



B 6 . C ^{tm1.1(APOE*4)Aduj} Apo e Ceacam1 ^{em1Aduj} Trem2* R47H Trem 2 | J

Stock No: 030673 | Ceacam1 KO/APOE4/Trem2*R47H

Congenic, Targeted Mutation



AVAILABLE

PLACE ORDER

Live mice available in varying quantities. Ask Customer Service for details.

Overview



MODEL-AD

Model Organism Development & Evaluation for Late-Onset Alzheimer's Disease

Also Known As: Ceacam1 KO/APOE4/Trem2*R47H

This triple mutant strain carries a humanized ApoE knock-in mutation (sequence coding for isoform E4), a CRISPR/cas9-generated knock-out mutation, deletion of exon 1, of the *Ceacam1* gene and a CRISPR/cas9-generated R47H point mutation of the *Trem2* gene. These mice may be suitable for use in studies related to Alzheimer's disease, lipoproteins, arteriosclerosis, and coronary heart disease.

Donating Investigator

Mike Sasner, The Jackson Laboratory

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GENETIC OVERVIEW

Genetic Background

Generation

?+pN2F5
(2019-12-13 00:00:00)

Trem2^{em1Aduj}

Allele Type

Gene Symbol

Gene Name

Endonuclease-mediated
(Humanized sequence)

Trem2

triggering receptor expressed on myeloid cells 2

Ceacam1^{em1Aduj}

Allele Type	Gene Symbol	Gene Name
Endonuclease-mediated (Null/Knockout)	<i>Ceacam1</i>	carcinoembryonic antigen-related cell adhesion molecule 1

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

Allele Type	Gene Symbol	Gene Name
Targeted (Inserted expressed sequence, Humanized sequence)	<i>ApoE</i>	apolipoprotein E

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

RESEARCH APPLICATIONS

Neurobiology Research
Cardiovascular Research
Research Tools
Metabolism Research

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

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

Details

Detailed Description

This triple mutant strain carries 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 knock-out mutant allele, deletion of exon 1, of the *Ceacam1* gene; and a knock-in of a point mutation into mouse *Trem2*, triggering receptor expressed on myeloid cells 2, gene containing a R47H point mutation, with two silent mutations.

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 *Ceacam1* gene encodes a biliary glycoprotein.

The targeted *Trem2* gene 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 the *ApoE*^{tm1.1(APOE*4)Aduj} and *Trem2*^{em1Aduj} alleles, and heterozygous for the *Ceacam1*^{em1Aduj} allele are viable and fertile. Homozygous viability/fertility has not been tested for the *Ceacam1*^{em1Aduj} allele (June 2018).

As the mice are characterized, we will modify the strain description and add phenotype data.

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*^{em1Adiuj}

+ *Ceacam1*^{em1Adiuj}

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

- Disease/Phenotype

+ Disease Terms

+ Research Areas By Genotype

+ Mammalian Phenotype Terms by Genotype

+ References

- Technical Support

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

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

Genotyping Protocols

End Point Analysis: *Trem2*^{em1Adiuj}-EP
Standard PCR: *Apoe*^{tm1.1(APOE*4)Adiuj}

[Genotyping resources and troubleshooting](#)

Dietary Information

LabDiet® 5K52 formulation (6% fat)

Breeding Considerations

When maintaining a live colony, mice homozygous for the *Apoe*^{tm1.1(APOE*4)Adiuj} and *Trem2*^{em1Adiuj} alleles, and heterozygous for the *Ceacam1*^{em1Adiuj} allele may be bred.

Homozygous viability/fertility has not been tested for the *Ceacam1*^{em1Adiuj} allele (June 2018).

As the mice are characterized, we will modify the strain description if necessary and add data related to viability and fertility.

[Additional Breeding and Husbandry Support](#)

Mating System

Homozygote x Homozygote

Citation

When using the Ceacam1 KO/APOE4/Trem2*R47H mouse strain in a publication, please [cite the originating article\(s\)](#) and include JAX stock #030673 in your Materials and Methods section.

 [AX9 \(Standard\)](#)

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Live mice available in varying quantities. Ask Customer Service for details.

Available

Domestic **International**

Pricing effective for USA, Canada and Mexico shipping destinations

Live Mouse

AGE	SEX	GENOTYPE	PRICE
Approx 4-8 weeks	Female	Homozygous for Apoe ^{tm1.1(APOE*4)Adiuj} Trem2 ^{em1Adiuj} Homozygous for Ceacam1 ^{em1Adiuj} Homozygous for	\$255.00
	Male	Homozygous for Apoe ^{tm1.1(APOE*4)Adiuj} Trem2 ^{em1Adiuj} Homozygous for Ceacam1 ^{em1Adiuj} Homozygous for	\$255.00

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