

**C57BL/6J-*Pm20d1*<sup>em1Brsp</sup> /J**Stock No: **032193** | PM20D1-KO **Coisogenic, Endonuclease-Mediated Mutation**

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circulating N-acyl amino acids (NAAs), as well as NAA physiology in glucose homeostasis, energy metabolism and pain sensation.

### Donating Investigator

Bruce M Spiegelman, Dana-Farber Cancer Institute/Harvard Medical School

[R E A D M O R E +](#)

## GENETIC OVERVIEW

**Genetic Background****Generation***Pm20d1*<sup>em1Brsp</sup>**Alele Type**Endonuclease-mediated  
(Null/Knockout)**Gene Symbol***Pm20d1***Gene Name**

peptidase M20 domain containing 1

[V I E W G E N E T I C S](#)

## RESEARCH APPLICATIONS

Cardiovascular Research

Metabolism Research

Sensorineural Research

Diabetes and Obesity Research

Research Tools

[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:

\$2,854.50 Domestic price Cryo Recovery

V I E W   P R I C E   L I S T

### Details

#### Detailed Description

N-acyl amino acids (NAAs) are bioactive signaling lipids with pleiotropic physiologic functions. PM20D1 has a dominant role in the bidirectional regulation of both tissue NAAs and circulating NAAs.

PM20D1-KO is a CRISPR/cas9-made knock-out allele with a  $\Delta 6$ -bp out-of-frame deletion in *Pm20d1* exon 1 that generates an early stop codon. While mice homozygous for this global knock-out allele (PM20D1-KO) are viable and fertile with no reported gross phenotypic or behavioral abnormalities, they exhibit a variety of metabolic and pain phenotypes - including impaired glucose tolerance and insulin resistance in response to higher fat diet, elevated body temperature in response to cold stimuli, and anti-nociceptive behaviors. More details are described below.

PM20D1-KO tissues show PM20D1 protein levels are completely abolished. Homozygotes show reduced NAA synthase/hydrolase activity. Specifically, multiple PM20D1-KO tissues show consistently elevated levels of the metabolite N-oleoyl-glutamine (C18:1-Gln), an antagonist of transient receptor potential nociceptor channel V1 (TRPV1).

On standard chow diet, PM20D1-KO mice were indistinguishable from wildtype in several metabolic parameters (body weight, energy expenditure, food intake, glucose homeostasis). When maintained on high fat diet (HFD ; 60% kcal from fat) or Western diet (WD ; 40% kcal from fat, 0.2% cholesterol), homozygotes show no major effects on body weight or adiposity compared to similarly-treated wildtype mice. However, PM20D1-KO mice exhibit impaired glucose tolerance after 16 weeks HFD or 17 weeks WD, as well as reduced insulin sensitivity after 19 weeks WD.

In response to environmental cold challenge, PM20D1-KO mice remained significantly warmer than control mice.

Compared to similarly-treated wildtype animals, PM20D1-KO mice exhibit antinociceptive behaviors selectively in response to chemical and inflammatory pain stimuli, while maintaining normal thermal pain sensation and normal movement/coordination.

The phenotype of mice heterozygous for the PM20D1-KO allele has not been characterized to date (June 2018).

#### Development

#### Control Suggestions

#### Selected References

## – Genetics

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+ [Pm20d1<sup>em1Brsp</sup>](#)

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## – Disease/Phenotype

+ [Disease Terms](#)

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+ [Research Areas By Phenotype](#)

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+ [Mammalian Phenotype Terms by Genotype](#)

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+ [References](#)

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## – Technical Support

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

Sanger sequencing:[Pm20d1](#)

[Genotyping resources and troubleshooting](#)

### Breeding Considerations

While mice homozygous for this global knock-out allele (PM20D1-KO) are viable and fertile with no reported gross phenotypic or behavioral abnormalities, they exhibit a variety of metabolic and pain phenotypes - including impaired glucose tolerance and insulin resistance in response to higher fat diet, elevated body temperature in response to cold stimuli, and anti-nociceptive behaviors.

When maintaining a live colony, heterozygous mice may be bred together, to wildtype mice from the colony or to C57BL/6J inbred mice (Stock No. [000664](#)). Alternatively, homozygous mice may be bred together.

### [Additional Breeding and Husbandry Support](#)

#### Mating System

Heterozygote x Heterozygote

#### Citation

When using the PM20D1-KO mouse strain in a publication, please [cite the originating article\(s\)](#) and include JAX stock #032193 in your Materials and Methods section.

### Animal Health Reports

[Facility Barrier Level Descriptions](#)

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

## ➔ Pricing & Availability



Cryo  
Recovery

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### Domestic | International

Pricing effective for USA, Canada and Mexico shipping destinations

#### Cryorecovery - Domestic Pricing

SERVICE/PRODUCT	DESCRIPTION	PRICE
<a href="#">Cryo Recovery</a>	Heterozygous for Pm20d1	\$2,854.50

#### Related Products and Services

<a href="#">Frozen Mouse Embryo</a>	C57BL/6J-Pm20d1	\$2595.00
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