

Hspa8 Cas9-CKO Strategy

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Overview

Target Gene Name

- Hspa8

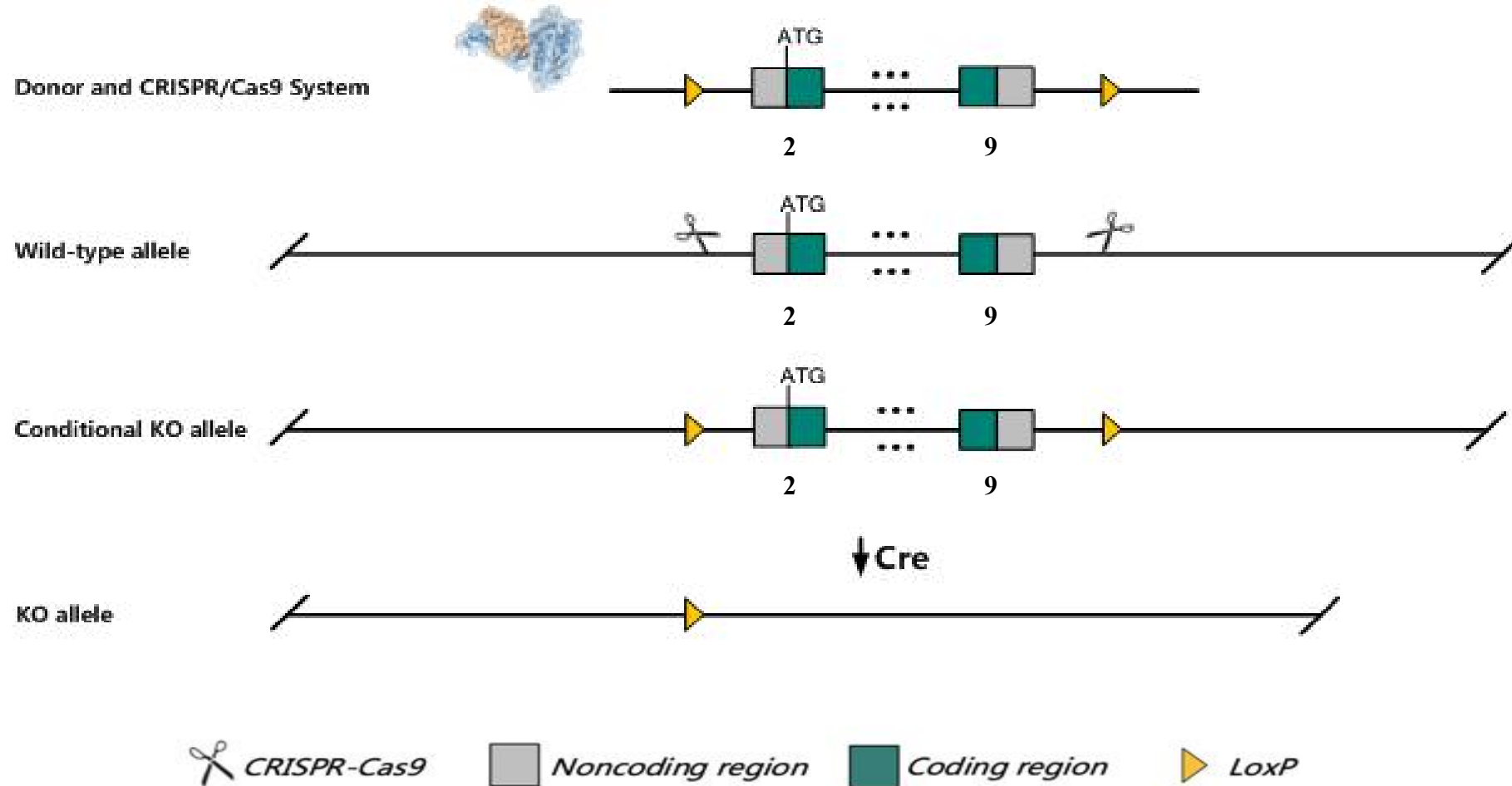
Project Type

- Cas9-CKO

Genetic Background

- C57BL/6JGpt

Strain Strategy



Schematic representation of CRISPR-Cas9 engineering used to edit the *Hspa8* gene.

Technical Information

- The *Hspa8* gene has 10 transcripts. According to the structure of *Hspa8* gene, exon2-exon9 of *Hspa8*-201 (ENSMUST00000015800.16) transcript is recommended as the knockout region. The region contains all of the coding sequence. Knocking out the region will result in disruption of protein function.
- In this project we use CRISPR-Cas9 technology to modify *Hspa8* 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

Hspa8 heat shock protein 8 [Mus musculus (house mouse)]

Gene ID: 15481, updated on 12-Apr-2023

Summary

Official Symbol	Hspa8 provided by MGI
Official Full Name	heat shock protein 8 provided by MGI
Primary source	MGI:MGI:105384
See related	Ensembl:ENSMUSG00000015656
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	2410008N15Rik, Hsc70, Hsc71, Hsc73, Hsp73, Hspa10
Expression	Ubiquitous expression in placenta adult (RPKM 956.1), CNS E11.5 (RPKM 802.7) and 28 other tissues See more
Orthologs	human all

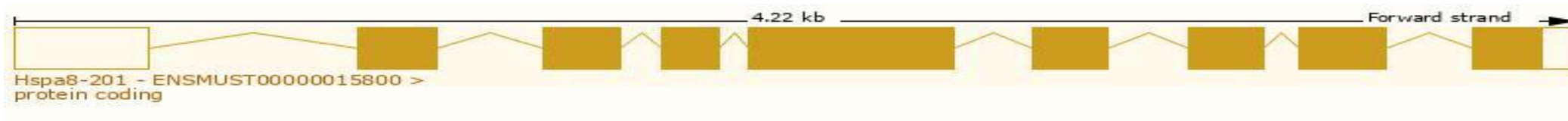
Source: <https://www.ncbi.nlm.nih.gov/>

Transcript Information

The gene has 10 transcripts, all transcripts are shown below:

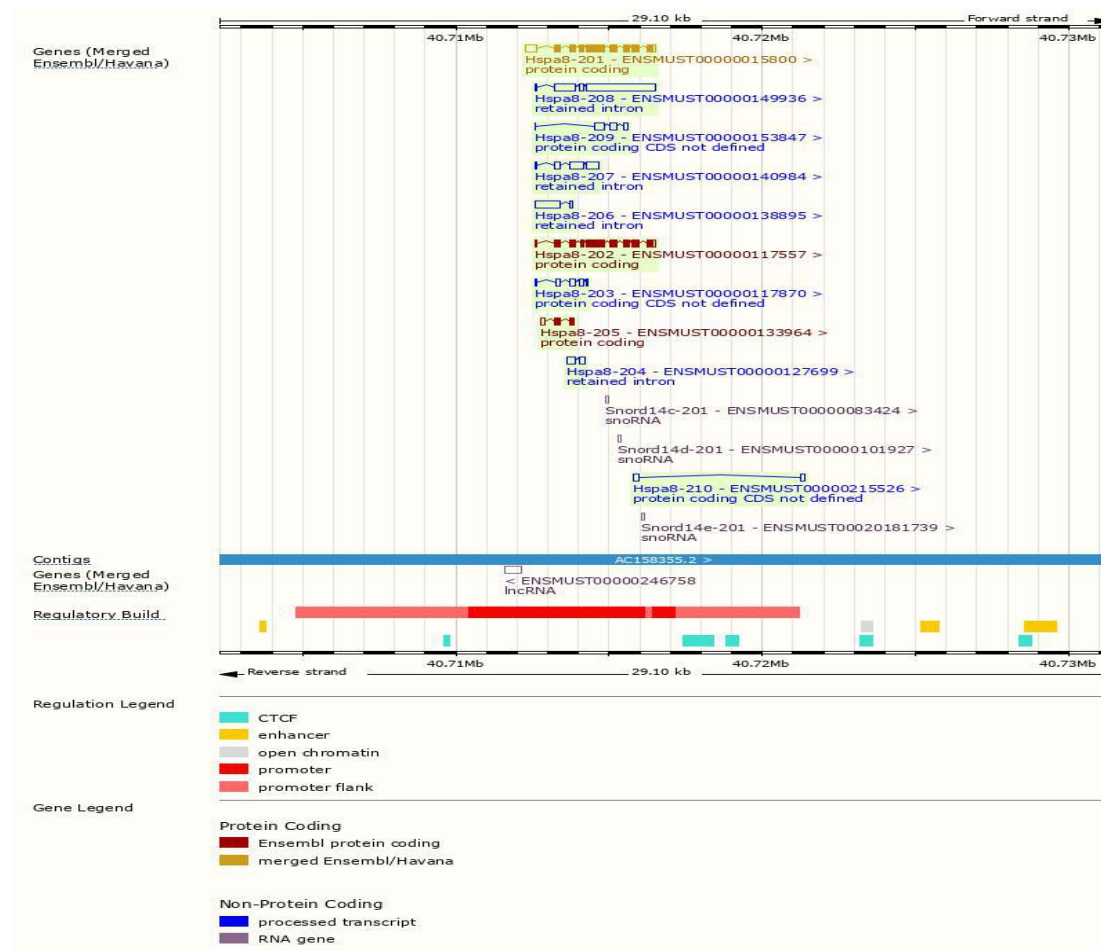
Transcript ID	Name	bp	Protein	Biotype	CCDS	UniProt Match	Flags
ENSMUST00000015800.16	Hspa8-201	2394	646aa	Protein coding	CCDS23083	P63017	Ensembl Canonical Gencode basic APPRIS P1 TSL:1
ENSMUST000000117557.8	Hspa8-202	2019	627aa	Protein coding		Q504P4	Gencode basic TSL:1
ENSMUST000000117870.9	Hspa8-203	598	No protein	Protein coding CDS not defined		-	TSL:3
ENSMUST000000127699.2	Hspa8-204	456	No protein	Retained intron		-	TSL:1
ENSMUST000000133964.2	Hspa8-205	514	116aa	Protein coding		D3Z5E2	TSL:2 CDS 3' incomplete
ENSMUST000000138895.2	Hspa8-206	920	No protein	Retained intron		-	TSL:1
ENSMUST000000140984.2	Hspa8-207	1152	No protein	Retained intron		-	TSL:5
ENSMUST000000149936.2	Hspa8-208	3158	No protein	Retained intron		-	TSL:1
ENSMUST000000153847.2	Hspa8-209	727	No protein	Protein coding CDS not defined		-	TSL:5
ENSMUST000000215526.2	Hspa8-210	357	No protein	Protein coding CDS not defined		-	TSL:5

The strategy is based on the design of *Hspa8-201* transcript, the transcription is shown below:



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

Genomic Information



Protein Information



Important Information

- *Hspa8* is located on Chr9. 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.
- The *Snord14c*, *Snord14d*, and *Snord14e* snoRNA genes overlap with the knockout region, and this strategy will knock out these genes.
- The insertion of 5'loxp may affect the normal splicing regulation function of *Hspa8* gene.
- This strategy may affect the 5-terminal regulatory function of the *Gm57042-01* gene.
- 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.