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Mouse models of tau variants linked to neurodegenerative disease

An improved and controlled mouse model expressing human tau P301L protein, a common mutation linked to neurodegeneration.

A carefully crafted mouse model of neurodegeneration

The vast majority of therapies found to be effective in mouse models of neurodegeneration fail in humans. This failure to translate highlights the need to ensure that transgenic animal models are created with intense attention to detail to increase relevance and understanding of the associated limitations. Mutation P301L in the protein tau (encoded by the MAPT gene) is a common mutation linked to neurodegeneration and represents an important area of focus. The mouse model currently used to study this mutation (rTg4510), has a 70-copy tau-transgene insertion in a 244 kb deletion of another gene (Fgf14). These additional genomic changes confound the observed-phenotypes which may or may not be due to the P301L mutation of interest. The lab of Dr. Michael Koob at the University of Minnesota has carefully developed a cleaner mouse model for the purpose of studying the role of the Tau P301L mutant in neurodegeneration. This transgenic mouse includes a single targeted MAPT cDNA insertion that expresses tauP301L (T2 mouse).

Phase of Development

MAPT T2 mice have been generated, characterized and published.

Researchers

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Publications

Factors other than hTau overexpression that contribute to tauopathy-like phenotype in rTg4510 mice
Nature Communications, 10, Article number: 2479 (2019)

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References

1. Julia Gamache, et al. , Factors other than hTau overexpression that contribute to tauopathy-like phenotype in rTg4510 mice, Nature Communications, 10, Article number: 2479

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