



B 6 . C ^{tm1.1(APOE*4)Adiuj} App o e ^{em1Adiuj} I I 1 rap ^{em1Adiuj} Trem 2 / J

Stock No: 030304 | I1rap KO/APOE4/Trem2*R47H, exon 2 KO

◆ Congenic, Targeted Mutation, Endonuclease-Mediated 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: *Il1rap* KO/APOE4/*Trem2**R47H, exon 2 KO

This triple mutant strain carries a humanized ApoE knock-in mutation (sequence coding for isoform E4), a CRISPR/cas9-generated 387bp deletion in the first coding exon knock-out mutation of the *Il1rap* 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
	?+pN1F4 (2019-06-17 00:00:00)

[Trem2^{em1Aduj}](#)

Allele Type	Gene Symbol	Gene Name
Endonuclease-mediated	<i>Trem2</i>	triggering receptor expressed on myeloid cells 2

(Humanized sequence)

Il1rap^{em1Aduj}

Allele Type	Gene Symbol	Gene Name
Endonuclease-mediated (Null/Knockout)	<i>Il1rap</i>	interleukin 1 receptor accessory protein

*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
Research Tools
Metabolism 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 4-week

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 mutant knock-out allele, 387bp deletion in the first coding exon, of the *Il1rap* 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 *Il1rap* gene encodes interleukin 1 receptor accessory protein which is a component of the interleukin 1 receptor complex, and is involved in interleukin 1 signalling. 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 *Il1rap^{em1Aduj}* allele are viable and fertile. Homozygous viability/fertility has not been tested for the *Il1rap^{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*^{em1Aduj}](#)

[+ *Il1rap*^{em1Aduj}](#)

[+ *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: [Il1rap KO \(387 bp del\) - 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)Adiuj} and *Trem2*^{em1Adiuj} alleles, and heterozygous for the *Il1rap*^{em1Adiuj} allele may be bred.

Homozygous viability/fertility has not been tested for the *Il1rap*^{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 *Il1rap* KO/*APOE4*/*Trem2**R47H, exon 2 KO

mouse strain in a publication, please [cite the originating article\(s\)](#) and include JAX stock #030304 in your Materials and Methods

Animal Health Reports

[Facility Barrier Level Descriptions](#)

 [AX9 \(Standard\)](#)

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Live Mouse

AGE	SEX	GENOTYPE	PRICE
4 weeks	Female	Homozygous for <i>Apoe</i> ^{tm1.1(APOE*4)Adiuj} <i>Trem2</i> ^{em1Adiuj} Homozygous for <i>Il1rap</i> ^{em1Adiuj} Homozygous for	\$255.00
	Male	Homozygous for <i>Apoe</i> ^{tm1.1(APOE*4)Adiuj} <i>Trem2</i> ^{em1Adiuj} Homozygous for <i>Il1rap</i> ^{em1Adiuj} Homozygous for	\$255.00
5 weeks	Female	Homozygous for <i>Apoe</i> ^{tm1.1(APOE*4)Adiuj} <i>Trem2</i> ^{em1Adiuj} Homozygous for <i>Il1rap</i> ^{em1Adiuj} Homozygous for	\$255.00
	Male	Homozygous for <i>Apoe</i> ^{tm1.1(APOE*4)Adiuj} <i>Trem2</i> ^{em1Adiuj} Homozygous for <i>Il1rap</i> ^{em1Adiuj} Homozygous for	\$255.00
6 weeks	Female	Homozygous for <i>Apoe</i> ^{tm1.1(APOE*4)Adiuj} <i>Trem2</i> ^{em1Adiuj} Homozygous for <i>Il1rap</i> ^{em1Adiuj} Homozygous for	\$255.00
	Male	Homozygous for <i>Apoe</i> ^{tm1.1(APOE*4)Adiuj} <i>Trem2</i> ^{em1Adiuj} Homozygous for <i>Il1rap</i> ^{em1Adiuj} Homozygous for	\$255.00
7 weeks	Female	Homozygous for <i>Apoe</i> ^{tm1.1(APOE*4)Adiuj} <i>Trem2</i> ^{em1Adiuj} Homozygous for <i>Il1rap</i> ^{em1Adiuj} Homozygous for	\$255.00
	Male	Homozygous for <i>Apoe</i> ^{tm1.1(APOE*4)Adiuj} <i>Trem2</i> ^{em1Adiuj} Homozygous for <i>Il1rap</i> ^{em1Adiuj} Homozygous for	\$255.00
8 weeks	Female	Homozygous for <i>Apoe</i> ^{tm1.1(APOE*4)Adiuj} <i>Trem2</i> ^{em1Adiuj} Homozygous for <i>Il1rap</i> ^{em1Adiuj} Homozygous for	\$255.00
	Male	Homozygous for <i>Apoe</i> ^{tm1.1(APOE*4)Adiuj} <i>Trem2</i> ^{em1Adiuj} Homozygous for <i>Il1rap</i> ^{em1Adiuj} Homozygous for	\$255.00
9 weeks	Female	Homozygous for <i>Apoe</i> ^{tm1.1(APOE*4)Adiuj} <i>Trem2</i> ^{em1Adiuj} Homozygous for <i>Il1rap</i> ^{em1Adiuj} Homozygous for	\$255.00

	SEX	Homozygous for Apoe Trem2 ^{em1Aduj}	tm1.1(APOE*4)Aduj	Homozygous for Il1rap ^{em1Aduj}	Homozygous for	\$255.00
10 weeks	Female	Homozygous for Apoe Trem2 ^{em1Aduj}	tm1.1(APOE*4)Aduj	Homozygous for Il1rap ^{em1Aduj}	Homozygous for	\$255.00
	Male	Homozygous for Apoe Trem2 ^{em1Aduj}	tm1.1(APOE*4)Aduj	Homozygous for Il1rap ^{em1Aduj}	Homozygous for	\$255.00
11 weeks	Female	Homozygous for Apoe Trem2 ^{em1Aduj}	tm1.1(APOE*4)Aduj	Homozygous for Il1rap ^{em1Aduj}	Homozygous for	\$255.00
	Male	Homozygous for Apoe Trem2 ^{em1Aduj}	tm1.1(APOE*4)Aduj	Homozygous for Il1rap ^{em1Aduj}	Homozygous for	\$255.00
12 weeks	Female	Homozygous for Apoe Trem2 ^{em1Aduj}	tm1.1(APOE*4)Aduj	Homozygous for Il1rap ^{em1Aduj}	Homozygous for	\$255.00
	Male	Homozygous for Apoe Trem2 ^{em1Aduj}	tm1.1(APOE*4)Aduj	Homozygous for Il1rap ^{em1Aduj}	Homozygous for	\$255.00

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