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*In vivo* Animal Models

# Alzheimer's Disease

## 5xFAD Transgenic Mouse Model

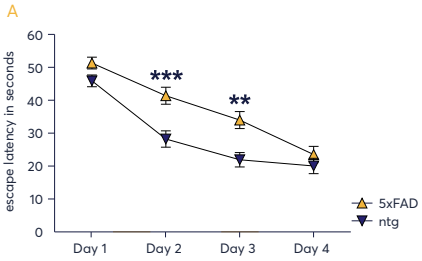
5xFAD (Familiar Alzheimer Disease) mice bear five mutations, three in the APP695 gene [K670N/M671L (Swedish), I716V (Florida), V717I (London)] as well as two mutations in the presenilin 1 gene [M146L, L286V]. Transgene expression is driven by the neuron-specific Thy-1 promoter.

- Severe plaque load in cortex and hippocampus at 9 months of age
- Highly increased insoluble Aβ1-42 and insoluble Aβ1-40 levels in cortex and hippocampus at 9 months of age
- Severe neuroinflammation (CD11b; GFAP) in cortex and hippocampus at the age of 9 months
- Spatial learning deficits in 7 month old mice (MWM)

### Morris Water Maze

Figure 1

**Escape Latency**




**Swim Length**

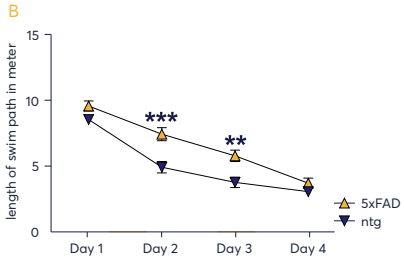



**Figure 1:**
Morris water maze of 7 month old 5xFAD mice and non-transgenic (ntg) littermates. Mean ± SEM; n = 12; Two-way ANOVA with Bonferroni's *post hoc* test; **p<0.01; ***p<0.001.

Figure 2

**Neurofilament Light Chain**

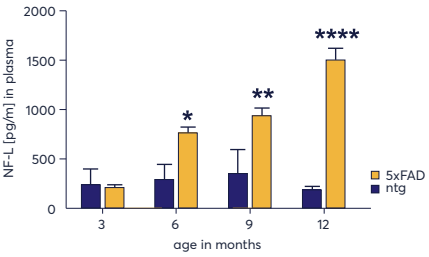



**Figure 2:**
Neurofilament light chain in plasma of 5xFAD mice. NF-L levels in pg/ml in the plasma of 3, 6, 9 and 12 month old 5xFAD mice compared to non-transgenic littermates. Two-way ANOVA with Bonferroni's *post hoc* test. Mean + SEM. *p<0.05; **p<0.01; ****p<0.0001.

Figure 3

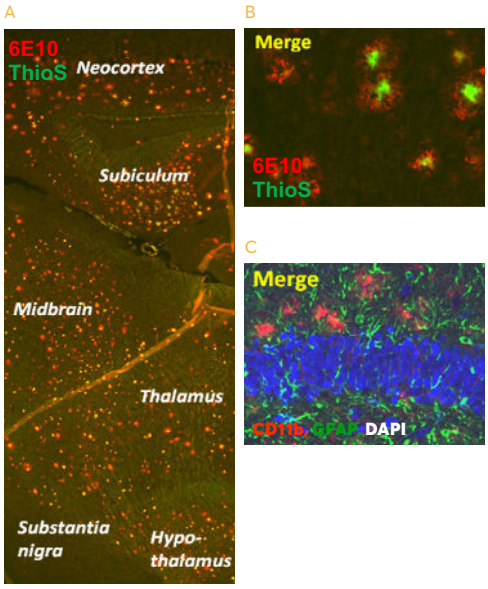



**Figure 3:**
**A&B:** Amyloid in the brain of 9 month old 5xFAD mice. C: Neuroinflammation in the cortex and hippocampus of 9 months old 5xFAD mice at 9 months.


Oakley et al. Intraneuronal β-amyloid aggregates, neurodegeneration, and neuron loss in transgenic mice with five familial Alzheimer's disease mutations: potential factors in amyloid plaque formation. J. Neurosci. 2006 Oct 4;26(40):10129-40.



**Scantox**
Discovery

**Scantox Group, HQ**
Hestehavevej 36A, Ejby
DK – 4623 Lille Skensved
clientservice@scantox.com
www.scantox.com
+45 5686 1500


**Important note:**
Representative data are shown throughout this document. However, biological variability might cause deviations from shown data.

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