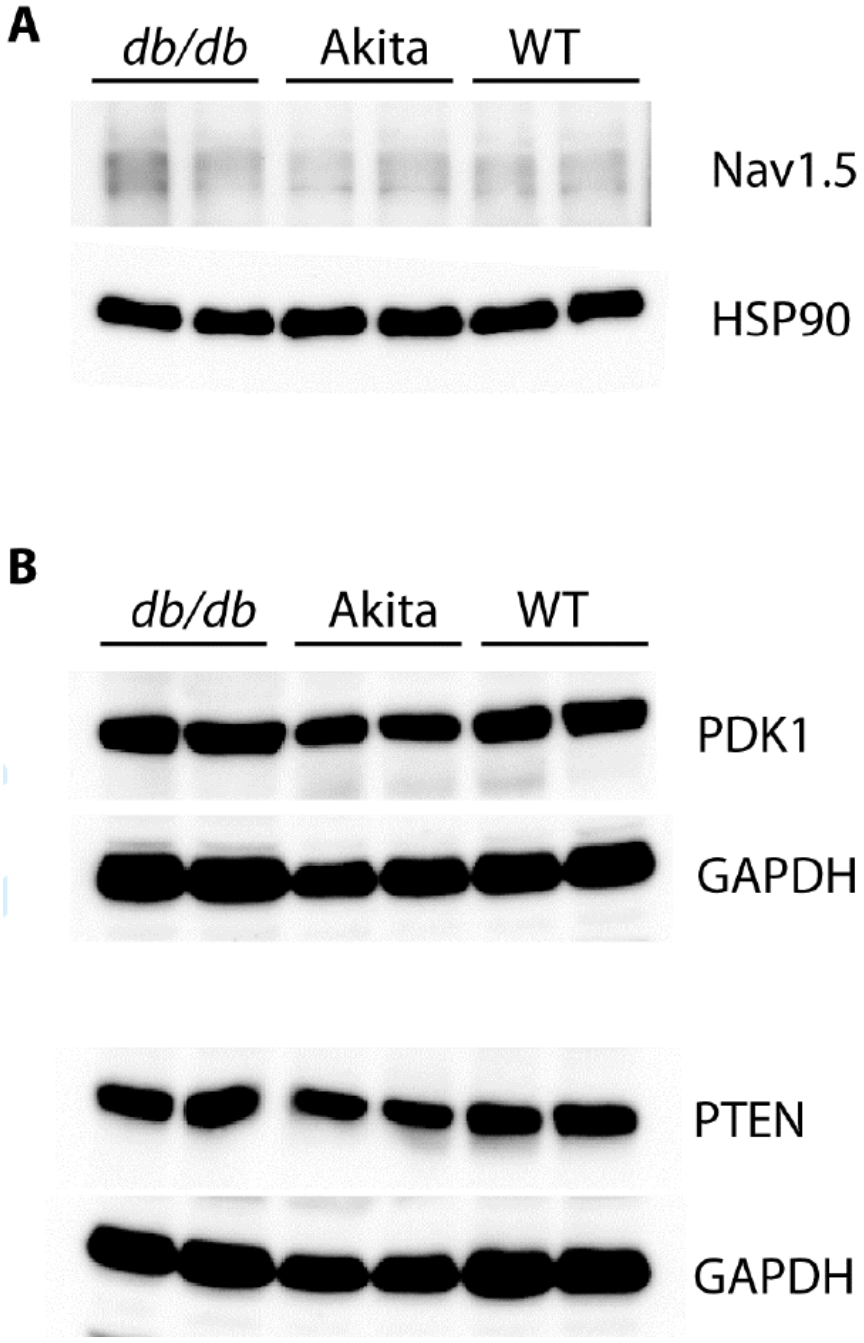
SUPPLEMENTARY DATA

Supplementary Figure 2. APD measured without 4-AP (see Figure 1D). Ventricular myocytes were prepared from diabetic *Ins2*^{Akita} (Akita) and *db/db* mice or normoglycemic wild-type (WT) mice. Action potentials were recorded in the absence of 4-AP with or without intracellular infusion of 1 μM phospholipids or after a 2 h preincubation with 4 μg/ml mexiletine. Summary data of APD_{90} are shown as mean ± SE. The number of cells studied is above each bar.



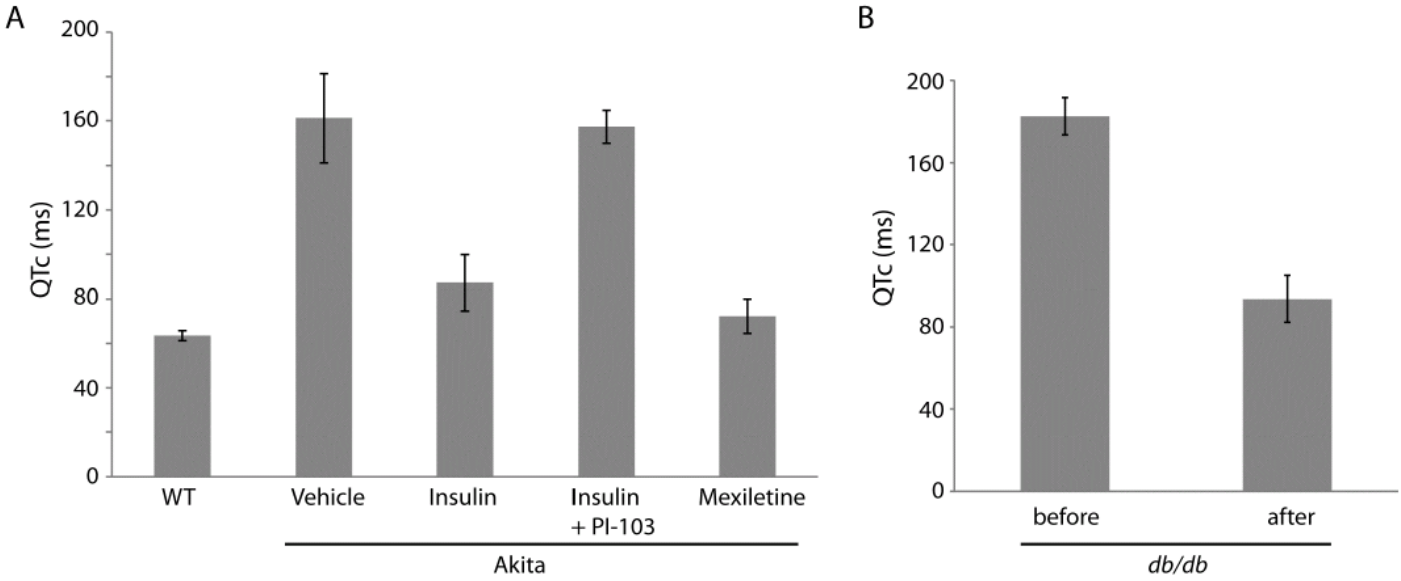
SUPPLEMENTARY DATA

Supplementary Figure 3. Nav1.5, PDK1 and PTEN expression levels. **(A)** Heart membrane preparations from *db/db*, *Ins2*^{Akita} (Akita) and wild-type (WT) mice were analyzed by western blotting with an Nav1.5 antibody. The blot was reprobed with an HSP90 antibody as a loading control. **(B)** Total heart lysates were analyzed by western blotting with the indicated antibodies.

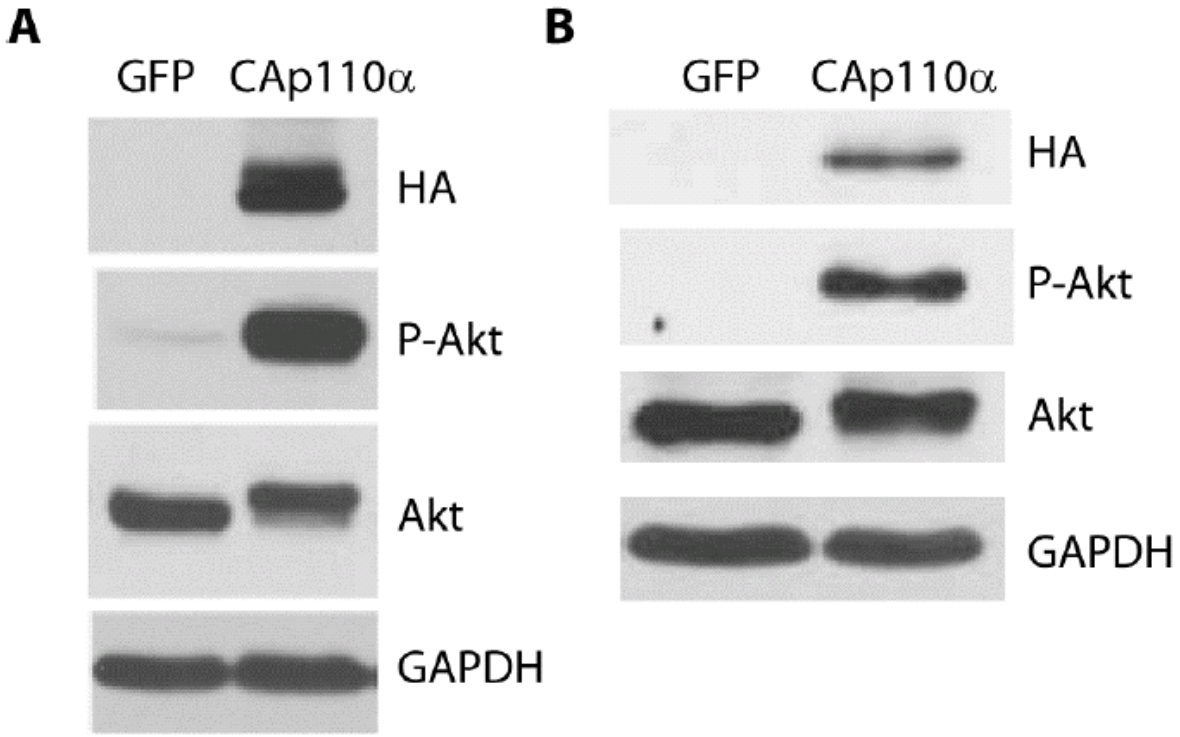


SUPPLEMENTARY DATA

Supplementary Figure 4. Bazett heart rate correction of QT intervals measured in Fig. 3A & B. Cardiac electrical activity was recorded from spontaneously beating hearts mounted on a Langendorff apparatus. QT intervals corrected for heart rate (QTc) were calculated from the tracings using the Bazett formula (*15*). Summary QTc graphs show mean ± SE. **(A)** Akita and wild-type (WT) hearts were treated with insulin (1 unit/L), PI-103 (500 nM) or mexiletine (4 μg/mL) added to the perfusate. N ≥ 4 hearts per group. **(B)** *db/db* hearts before and after mexiletine treatment. N = 5 hearts.

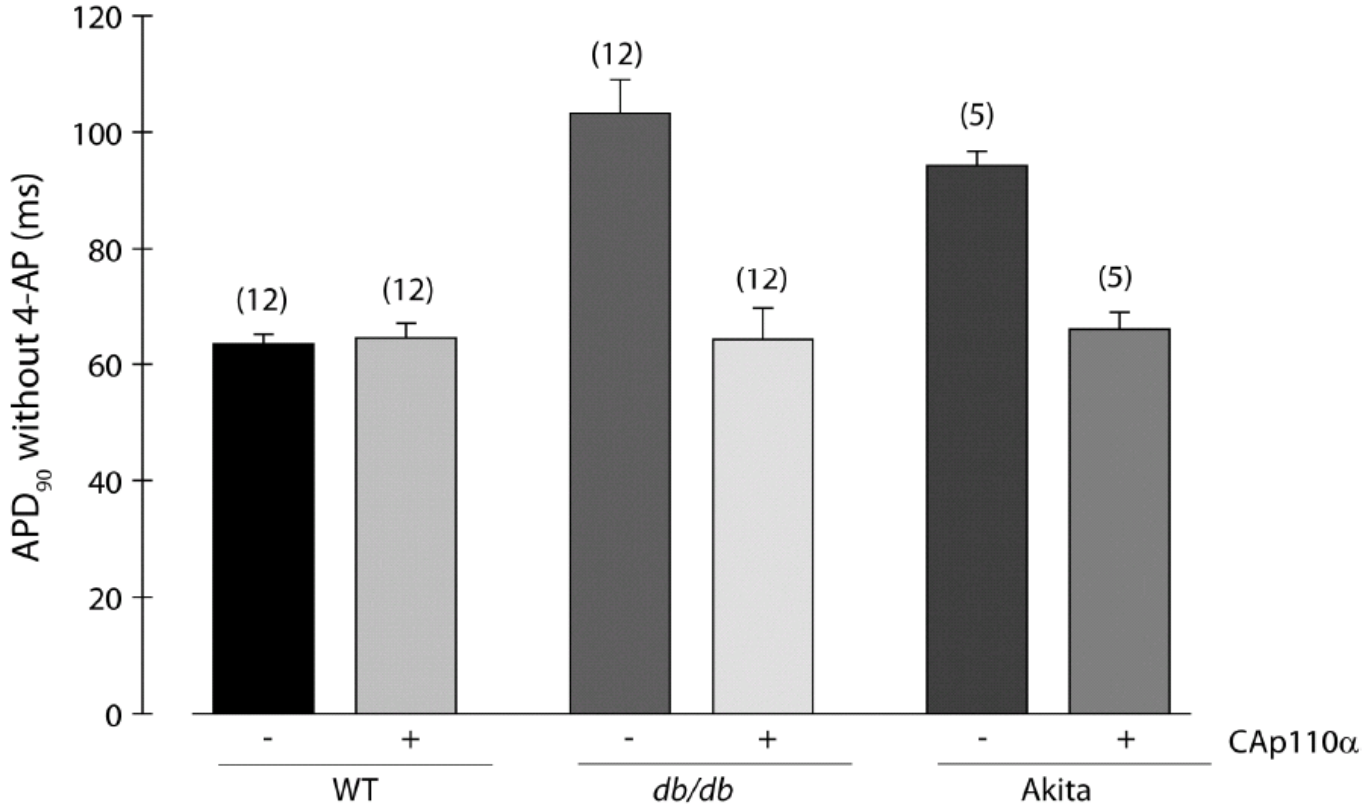


Supplementary Figure 5. Expression of CAp110α in cultured *Ins2*^{Akita} (A) and *db/db* (B) myocytes. Myocytes were infected with adenoviruses carrying HA-tagged CAp110α or GFP as a control. Cells were harvested 48 h later and lysates were analyzed by western blotting using the indicated antibodies.



SUPPLEMENTARY DATA

Supplementary Figure 6. Action potential duration measured without 4-AP (see Figure 5B). Cultured myocytes from wild-type (WT), *db/db* and *Ins2*^{Akita} (Akita) mice were infected with adenoviruses carrying either CAp110α or GFP as a control. Action potential recordings were made in the absence of 4-AP. Summary graph of APD_{90} shows mean ± SE. The number of cells studied is above each bar.



Supplementary Figure 7. Akt inhibitor (Akti) increases I_{NaP} in wild-type myocytes. Cardiac myocytes isolated from wild-type mice were treated with 10 μM Akti for 2 h at room temperature prior to measuring I_{NaP}. N = 7 cells per group.