

B6.Cg-Apoe^{tm1.1(APOE*4)Adiuj} Scimp^{em1Adiuj} App^{em1Adiuj} Trem2^{em1Adiuj} /J

Stock No: **032775** | Scimp upstream SNP/hAbeta/APOE4/Trem2*R47H

 Congenic, Endonuclease-Mediated Mutation, Targeted Mutation

Estimated to begin distribution on May 3, 2021

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This mutation is maintained with the hAbeta/APOE4/Trem2*R47H mutations (Stock No. [030670](#)) intended to increase risk of late-onset Alzheimer's disease: a humanized Apoe knock-in mutation (sequence coding for human isoform E4), a CRISPR/Cas9-generated *App* allele with a humanized Abeta1-42 region (G601R, F606Y, R609H in the mouse gene, corresponding to amino acid positions 676, 681, 684 in the human *APP* locus) and a CRISPR/Cas9-generated R47H point mutation of the *Trem2* gene.

Donating Investigator

Mike Sasner, The Jackson Laboratory

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GENETIC OVERVIEW

Genetic Background

Generation

Trem2^{em1Adiuj}

Alele Type

Endonuclease-mediated
(Humanized sequence)

Gene Symbol

Trem2

Gene Name

triggering receptor expressed on myeloid cells 2

*Apoe^{tm1.1(APOE*4)Adiuj}*

Alele Type

Targeted (Inserted
expressed sequence,
Humanized sequence)

Gene Symbol

Apoe

Gene Name

apolipoprotein E

App^{em1Adiuj}

Alele Type

Endonuclease-mediated
(Humanized sequence)

Gene Symbol

App

Gene Name

amyloid beta (A4) precursor protein

Scimp^{em1Aduj}

Allele Type	Gene Symbol	Gene Name
Endonuclease-mediated (Not Specified)	<i>Scimp</i>	SLP adaptor and CSK interacting membrane protein

V I E W G E N E T I C S

RESEARCH APPLICATIONS

Neurobiology Research
Mouse/Human Gene Homologs

V I E W A L L R E S E A R C H A P P L I C A T I O N S

BASE PRICE

Starting at:

\$255.00 Domestic price for female

510.00 Domestic price for breeder pair

V I E W P R I C E L I S T

Details

Detailed Description

Scimp upstream SNP/hAbeta/APOE4/Trem2*R47H quadruple mutant strain carries a mutant allele of the *Scimp* gene with a T-to-C point mutation (modeling human SNP rs61481506), a humanized ApoE knock-in allele in which exons 2, 3 and most of exon 4 of the mouse *ApoE* gene were replaced by human APOE4 gene sequence including exons 2, 3 and 4 (and some 3' UTR sequence), a mutant allele of the *App* gene containing G601R, F606Y and R609H point mutations and a knock-in of a point mutation into mouse *Trem2* gene containing an R47H point mutation with two silent mutations.

The targeted *Scimp* gene encodes a transmembrane adaptor protein that is expressed in antigen-presenting cells. Localized in the immunologic synapse, the encoded protein may also play a role in the onset of Alzheimer's disease. The targeted *ApoE* gene encodes apolipoprotein E, which is important in lipoprotein metabolism and cardiovascular disease as well as Alzheimer's disease, immunoregulation and cognition. The targeted *App* gene encodes amyloid beta precursor protein, a transmembrane cell surface receptor that is cleaved by secretases. Mutations in this gene have been associated

with Alzheimer's disease. The targeted Trem2 gene (triggering receptor expressed on myeloid cells 2) encodes a protein that is part of a receptor signaling complex with TYRO protein tyrosine kinase binding protein, and that activates macrophages and dendritic cells during immune responses. The TREM2 R47H mutation is a missense mutation in exon 2 that is one of the strongest genetic risk factors for late-onset Alzheimer's disease.

Mice that are homozygous for *Scimp*^{em1Aduj} (Scimp upstream SNP), *Apoe*^{tm1.1(APOE*4)Aduj} (APOE4), *App*^{em1Aduj} (hAbeta) and *Trem2*^{em1Aduj} (Trem2*R47H) are viable and fertile [July 2020]. If additional characterization of these Scimp upstream SNP/hAbeta/APOE4/Trem2*R47H mice is performed, we may modify the strain description accordingly.

Of note, in brains of mice homozygous for the *Trem2*^{em1Aduj} allele (and not carrying any other mutant alleles), expression of both transcripts of *Trem2* is decreased by about 50%. Mice expressing the *Trem2* R47H mutation also express a novel splice variant with a deletion of 119bp at the 5' end of exon 2, due to a cryptic splice acceptor site in exon 2 (see Stock No. 027918).

+ Development

+ Expression Data

+ Control Suggestions

- Genetics

+ *Trem2*^{em1Aduj}

+ *Apoe*^{tm1.1(APOE*4)Aduj}

+ *App*^{em1Aduj}

+ *Scimp*^{em1Aduj}

- Disease/Phenotype

+ Disease Terms

+ Research Areas By Phenotype

+ Mammalian Phenotype Terms by Genotype

+ References

- Technical Support

Genotyping Protocols

End Point Analysis: [Trem2](#)

Probe: [App](#)

Probe: [Apoe-Probe](#)

End Point Analysis: [Scimp-rs61481506-EP-alt1](#)

[Genotyping resources and troubleshooting](#)

Breeding Considerations

When maintaining a live colony, mice homozygous for *Apoe*^{tm1.1(APOE*4)Adiuj} (APOE4), *Scimp*^{em1Adiuj} (Scimp upstream SNP), *App*^{em1Adiuj} (hAbeta) and *Trem2*^{em1Adiuj} (Trem2*R47H) may be bred together as they are viable and fertile. [July 2020]

Additional Breeding and Husbandry Support

Appearance

Black

Citation

When using the Scimp upstream SNP/hAbeta/APOE4/Trem2*R47H mouse strain in a publication, please [cite the originating article\(s\)](#) and include JAX stock #032775 in your Materials and Methods section.

➔ Pricing & Availability



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LIVE MOUSE

AGE	SEX	GENOTYPE	PRICE	
Approx 4-8 weeks	Female	Homozygous for <i>Apoe</i> ^{tm1.1(APOE*4)Adiuj} Homozygous for <i>App</i> ^{em1Adiuj}	Heterozygous for <i>Scimp</i> ^{em1Adiuj} Homozygous for <i>Trem2</i> ^{em1Adiuj}	\$255.00
	Male	Homozygous for <i>Apoe</i> ^{tm1.1(APOE*4)Adiuj} Homozygous for <i>App</i> ^{em1Adiuj}	Heterozygous for <i>Scimp</i> ^{em1Adiuj} Homozygous for <i>Trem2</i> ^{em1Adiuj}	\$255.00
Approx 4-8 weeks	Female	Homozygous for <i>Apoe</i> ^{tm1.1(APOE*4)Adiuj} for <i>App</i> ^{em1Adiuj}	Homozygous for <i>Scimp</i> ^{em1Adiuj} Homozygous for <i>Trem2</i> ^{em1Adiuj}	\$255.00
	Male	Homozygous for <i>Apoe</i> ^{tm1.1(APOE*4)Adiuj} for <i>App</i> ^{em1Adiuj}	Homozygous for <i>Scimp</i> ^{em1Adiuj} Homozygous for <i>Trem2</i> ^{em1Adiuj}	\$255.00

BREEDER PAIR

SEX	GENOTYPE	PRICE
	<i>tm1.1(APOE*4)Adiuj</i>	<i>em1Adiuj</i>

Female	Homozygous for Apoe ^{em1Aduj} Homozygous for Trem2	Heterozygous for Scimp	Homozygous for App ^{em1Aduj}	\$510.00
Male	Homozygous for Apoe ^{tm1.1(APOE*4)Aduj} Homozygous for Trem2 ^{em1Aduj}	Heterozygous for Scimp ^{em1Aduj}	Homozygous for App ^{em1Aduj}	

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