## Progressive Increase of Alzheimer's Disease Pathology in 5xFAD Transgenic Mice

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#### BACKGROUND

Today, Alzheimer's disease (AD) is one of most devastating neurodegenerative the Pathologically worldwide. diseases increased  $\beta$ -amyloid in the brain of AD patients is thought to be one of the main for the observed progressive causes cognitive decline in affected people. The development of new drugs against AD is therefore a main research focus. To be able to test these new drugs, appropriate animal models are needed. The 5xFAD transgenic mouse model mimics the most crucial phenotypic symptoms of amyloidogenic neurodegeneration and is therefore among the best transgenic AD animals available.

#### RESULTS



#### MATERIALS and METHODS

5xFAD mice bear 5 mutations, 3 in the APP695 gene as well as 2 mutations in the presenilin 1 gene. The expression of the 5xFAD transgene is driven by the neuronspecific Thy1 promoter. Here, we analyzed the soluble and insoluble fraction of whole brain lysate from 5xFAD mice over age for aggregated A $\beta$  by A4 assay and for A $\beta$  and Αβ aggregates well as as neuroinflammation indicated by as activated microglia and astrogliosis by immunofluorescent labeling followed by quantification.

#### RESULTS

Our results show a progressive increase of A $\beta$ 40 and A $\beta$ 42 aggregates as well as neuroinflammation in the cortex and hippocampus of 3 to 9 months old 5xFAD mice.



**Figure 3: Neuroinflammation in 5xFAD transgenic mice.** Quantification of activated microglia (**A**; CD11b labeling) and astrocytosis (**B**; GFAP labeling) in the cortex and hippocampus of 3-, 6- and 9-month old 5xFAD transgenic mice. Immunoreactive area in percent. n = 5. Data are shown as mean + SEM. One Way ANOVA followed by Bonferroni's *posthoc* test.\*p<0.05; \*\*p<0.01; \*\*\*p<0.001. **C**: Representative images of CD11b, GFAP, NeuN and DAPI labeling in 9 months old 5xFAD transgenic mice.

#### SUMMARY and CONCLUSION

These results suggest that 5xFAD mice are not only a well-suited model for Aβ research but also to analyze Alzheimer's disease - related neuroinflammation.

#### **Contact for more information about the model:**

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