

# Ifitm10 Cas9-CKO Strategy

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# Overview

## Target Gene Name

- Ifitm10

## Project Type

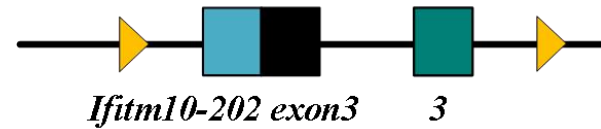
- Cas9-CKO

## Genetic Background

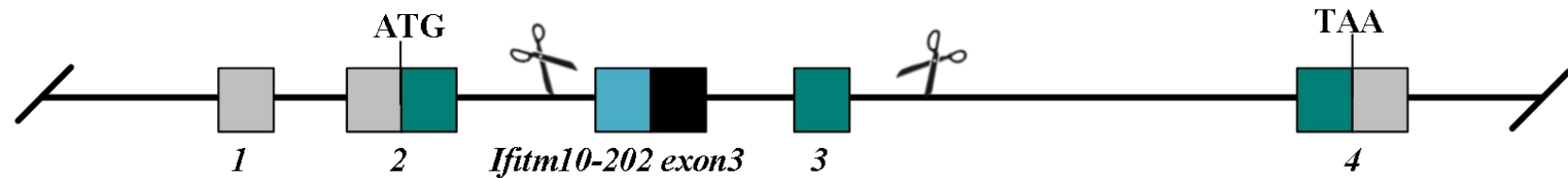
- C57BL/6JGpt

# Strain Strategy

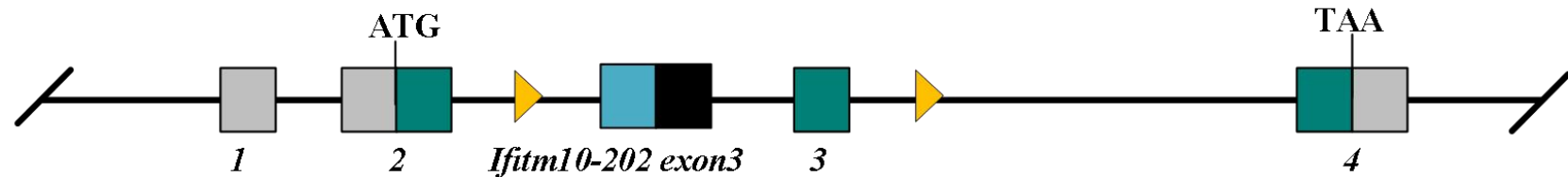
Donor and CRISPR-Cas9 System



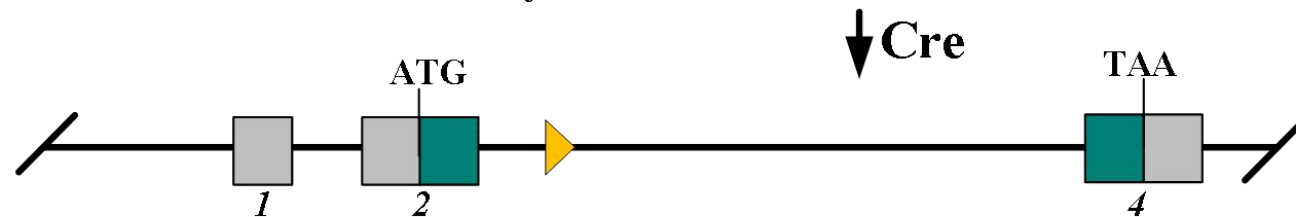
Wild-type allele



Conditional KO allele



KO allele



Schematic representation of CRISPR-Cas9 engineering used to edit the *Ifitm10* gene.

# Technical Information

- The *Ifitm10* gene has 6 transcripts. According to the structure of *Ifitm10* gene, exon3 of *Ifitm10*-201 (ENSMUST00000059223.15) transcript is recommended as the knockout region. The region contains 97bp coding sequence. Knocking out the region will result in disruption of protein function.
- In this project we use CRISPR-Cas9 technology to modify *Ifitm10* gene. The brief process is as follows: CRISPR-Cas9 system and Donor were microinjected into the fertilized eggs of C57BL/6JGpt mice. Fertilized eggs were transplanted to obtain positive F0 mice which were confirmed by PCR and on-target amplicon sequencing. A stable F1-generation mouse strain was obtained by mating positive F0-generation mice with C57BL/6JGpt mice and confirmation of the desired mutant allele was carried out by PCR and on-target amplicon sequencing.
- The flox mice will be knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

# Gene Information

**Ifitm10** interferon induced transmembrane protein 10 [ *Mus musculus* (house mouse) ]

[Download Datasets](#)

Gene ID: 320802, updated on 7-Sep-2023

## Summary

**Official Symbol** Ifitm10 provided by MGI  
**Official Full Name** interferon induced transmembrane protein 10 provided by MGI  
**Primary source** MGI:MGI:2444776  
**See related** [Ensembl:ENSMUSG00000045777](#) [AllianceGenome:MGI:2444776](#)  
**Gene type** protein coding  
**RefSeq status** VALIDATED  
**Organism** [Mus musculus](#)  
**Lineage** Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus  
**Also known as** DSPA3; 6330512M04Rik  
**Summary** Predicted to be located in membrane. Predicted to be integral component of membrane. Predicted to be active in plasma membrane. Orthologous to human IFITM10 (interferon induced transmembrane protein 10). [provided by Alliance of Genome Resources, Apr 2022]  
**Expression** Biased expression in cerebellum adult (RPKM 9.8), lung adult (RPKM 4.5) and 8 other tissues [See more](#)  
**Orthologs** [human](#) [all](#)  
**NEW** Try the new [Gene table](#)  
Try the new [Transcript table](#)

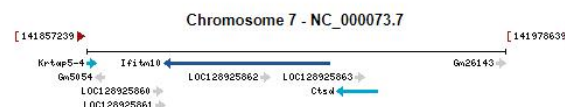
## Genomic context

**Location:** 7 F5; 7 87.9 cM

[See Ifitm10 in Genome Data Viewer](#)

**Exon count:** 10

| Annotation release | Status            | Assembly                     | Chr | Location                                       |
|--------------------|-------------------|------------------------------|-----|--|
| RS_2023_04         | current           | GRCh39 (GCF_000001635.27)    | 7   | NC_000073.7 (141879572..141927526, complement) |
| 108.20200622       | previous assembly | GRCh38.p6 (GCF_000001635.26) | 7   | NC_000073.6 (142325835..142373779, complement) |



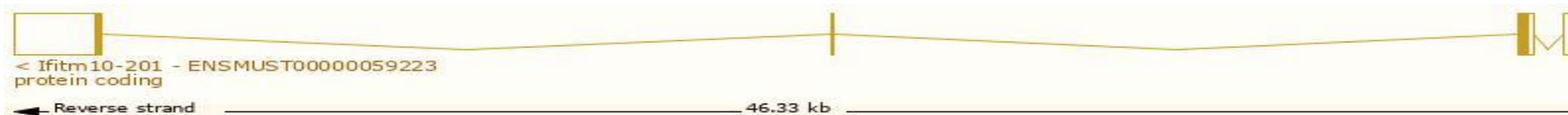
Source: <https://www.ncbi.nlm.nih.gov/>

# Transcript Information

The gene has 6 transcripts, all transcripts are shown below:

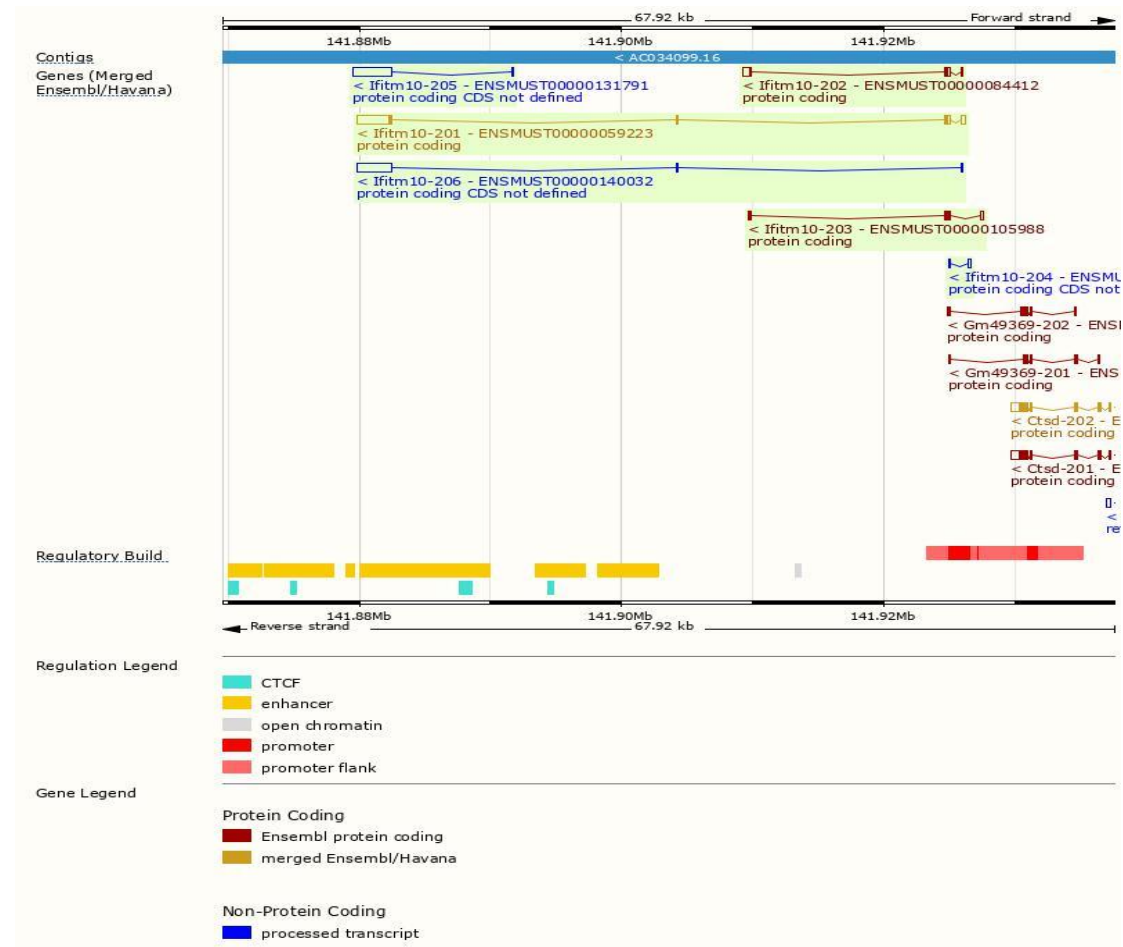
| Transcript ID                         | Name        | bp   | Protein               | Biotype                        | CCDS                      | UniProt Match            | Flags   |
|---------------------------------------|-------------|------|-----------------------|--------------------------------|---------------------------|--------------------------|---|
| <a href="#">ENSMUST00000105988.2</a>  | Ifitm10-203 | 824  | <a href="#">201aa</a> | Protein coding                 | <a href="#">CCDS85468</a> | <a href="#">Q8BR26-1</a> | Ensembl Canonical Gencode basic APPRIS ALT2 TSL:2 |
| <a href="#">ENSMUST00000059223.15</a> | Ifitm10-201 | 3412 | <a href="#">162aa</a> | Protein coding                 | <a href="#">CCDS40191</a> | <a href="#">Q8BR26-3</a> | Gencode basic TSL:1                               |
| <a href="#">ENSMUST00000084412.6</a>  | Ifitm10-202 | 1158 | <a href="#">130aa</a> | Protein coding                 | <a href="#">CCDS85467</a> | <a href="#">Q8BR26-2</a> | Gencode basic APPRIS P2 TSL:1                     |
| <a href="#">ENSMUST00000131791.2</a>  | Ifitm10-205 | 2973 | No protein            | Protein coding CDS not defined |                           | -                        | TSL:1   |
| <a href="#">ENSMUST00000140032.2</a>  | Ifitm10-206 | 2767 | No protein            | Protein coding CDS not defined |                           | -                        | TSL:1   |
| <a href="#">ENSMUST00000123543.2</a>  | Ifitm10-204 | 369  | No protein            | Protein coding CDS not defined |                           | -                        | TSL:3   |

The strategy is based on the design of *Ifitm10-201* transcript, the transcription is shown below:



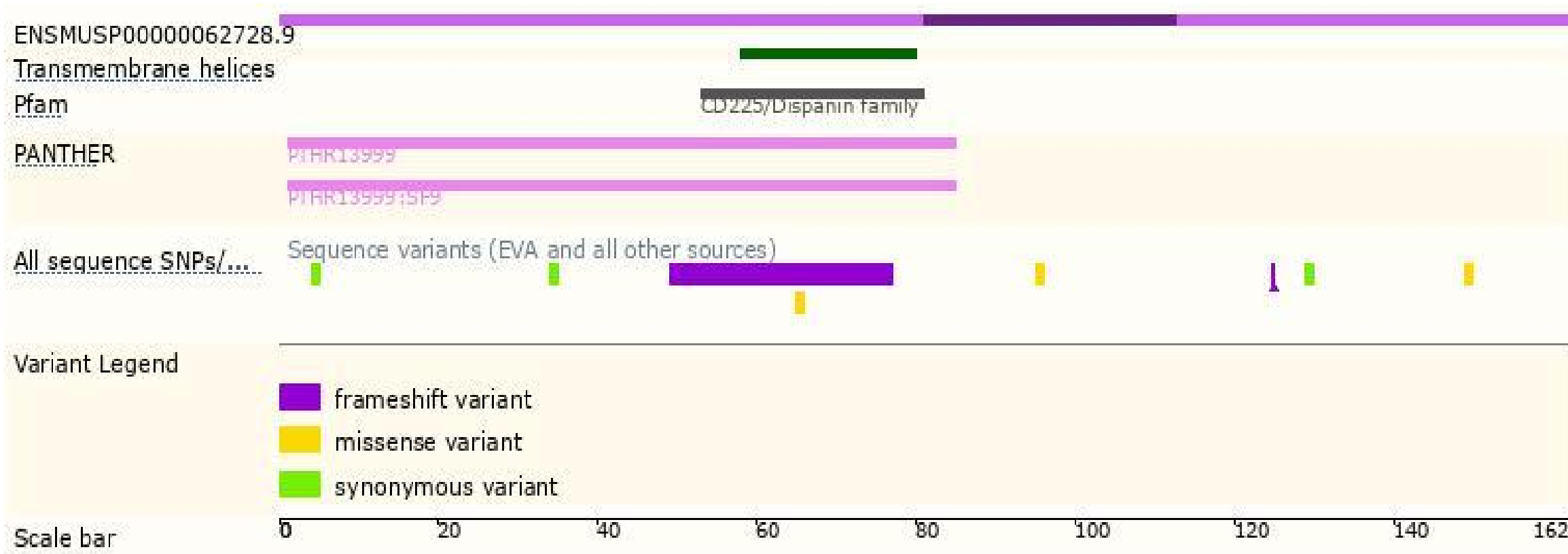
Source: <https://www.ensembl.org>

# Genomic Information





# Protein Information





# Important Information

- *Ifitm10* is located on Chr7. If the knockout mice are crossed with other mouse strains to obtain double homozygous mutant offspring, please avoid the situation that the second gene is on the same chromosome.
- This Strategy is designed based on genetic information in existing databases. Due to the complexity of biological processes, all risk of loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.