

Supplementary materials

The role of the *PIK3CA* gene in the development and aging of the brain

Shaozhen Xie^{1,2,3}, Jing Ni^{1,2,3}, Hanbing Guo^{1,2}, Victor Luu^{1,2}, Yanzhi Wang^{1,2}, Jean J. Zhao^{1,2,*},

Thomas M. Roberts^{1,2,*}

¹Department of Cancer Biology, Dana-Farber Cancer Institute, Boston, MA 02215, USA.

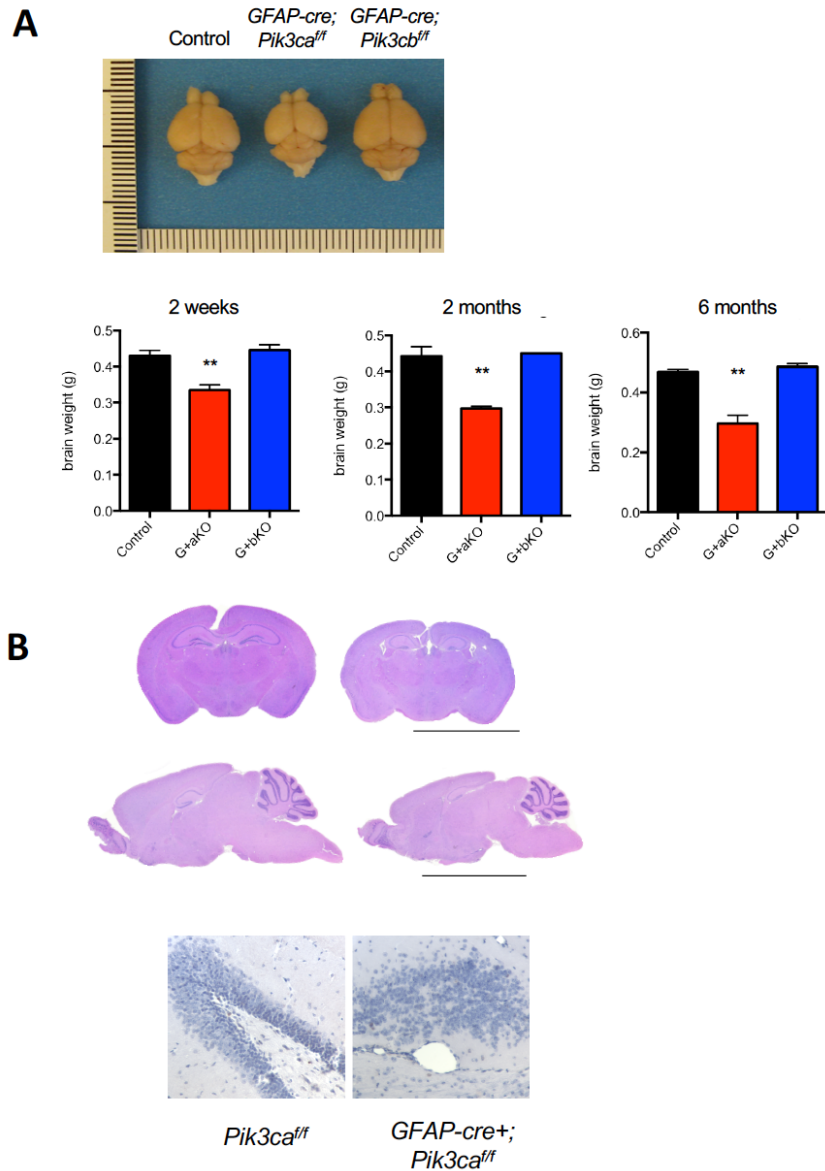
²Department of Biological Chemistry and Molecular Pharmacology, Harvard Medical School,
Boston, MA 02115, USA

³These authors contributed equally

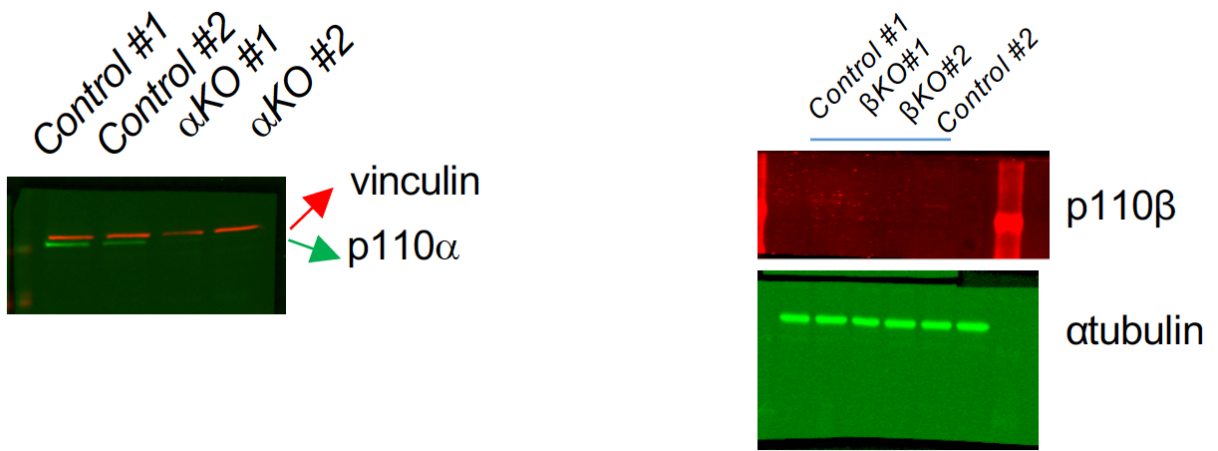
*Correspondence to: Jean J. Zhao (email: jean_zhao@dfci.harvard.edu); and Thomas M.

Roberts, PhD (email: thomas_roberts@dfci.harvard.edu)

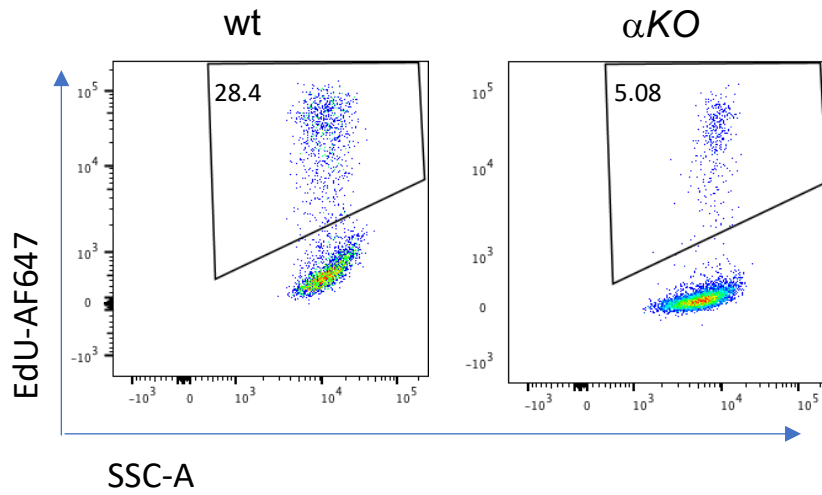
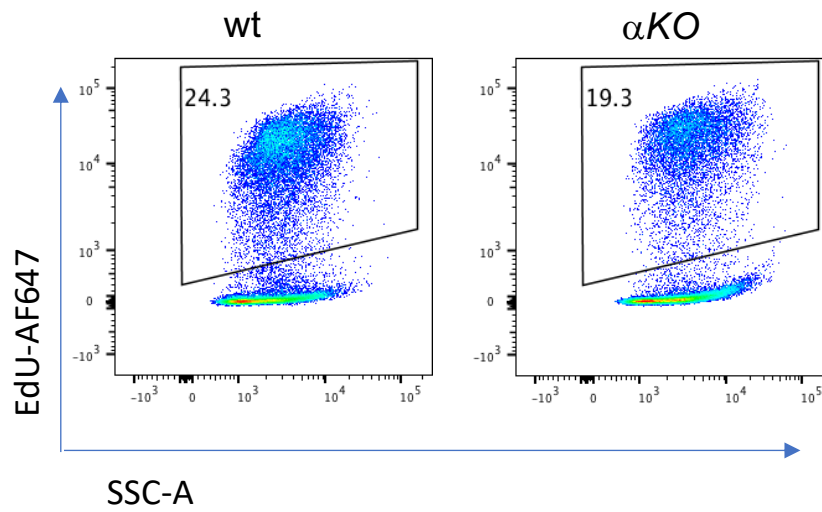
SUPPLEMENTARY FIGURES



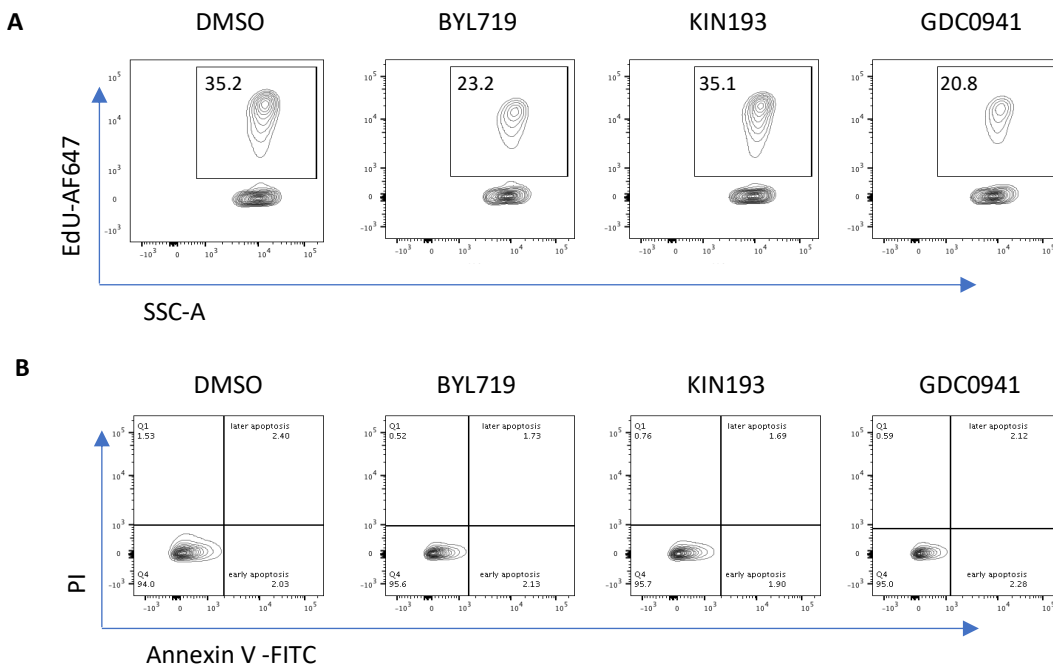
Supplementary Figure 1. The mice with brain-specific 110 α knockout, but not p110 β , have significantly smaller and abnormal brains. (A) Overall brain picture and brain weight of *GFAPcre;Pik3ca^{ff}* mice (red bar), *GFAPcre;Pik3cb^{ff}* mice (blue bar), or wild type control mice (black line) at different ages. Bars represents mean \pm SEM ($n \geq 5$). (B) H&E staining of coronal sections (upper panel, 12 months old), sagittal sections (middle panel, 2 months old), and hippocampus region (lower panel) of the mouse brain tissue. Scale bar, 5 mm



Supplementary Figure 2. Uncropped images from Western blot related to Figure 4A

A**B**

Supplementary Figure 3. Flow cytometry analysis of EdU incorporation in NSC/NPCs *in vitro* and *in vivo*. Representative plots for cell subset of EdU+ cells *in vitro* (A, related to Figure 4C) and *in vivo* (B, related to Figure 4D).



Supplementary Figure 4. Flow cytometry analysis of EdU incorporation (A) and AnnexinV/PI apoptosis (B) in wild type NSC/NPCs with indicated PI3K inhibitors treatment. Representative plots of cell subset of NSC/NPCs related to Figure 4F and 4G.