Idh3b Cas9-KO Strategy

Designer: Xueting Zhang
Reviewer:Yanhua Shen
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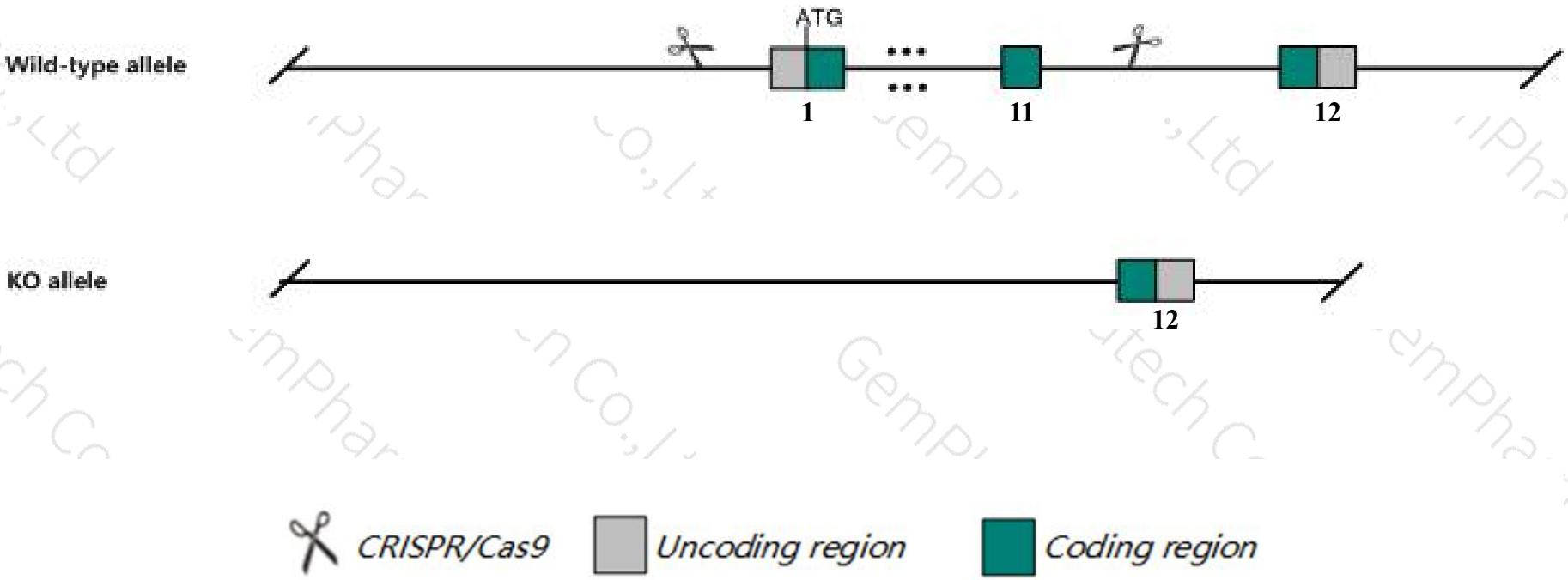
Project Overview

Project Name	***Idh3b***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Idh3b* gene. The schematic diagram is as follows:



Technical routes

➢ The *Idh3b* gene has 5 transcripts. According to the structure of *Idh3b* gene, exon1-exon11 of *Idh3b-201* (ENSMUST00000028892.10) transcript is recommended as the knockout region.The region contains start codon ATG. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Idh3b* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

- According to the existing MGI data,Homozygous knockout does not cause eye phenotypes.
- The knockout region is near to the C-terminal of *Nop56* gene,this strategy may influence the regulatory function of the C-terminal of *Nop56* gene.
- The *Idh3b* gene is located on the Chr2. If the knockout mice are crossed with other mice strains to obtain double gene positive homozygous mouse offspring, please avoid the two genes 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information （NCBI）

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Idh3b isocitrate dehydrogenase 3 (NAD+) beta [*Mus musculus* (house mouse)]

Gene ID: 170718, updated on 13-Mar-2020

Summary

Official Symbol	Idh3b provided by MGI
Official Full Name	isocitrate dehydrogenase 3 (NAD+) beta provided by MGI
Primary source	MGI:MGI:2158650
See related	Ensembl:ENSMUSG00000027406
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	C78231
Expression	Ubiquitous expression in heart adult (RPKM 305.9), kidney adult (RPKM 164.3) and 28 other tissues See more
Orthologs	human all

Genomic context

Location: 2; 2 F1

See Idh3b in Genome Data Viewer

Exon count: 12

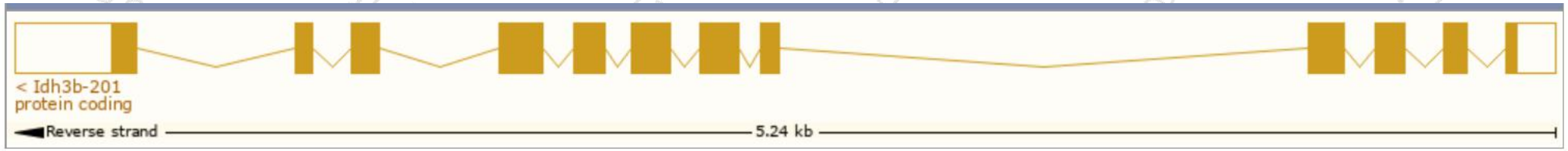
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	2	NC_000068.7 (130279309..130284451, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	2	NC_000068.6 (130105045..130110187, complement)

Transcript information（Ensembl）

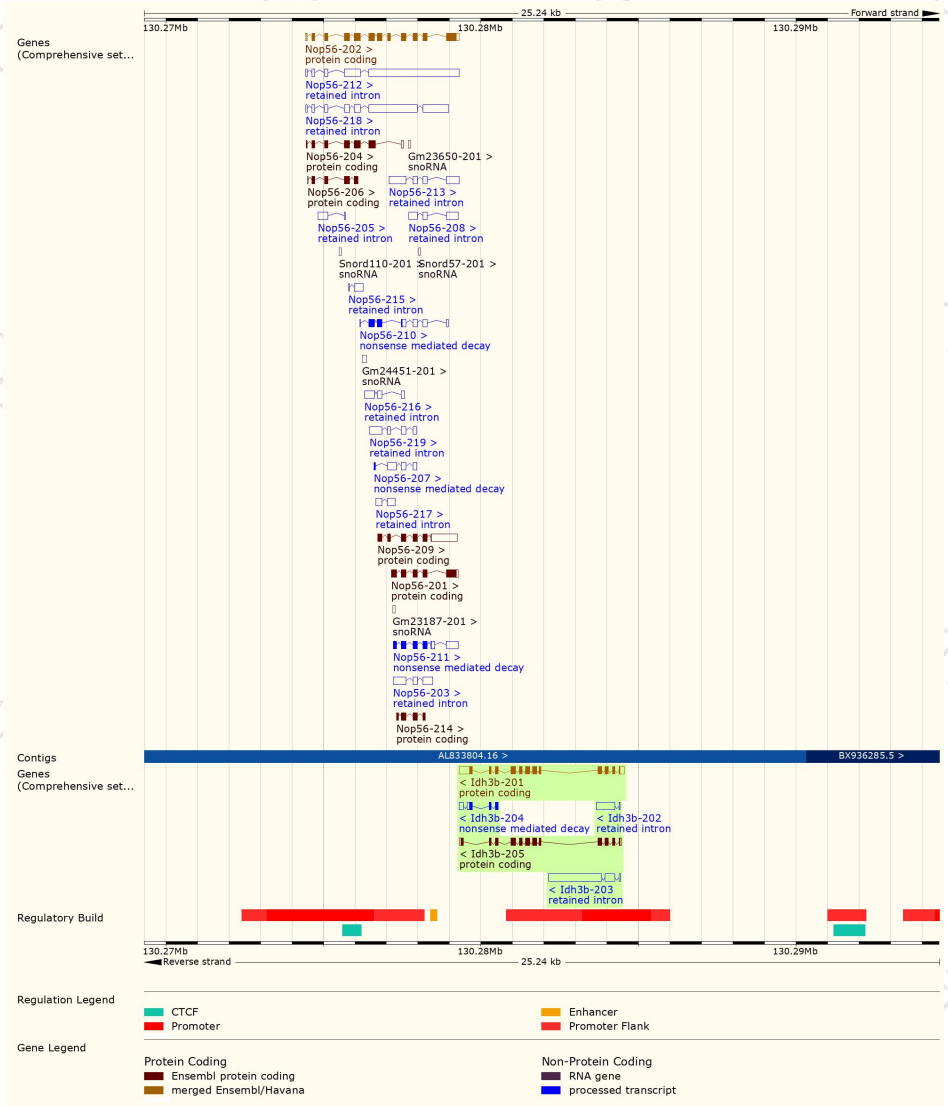
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Idh3b-201	ENSMUST00000028892.10	1616	384aa	Protein coding	CCDS16738	Q91VA7	TSL:1 GENCODE basic APPRIS P2
Idh3b-205	ENSMUST00000239288.1	1233	380aa	Protein coding	-	-	GENCODE basic APPRIS ALT2
Idh3b-204	ENSMUST00000184538.1	452	80aa	Nonsense mediated decay	-	V9GXV0	CDS 5' incomplete TSL:3
Idh3b-203	ENSMUST00000149843.1	2049	No protein	Retained intron	-	-	TSL:1
Idh3b-202	ENSMUST00000124868.1	620	No protein	Retained intron	-	-	TSL:3

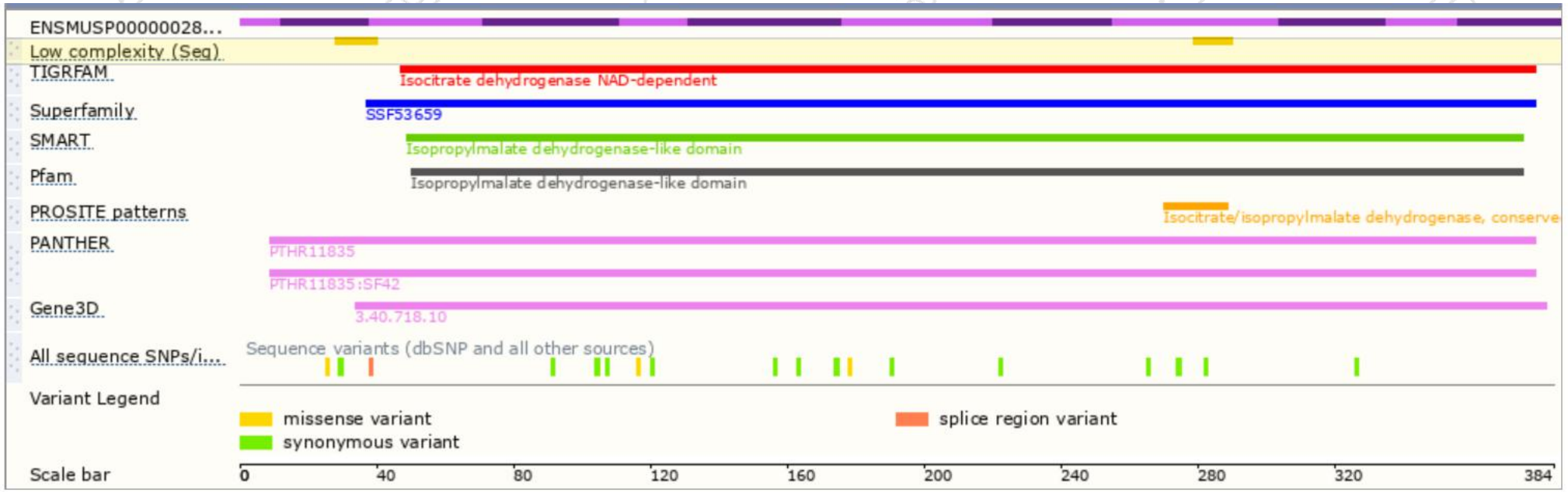
The strategy is based on the design of *Idh3b-201* transcript,The transcription is shown below



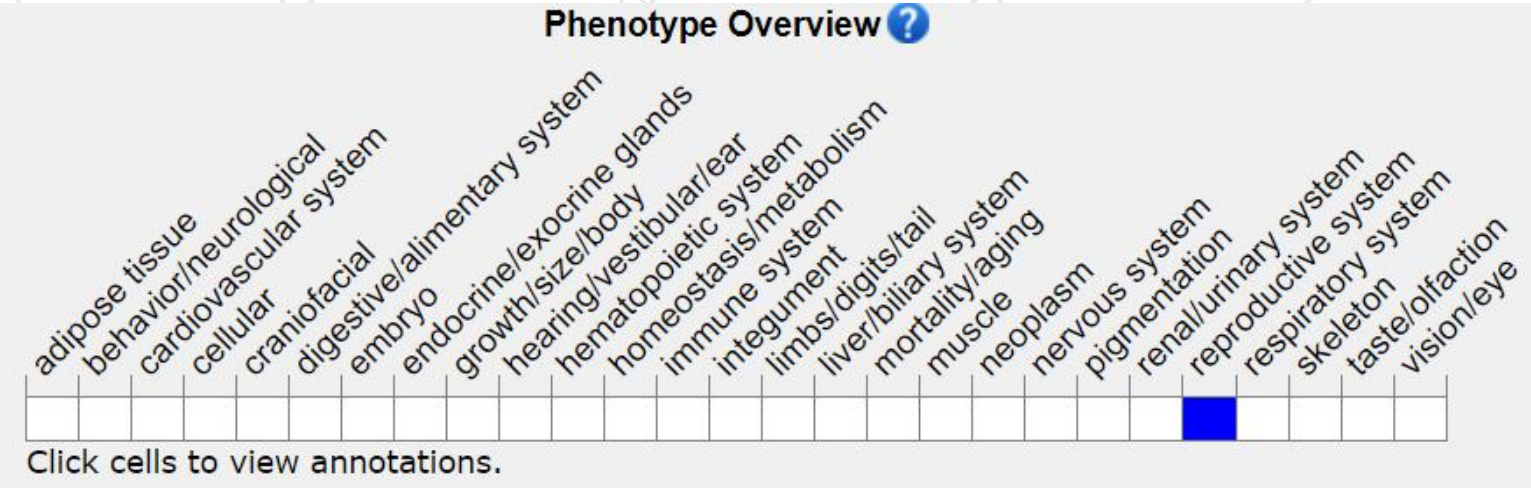
Genomic location distribution



Protein domain



Mouse phenotype description(MGI)



Phenotypes affected by the gene are marked in blue.Data quoted from MGI database(http://www.informatics.jax.org/).

According to the existing MGI data,Homozygous knockout does not cause eye phenotypes.

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If you have any questions, you are welcome to inquire.

Tel: 400-9660890

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GemPharmatech Co.,Ltd