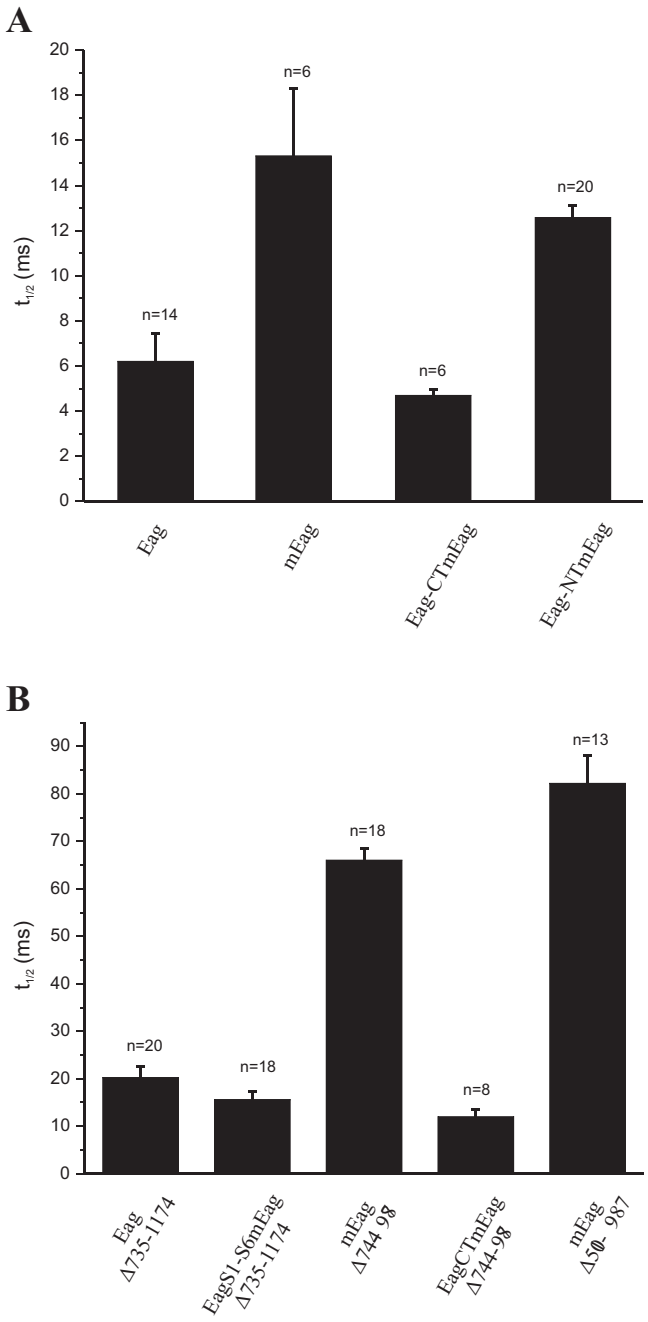
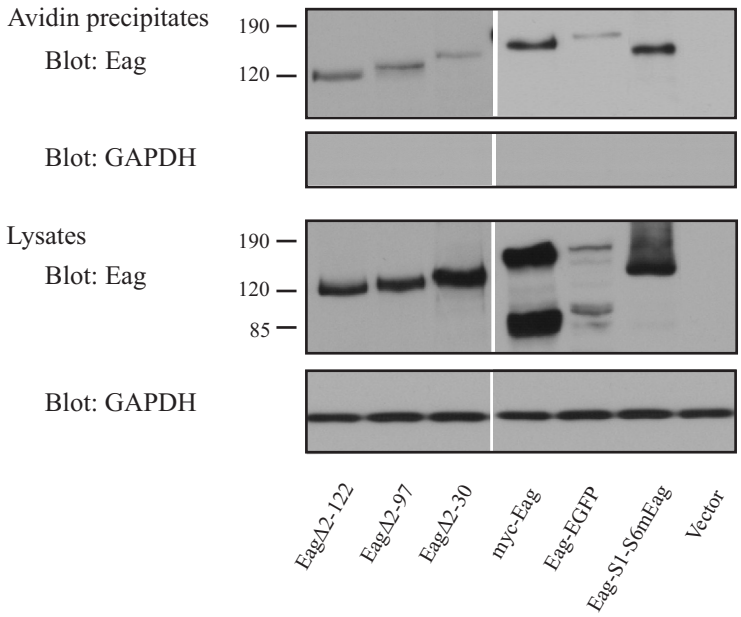


Supplemental Figure 1. **Changes in activation kinetics of the chimeric and truncation mutant Eag channels. (A)** Comparison of activation kinetics of Eag, mEag and the two chimeric channels. Activation time course was determined by measuring time to half maximal current amplitude ($t_{1/2}$) at +60 mV in extracellular solutions containing 2 mM Mg^{2+}. Values are shown as mean ± SEM. Data shown are measured from transfected CHO cells cultivated at 26^0C. For mEag and the two chimeric channels that conduct K^+ currents at 37^0C, their $t_{1/2}$ values are not significantly different from that at 26^0C. **(B)** Compared with the respective full length channels, CT-truncated mutant channels exhibited slower activation kinetics when they expressed ionic currents at 26^0C .



Supplemental Figure 2. **Non-conducting mutant Eag channels are targeted to the plasma membrane.** Cell surface proteins were biotinylated using a membrane-impermeable reagent and isolated with streptavidin beads. Channel immunoreactivity in the streptavidin precipitates (*first panel*) and in the lysates (*third panel*) was detected with an anti-Eag antibody which recognizes a region of the Eag carboxyl terminal domain. GAPDH was probed either as a loading control (*fourth panel), or* to verify that the biotinylation reagent did not label intracellular proteins, (*second panel*). Images shown are representative data from transfected tsA 201 cells cultivated at 26^0C. Similar results were obtained from cells maintained at 37^0C. Note that expression levels of different mutant channel proteins varied because they were expressed by three different vectors.