



B 6 . C ^{tm1.1(APOE*4)Adiuj} *App o e* A b c a 7 ^{em2Adiuj} *T r e m 2* | J

Stock No: 030283 | Abca7*A1527G/APOE4/Trem2*R47H

Congenic, Targeted Mutation, Endonuclease-Mediated Mutation



AVAILABLE

P L A C E O R D E R

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: *Abca7**A1527G/APOE4/*Trem2**R47H

This triple mutant strain carries a humanized ApoE knock-in mutation (sequence coding for isoform E4), a CRISPR/cas9-generated rs3752246 SNP knock-in mutation of the *Abca7* gene (alanine to glycine at position 1527 in exon 33) 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

?+pN1

(2018-07-11 00:00:00)

Trem2^{em1Aduj}

Allele Type

Gene Symbol

Gene Name

Endonuclease-mediated
(Humanized sequence)

Trem2

triggering receptor expressed on myeloid cells 2

Abca7^{em2Adiuj}

Allele Type	Gene Symbol	Gene Name
Endonuclease-mediated (Humanized sequence)	<i>Abca7</i>	ATP-binding cassette, sub-family A (ABC1), member 7

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

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

Research Tools
Metabolism Research
Neurobiology Research
Cardiovascular 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 rs3752246 SNP knock-in mutation into the *Abca7* gene (alanine to glycine at position 1527 in exon 33); 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 *Abca7* gene encodes an ATP-binding cassette (ABC) transporter protein that moves lipids across membranes. Mutations in this gene have been associated with susceptibility to Alzheimer's disease.

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)Adiuj}*, *Abca7^{em2Adiuj}* and *Trem2^{em1Adiuj}* alleles are viable and fertile. 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*^{em1Aduj}

+ *Abca7*^{em2Aduj}

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

- Disease/Phenotype

+ Disease Terms

+ Research Areas By Genotype

+ Mammalian Phenotype Terms by Genotype

+ References

- Technical Support

C H A T O  F L I N E

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*^{em1Aduj}-EP
Standard PCR: *Apoe*^{tm1.1(APOE*4)Aduj}

Probe: *Abca7* KI (A1541G) - Probe

[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)Aduj} and *Trem2*^{em1Aduj} alleles, and heterozygous for the *Abca7*^{em2Aduj} allele, or homozygous for all 3 alleles, may be bred.

[Additional Breeding and Husbandry Support](#)

Mating System

Homozygote x Homozygote

Citation

When using the Abca7*^{A1527G}/APOE4/Trem2*^{R47H} mouse strain in a publication, please [cite the originating article\(s\)](#) and include JAX stock #030283 in your Materials and Methods section.

[Animal Health Reports](#)

[Facility Barrier Level Descriptions](#)

 [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 Abca7 ^{em2Adiuj} Homozygous for	\$255.00
	Male	Homozygous for Apoe ^{tm1.1(APOE*4)Adiuj} Trem2 ^{em1Adiuj} Homozygous for Abca7 ^{em2Adiuj} Homozygous for	\$255.00

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