GemPharmatech™

Ing4 Cas9-KO Strategy

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Reviewer: Xingkai Xiao

Design Date: 2024-4-16

Overview

Target Gene Name

- *Ing4*

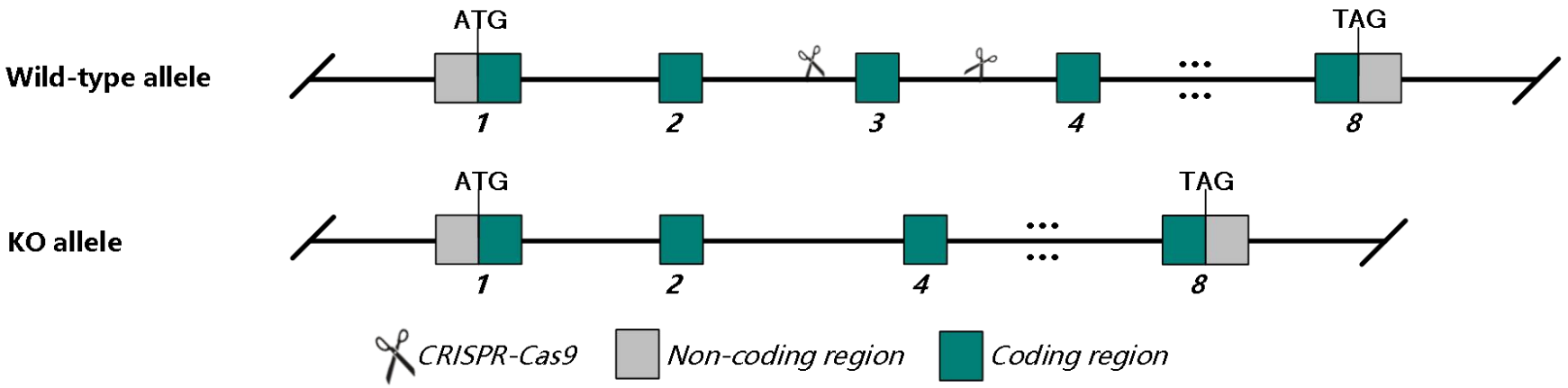
Project Type

- Cas9-KO

Genetic Background

- C57BL/6JGpt

Strain Strategy



Schematic representation of CRISPR-Cas9 engineering used to edit the *Ing4* gene.

Technical Information

- The *Ing4* gene has 9 transcripts. According to the structure of *Ing4* gene, exon 3 of *Ing4*-201 (ENSMUST00000032480.14) is recommended as the knockout region. The region contains 167 bp of coding sequence. Knocking out the region will result in disruption of gene function.
- In this project we use CRISPR-Cas9 technology to modify *Ing4* gene. The brief process is as follows: CRISPR-Cas9 system and gRNA 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.

Gene Information

Ing4 inhibitor of growth family, member 4 [*Mus musculus* (house mouse)]

Download Datasets

Gene ID: 28019, updated on 10-Mar-2024

Summary

Official Symbol	Ing4 provided by MGI
Official Full Name	inhibitor of growth family, member 4 provided by MGI
Primary source	MGI:MGI:107307
See related	Ensembl:ENSMUSG00000030330 AllianceGenome:MGI:107307
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	D6Xrf92; p29ING4; D6Wsu147e
Summary	Predicted to enable methylated histone binding activity and transcription coactivator activity. Involved in positive regulation of apoptotic process. Located in nucleus. Is expressed in several structures, including cerebral cortex; early conceptus; genitourinary system; sensory organ; and skeleton. Orthologous to human ING4 (inhibitor of growth family member 4). [provided by Alliance of Genome Resources, Apr 2022]
Expression	Ubiquitous expression in limb E14.5 (RPKM 43.3), CNS E14 (RPKM 42.0) and 28 other tissues See more
Orthologs	human all

NEW **Try the new Gene table**
Try the new Transcript table

Genomic context

Location: 6 F2; 6 59.17 cM — See Ing4 in Genome Data Viewer

Exon count: 8

https://www.ncbi.nlm.nih.gov/gene/28019

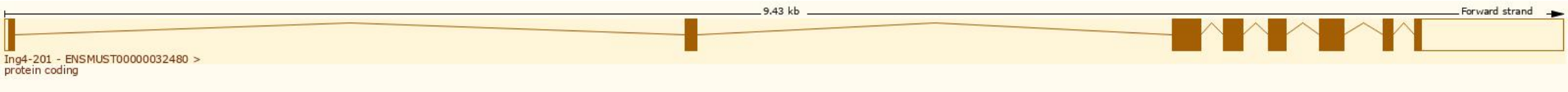
Transcript Information

The gene has 9 transcripts, all transcripts are shown below:

Show/hide columns (1 hidden) Filter

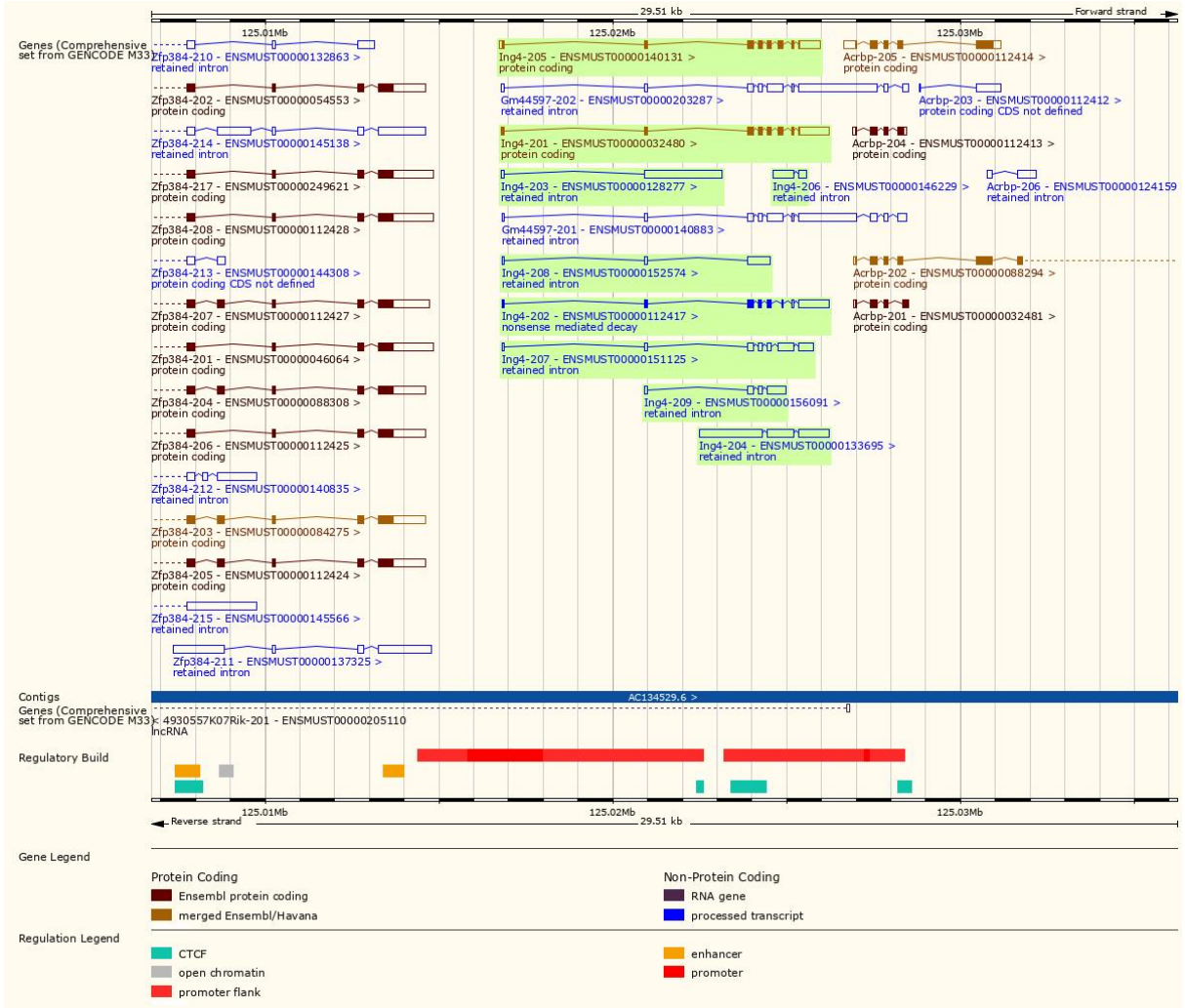
Transcript ID	Name	bp	Protein	Biotype	CCDS	UniProt Match	Flags
ENSMUST00000140131.8	Ing4-205	1446	249aa	Protein coding		Q8C0D7	Ensembl Canonical, GENCODE basic, APPRIS ALT1, TSL:1
ENSMUST00000032480.14	Ing4-201	1629	248aa	Protein coding	CCDS39632	Q8C0D7-2	GENCODE basic, APPRIS P4, TSL:1
ENSMUST00000112417.9	Ing4-202	1487	168aa	Nonsense mediated decay		Q8C0D7-5	TSL:1
ENSMUST00000133695.2	Ing4-204	3458	No protein	Retained intron		-	TSL:1
ENSMUST00000128277.2	Ing4-203	2294	No protein	Retained intron		-	TSL:1
ENSMUST00000151125.8	Ing4-207	1383	No protein	Retained intron		-	TSL:1
ENSMUST00000156091.2	Ing4-209	879	No protein	Retained intron		-	TSL:5
ENSMUST00000146229.2	Ing4-206	849	No protein	Retained intron		-	TSL:1
ENSMUST00000152574.8	Ing4-208	791	No protein	Retained intron		-	TSL:2

The strategy is based on the design of *Ing4*-201 transcript, the transcription is shown below:



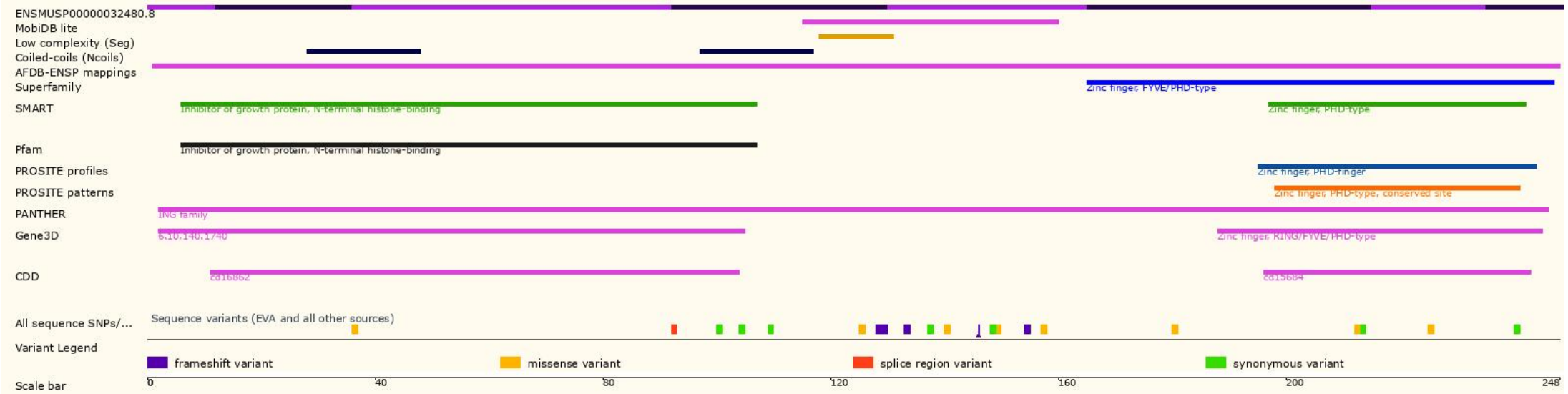
Source: http://asia.ensembl.org/

Genomic Information



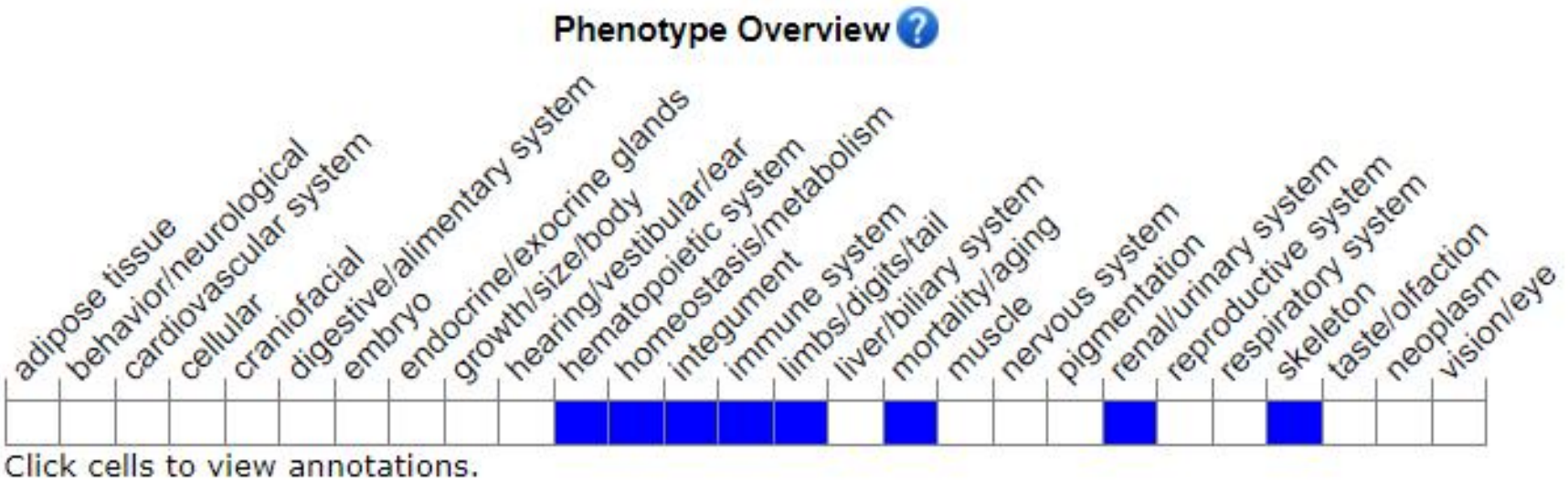
Source: http://asia.ensembl.org/

Protein Information



Source: https://www.ensembl.org

Mouse Phenotype Information (MGI)



Mice homozygous for a gene trapped allele are hypersensitive to LPS challenge and exhibit elevated cytokine responses.

Source: https://www.informatics.jax.org

Important Information

- The knockout region is about 2.5 kb away from the 5’ of the *Acrbp* gene, which may affect the regulation of this gene.
- The knockout region overlaps with *Gm44597* and *4930557K07* gene, which may affect the function of this gene.
- This stratergy may not affect *Ing4*-203 and *Ing4*-206 non-coding transcript.
- *Ing4* is located on Chr 6. 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 on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.