The Jackson Laboratory

B6.129S2(Cg)-*Ace2*$^{tm1(ACE2)Dwnt}$/J

Stock No: **035000** | hACE2-KI

Congenic, Targeted Mutation

Sized to accommodate orders of up to 50 or more. Ask Customer Service for details.

PLACE ORDER

Email Download PDF Help

regulatory elements direct expression of human ACE2, the receptor used for cellular entry by several coronaviruses, including severe acute respiratory syndrome coronavirus-1 (SARS-CoV) and -2 (SARS-CoV-2). Because hACE2-KI are susceptible to SARS-CoV-2, they are useful for studying antiviral therapies to COVID-19.

These mice should be handled in a manner consistent with CDC/ABSA/WHO guidelines for prevention of human infection with the SARS-CoV-2 virus. Proper PPE and handling methods should be used at all times when working with these mice. Additional important guidelines for using SARS-CoV-2 susceptible mouse lines.

Of note, ACE2-GR (Stock No. 035800) has some similarities, but the human ACE2 gene replaces the endogenous sequence (expression directed by human regulatory elements) and is not floxed. Also available are K18-hACE2 transgenic mice with human ACE2 expression directed to epithelia (Stock No. 034860).

Donating Investigator

David Wentworth, Center for Disease Control

READ MORE +

GENETIC OVERVIEW

Genetic Background

Generation

N7+pN2F2
(2020-12-07 00:00:00)

Ace2$^{tm1(ACE2)Dwnt}$

Allele Type	Gene Symbol	Gene Name
Targeted (Inserted expressed sequence, Humanized sequence)	*Ace2*	angiotensin I converting enzyme (peptidyl-dipeptidase A) 2

VIEW GENETICS

RESEARCH APPLICATIONS

Research Tools
Mouse/Human Gene Homologs
Developmental Biology Research
Internal/Organ Research
Immunology, Inflammation and Autoimmunity Research
Virology Research

VIEW ALL RESEARCH APPLICATIO

BASE PRICE

Starting at:

$106.00 Domestic price for female 4-week

VIEW PRICE LIST

Details

Detailed Description

hACE2-KI mice have a *loxP*-flanked human *ACE2* cDNA sequence replacing the endogenous mouse *Ace2* sequences on the X Chromosome. These mice express human ACE2 in place of mouse Ace2, as directed by endogenous regulatory elements of the mouse *Ace2* locus. Homozygous females and hemizygous males are viable and fertile.

Human ACE2 is the receptor used for cellular entry by several coronaviruses, including severe acute respiratory syndrome coronavirus-1 (SARS-CoV), severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2; 2019 novel coronavirus) and HCoV-NL63. This hACE2-KI mouse model may be useful in studying antiviral therapies for these coronaviruses, particularly SARS-CoV-2 pathogenesis and the disease outbreak COVID-19.

The donating investigator reports that initial studies with 10-13 week old hACE2-KI heterozygous females are susceptible to SARS-CoV-2, and the virus replicates efficiently in respiratory tissues. Specifically, heterozygous females were infected intranasally with wildtype SARS-CoV-2 variants [a 1:1 ratio of SARS-CoV-2(S-614D) and SARS-CoV-2(S-614G), using 1x10^5 plaque forming units of each variant] and samples were collected at days 2-4 post-infection. This revealed high viral RNA loads in the nasal conchae and lungs. Virus RNA was also detected in olfactory bulbs and at lower levels in brain tissues. Low to undetectable levels of virus were observed in spleen, small intestine, kidneys and feces. Heterozygous females did not exhibit morbidity or mortality (e.g., no weight loss) when infected with typical wildtype SARS-CoV-2 viruses. [Zhou *et al.* bioRxiv October 2020]
We will update this description as more information becomes available.

These hACE2-KI mice (Stock No. 035000) have *loxP* sites flanking the human *ACE2* cDNA sequence. Upon exposure to Cre recombinase, the human *ACE2* cDNA will be deleted - generating a knock-out allele.
Of note, ACE2-GR (Stock No. 035800) has some similarities, but differs in that it has the human *ACE2* coding and regulatory/non-coding sequences replacing the endogenous mouse *Ace2* coding and regulatory/non-coding sequences, and it does not have the *loxP* sites.

Development

Control Suggestions

Selected References

Genetics

Ace2$^{tm1(ACE2)Dwnt}$

Disease/Phenotype

Disease Terms

Research Areas By Phenotype

Mammalian Phenotype Terms by Genotype

References

Technical Support

CONTACT TECHNICAL SUPPORT

Genotyping Protocols

Standard PCR:Ace2
Genotyping resources and troubleshooting

Breeding Considerations

Ace2 is X-linked. Homozygous females and hemizygous males are viable and fertile.

Additional Breeding and Husbandry Support

Mating System

Homozygote x Hemizygote

Citation

When using the hACE2-KI mouse strain in a publication, please cite the originating article(s) and include JAX stock #035000 in your Materials and Methods section.

Animal Health Reports

Facility Barrier Level Descriptions

AX12 (Maximum)

Pricing & Availability

Available Now

Sized to accommodate orders of up to 50 or more. Ask Customer Service for details.

Domestic | **International**

Pricing effective for USA, Canada and Mexico shipping destinations

Domestic Pricing for

- (•) Commercial & For-Profit
- ( ) Not-For-Profit & Academic

LIVE MOUSE

AGE	SEX	GENOTYPE	PRICE
4 weeks	Female	Homozygous for $Ace2^{tm1(ACE2)Dwnt}$	$106.00
4 weeks	Male	Hemizygous for $Ace2^{tm1(ACE2)Dwnt}$	$106.00
5 weeks	Female	Homozygous for $Ace2^{tm1(ACE2)Dwnt}$	$106.00
5 weeks	Male	Hemizygous for $Ace2^{tm1(ACE2)Dwnt}$	$106.00
6 weeks	Female	Homozygous for $Ace2^{tm1(ACE2)Dwnt}$	$106.00
6 weeks	Male	Hemizygous for $Ace2^{tm1(ACE2)Dwnt}$	$106.00
7 weeks	Female	Homozygous for $Ace2^{tm1(ACE2)Dwnt}$	$106.00
7 weeks	Male	Hemizygous for $Ace2^{tm1(ACE2)Dwnt}$	$106.00
8 weeks	Female	Homozygous for $Ace2^{tm1(ACE2)Dwnt}$	$106.00
8 weeks	Male	Hemizygous for $Ace2^{tm1(ACE2)Dwnt}$	$106.00
9 weeks	Female	Homozygous for $Ace2^{tm1(ACE2)Dwnt}$	$106.00
9 weeks	Male	Hemizygous for $Ace2^{tm1(ACE2)Dwnt}$	$106.00
10 weeks	Female	Homozygous for $Ace2^{tm1(ACE2)Dwnt}$	$106.00
10 weeks	Male	Hemizygous for $Ace2^{tm1(ACE2)Dwnt}$	$106.00

PAYMENT TERMS AND CONDITIONS

Terms are granted by individual review and stated on the customer invoice(s) and account statement. These transactions are payable in U.S. currency within the granted terms. Payment for services, products, shipping containers, and shipping costs that are rendered are expected within the payment terms indicated on the invoice or stated by contract. Invoices and account balances in arrears of stated terms may result in The Jackson Laboratory pursuing collection activities including but not limited to outside agencies and court filings.

THE JACKSON LABORATORY'S GENOTYPE PROMISE

The Jackson Laboratory has rigorous genetic quality control and mutant gene genotyping programs to ensure the genetic background of JAX® Mice strains as well as the genotypes of strains with identified molecular mutations. JAX® Mice strains are only made available to researchers after meeting our standards. However, the phenotype of each strain may not be fully characterized and/or captured in the strain data sheets. **Therefore, we cannot guarantee a strain's phenotype will meet all expectations.** To ensure that JAX® Mice will meet the needs of individual research projects or when requesting a strain that is new to your research, we suggest ordering and performing tests on a small number of mice to determine suitability for your particular project. We do not guarantee breeding performance and therefore suggest that investigators order more than one breeding pair to avoid delays in their research.

Terms Of Use

TERMS OF USE

General Terms and Conditions

QUESTIONS ABOUT TERMS OF USE

ADDITIONAL USE RESTRICTIONS APPLY

Use of MICE by companies or for-profit entities requires a no-fee JAX Leap License prior to shipping.

LICENSING INFORMATION

Phone: 207-288-6470
Email: TechTran@jax.org

Related Strains

All

By Allele

By Gene

By Collection