



# B 6 ( S J Q r ) 2 <sup>tm1(CR2,CR1)How</sup> A p o e <sup>tm1(APOE\*4)Adiuj</sup> T r e m 2 <sup>tm1A0iuj</sup> / J

Stock No: 031668 | hCR1 KI on APOE4/Trem2

◆ Congenic, Targeted Mutation, Endonuclease-Mediated Mutation



CRYORECOVERY

PLACE ORDER

Typically mice are recovered in 10-14 weeks. Contact Customer Service to place an order or for more information.

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## Overview



# MODEL-AD

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

### Also Known As: hCR1 KI on APOE4/Trem2

This mutant strain carries a knock-in knock-out *Cr2* allele containing the human *CR1* gene, the human *CR2* gene and the intergenic region between the 2 genes; a humanized ApoE knock-in mutation (sequence coding for isoform E4); and a CRISPR/cas9-generated R47H point mutation of the *Trem2* gene. In the knock-in knock-out *Cr2* allele the human *CR1* sequence exons 4 through 20 are flanked by *loxP* sites and exons 13 through 20 are flanked by FRT sites. When crossed to a FLP recombinase expressing strain, the resulting offspring will have exons 13 through 20 of the human *CR1* gene deleted in the FLP-expressing tissues. When these mutant mice are bred to mice that express Cre recombinase, resulting offspring will have exons 4 through 20 of the human *CR1* gene deleted in the *cre*-expressing tissues. These mice may be suitable for use in studies related to Alzheimer's disease.

## Donating Investigator

Mike Sasner, The Jackson Laboratory

Gareth Howell, JAX

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## GENETIC OVERVIEW

Genetic Background

Generation

### *Trem2<sup>em1Aduj</sup>*

Allele Type

Endonuclease-mediated  
(Humanized sequence)

Gene Symbol

*Trem2*

Gene Name

triggering receptor expressed on myeloid cells 2

### *Cr2<sup>tm1(CR2,CR1)How</sup>*

Allele Type

Targeted (Inserted expressed  
sequence)

Gene Symbol

*Cr2*

Gene Name

complement receptor 2

### *Apoe<sup>tm1.1(APOE\*4)Aduj</sup>*

Allele Type

Targeted (Inserted expressed  
sequence, Humanized  
sequence)

Gene Symbol

*Apoe*

Gene Name

apolipoprotein E

VIEW GENETICS

## RESEARCH APPLICATIONS

Neurobiology Research

VIEW ALL RESEARCH APPLICATIONS

## BASE PRICE

Starting at:

\$2,854.50 Domestic price Cryo Recovery

VIEW PRICE LIST

Details

## – Detailed Description

This mutant strain carries a knock-in knock-out allele of *Cr1* in which the human *CR1*, complement C3b/C4b receptor 1 (Knops blood group), gene, the human *CR2*, complement C3d receptor 2, gene and the intergenic region between the 2 genes replaced the endogenous mouse *Cr2* gene, 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), and a knock-in point mutation in the mouse *Trem2*, gene consisting of an R47H point mutation, along with 2 other silent mutations. When crossed to a FLP recombinase expressing strain, the resulting offspring will have exons 13 through 20 of the human *CR1* gene deleted in the FLP-expressing tissues. When these mutant mice are bred to mice that express Cre recombinase, resulting offspring will have exons 4 through 20 of the human *CR1* gene deleted in the *cre*-expressing tissues. Removal of the floxed (or FRT site) flanked *CR1* sequence creates a null allele, as confirmed by western blot analysis.

The targeted apolipoprotein E gene is important in lipoprotein metabolism and cardiovascular disease as well as Alzheimer's disease, immunoregulation and cognition. 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. Loss-of-function variants of the TREM2 gene are associated with Alzheimer's Disease. The R47H point mutation has been shown to increase Alzheimer's disease risk. The *CR1* gene is an Alzheimer's disease susceptibility locus. *CR2* and *CR1* encode receptors for Epstein-Barr virus.

Mice that are homozygous for the *Cr2*<sup>tm1(CR2,CR1)How</sup>, *ApoE*<sup>tm1.1(APOE\*4)Aduj</sup>, *Trem2*<sup>em1Aduj</sup> alleles are viable and fertile. As the mice are characterized, we will modify the strain description and add phenotype data.

## + Development

## + Expression Data

## + Control Suggestions

## – Genetics

### + *Trem2*<sup>em1Aduj</sup>

### + *Cr2*<sup>tm1(CR2,CR1)How</sup>

### + *ApoE*<sup>tm1.1(APOE\*4)Aduj</sup>

## – Disease/Phenotype

### + Disease Terms

### + Research Areas By Genotype

### + Mammalian Phenotype Terms by Genotype

### + References

## – Technical Support

## Genotyping Protocols

End Point Analysis: [Trem2<sup>em1Aduj</sup>](#)  
 Standard PCR: [Apoe<sup>tm1.1\(APOE\\*4\)Aduj</sup>](#)  
 Standard PCR: [Tg\(hCR1\)](#)  
 Standard PCR: [Cr2<sup>tm1\(CR2,CR1\)How</sup>](#)

[Genotyping resources and troubleshooting](#)

## Breeding Considerations

When maintaining a live colony, these mice can be bred as homozygous for the [Cr2<sup>tm1\(CR2,CR1\)How</sup>](#), [Apoe<sup>tm1.1\(APOE\\*4\)Aduj</sup>](#) and [Trem2<sup>em1Aduj</sup>](#) alleles.

[Additional Breeding and Husbandry Support](#)

## Citation

When using the hCR1KI on APOE4/Trem2 mouse strain in a publication, please [cite the originating article\(s\)](#) and include JAX stock #031668 in your Materials and Methods section.

[Facility Barrier Level Descriptions](#)

*Production of mice from cryopreserved embryos or sperm occurs in a maximum barrier room, [G200](#)*

## ➔ Pricing & Availability



Cryo Recovery

Typically mice are recovered in 10-14 weeks. Contact Customer Service to place an order or for more information.

## Domestic International

Pricing effective for USA, Canada and Mexico shipping destinations

### Cryorecovery - Domestic Pricing

SERVICE	GENOTYPE	PRICE
Cryo Recovery	Heterozygous or wildtype for <a href="#">Cr2&lt;tm1(CR2,CR1)How&gt;</a> ; homozygous for <a href="#">Apoe&lt;tm1.1(APOE*4)Aduj&gt;</a> ; and homozygous for <a href="#">Trem2&lt;em1Aduj&gt;</a>	\$2,854.50

We will fulfill your order by providing at least two carriers for each strain ordered. The total number, sex, and genotypes provided will vary, although typically 8 or more animals are provided. Please check genotypes which will be recovered. While the genotypes of all animals produced will be communicated to you prior to scheduling shipment, the genotypes of animals provided may not reflect the mating scheme and genotypes described in the strain description. Animals are typically ready to ship in 11-14 weeks. If a second recovery is required to produce the minimum number of animals, then delivery time would increase to approximately 25 weeks. If we fail to produce animals of the correct genotype, you will not be charged. We cannot guarantee the reproductive success of mice shipped to your facility. If the mice are lost after the first three days (post-arrival) or do not produce progeny at your facility, a new order and fee will be necessary.

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