Adult hippocampal neurogenesis is intact in old APP/APLP2 conditional knockout mice

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The major lesions found in the brains of AD patients are neurofibrillary tangles and neuritic plaques that are mainly composed of the β-amyloid peptide (Aβ) derived via proteolysis from the amyloid precursor protein (APP) and related amyloid precursor-like protein, APLP2. It has been suggested that the modulation of hippocampal neurogenesis, by way of GABAergic interneurons, is a possible physiological function of APP.

We therefore analyzed adult hippocampal neurogenesis and GABAergic interneurons in old (18-22 months) conditional APP KO mice on an APLP2-KO background to circumvent the early postnatal lethality. Analysis of GABAergic interneurons are ongoing, surprisingly however, we found no difference in the number of young neurons and proliferating cells between the knockout and control mice. There were also no significant differences between males and females. However, there is still a significant decline of neurogenesis between the age of 18 to 22 month in both mutant and control group.

Our results indicate that old APP-/-APLP2-/- mice of both sexes are not impaired by a loss of young granule cells, indicating that in this AD related mouse model impaired neurogenesis does not contribute to the disease pathogenesis.