Zmiz1 Cas9-KO Strategy

Designer: JiaYu

Reviewer: Xiaojing Li

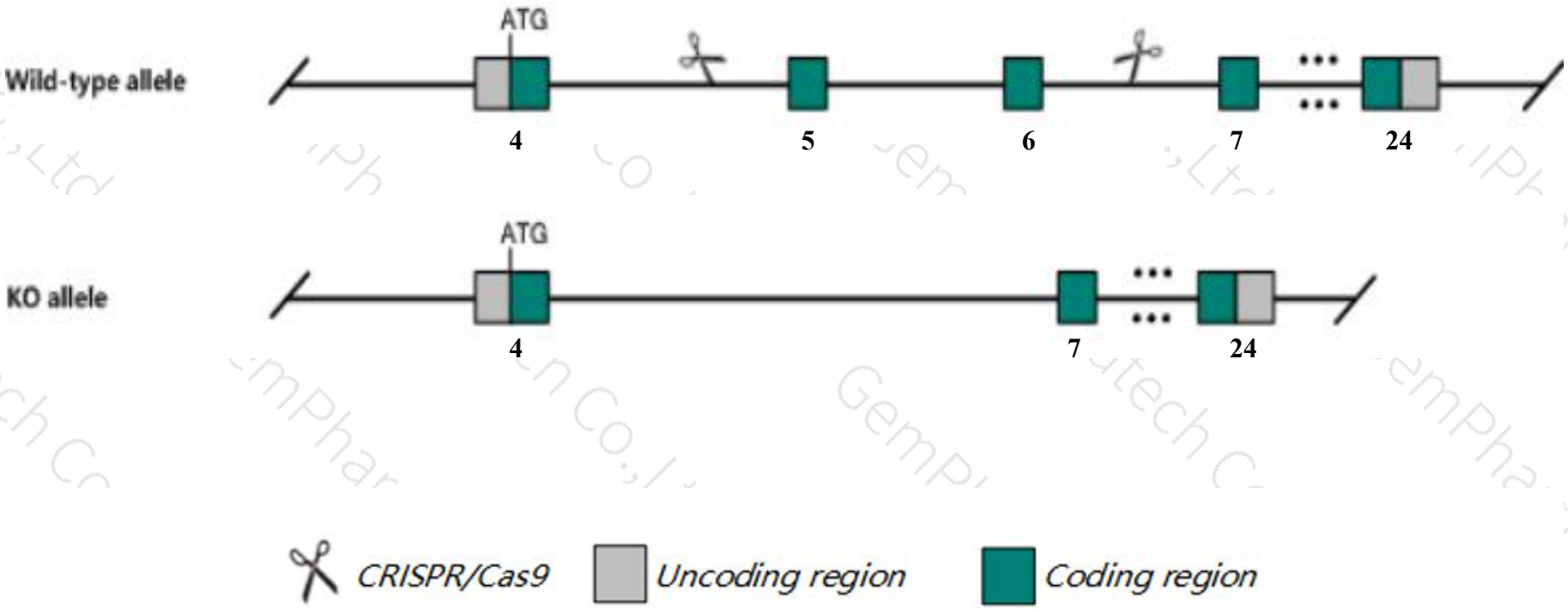
Design Date: 2020-7-27

Project Overview

Project Name	***Zmiz1***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Zmiz1* gene. The schematic diagram is as follows:



Technical routes

➢ The *Zmiz1* gene has 8 transcripts. According to the structure of *Zmiz1* gene, exon5-exon6 of *Zmiz1-208*(ENSMUST00000162645.7) transcript is recommended as the knockout region.The region contains 220bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Zmiz1* gene. The brief process is as follows: CRISPR/Cas9 system 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 sequencing. A stable F1 generation mouse model was obtained by mating positive F0 generation mice with C57BL/6JGpt mice.

Notice

➢ According to the existing MGI data,mice homozygous for a null mutation display embryonic lethality during organogenesis with failure of yolk sac vascular remodeling and abnormal embryonic vascular development.

➢ The *Zmiz1* gene is located on the Chr14. 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）

集萃药康 GemPharmatech

Zmiz1 zinc finger, MIZ-type containing 1 [Mus musculus (house mouse)]

Gene ID: 328365, updated on 13-Mar-2020

Summary

Official Symbol	Zmiz1 provided by MGI
Official Full Name	zinc finger, MIZ-type containing 1 provided by MGI
Primary source	MGI:MGI:3040693
See related	Ensembl:ENSMUSG00000007817
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	BC065120, E330020C23, Gm10397, I920194n01, Rai17, Zimp10
Expression	Ubiquitous expression in adrenal adult (RPKM 35.4), limb E14.5 (RPKM 30.1) and 27 other tissues See more
Orthologs	human all

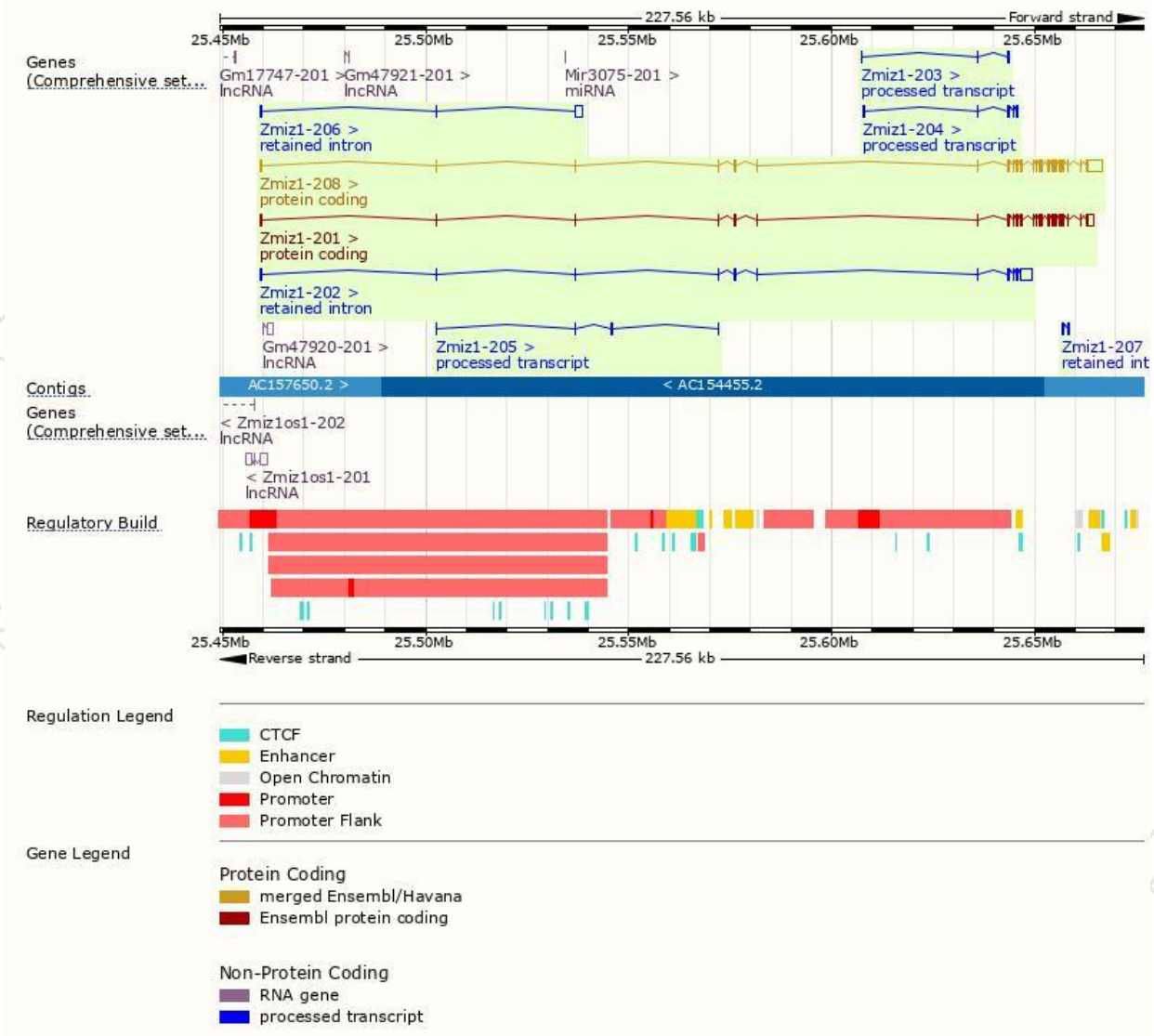
Transcript information（Ensembl）

The gene has 8 transcripts,all transcripts are shown below:

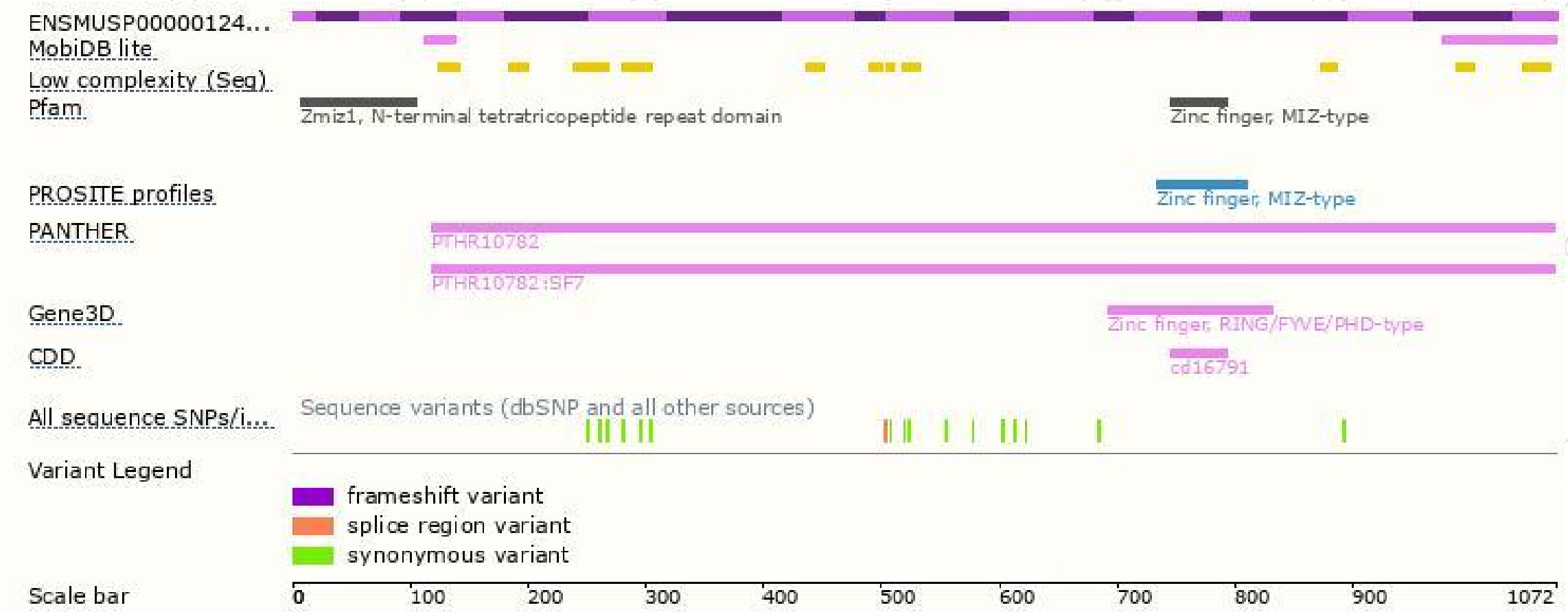
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Zmiz1-208	ENSMUST00000162645.7	7482	1072aa	Protein coding	CCDS26873	Q6P1E1	TSL:1 GENCODE basic APPRIS P3
Zmiz1-201	ENSMUST00000007961.14	5397	1066aa	Protein coding	CCDS79280	Q6P1E1	TSL:1 GENCODE basic APPRIS ALT1
Zmiz1-204	ENSMUST00000160229.1	930	No protein	Processed transcript	-	-	TSL:3
Zmiz1-203	ENSMUST00000160190.1	359	No protein	Processed transcript	-	-	TSL:3
Zmiz1-205	ENSMUST00000160680.2	342	No protein	Processed transcript	-	-	TSL:5
Zmiz1-202	ENSMUST00000159766.7	4314	No protein	Retained intron	-	-	TSL:2
Zmiz1-206	ENSMUST00000161766.7	2225	No protein	Retained intron	-	-	TSL:1
Zmiz1-207	ENSMUST00000162546.1	460	No protein	Retained intron	-	-	TSL:2

The strategy is based on the design of *Zmiz1-208* transcript,the transcription is shown below:

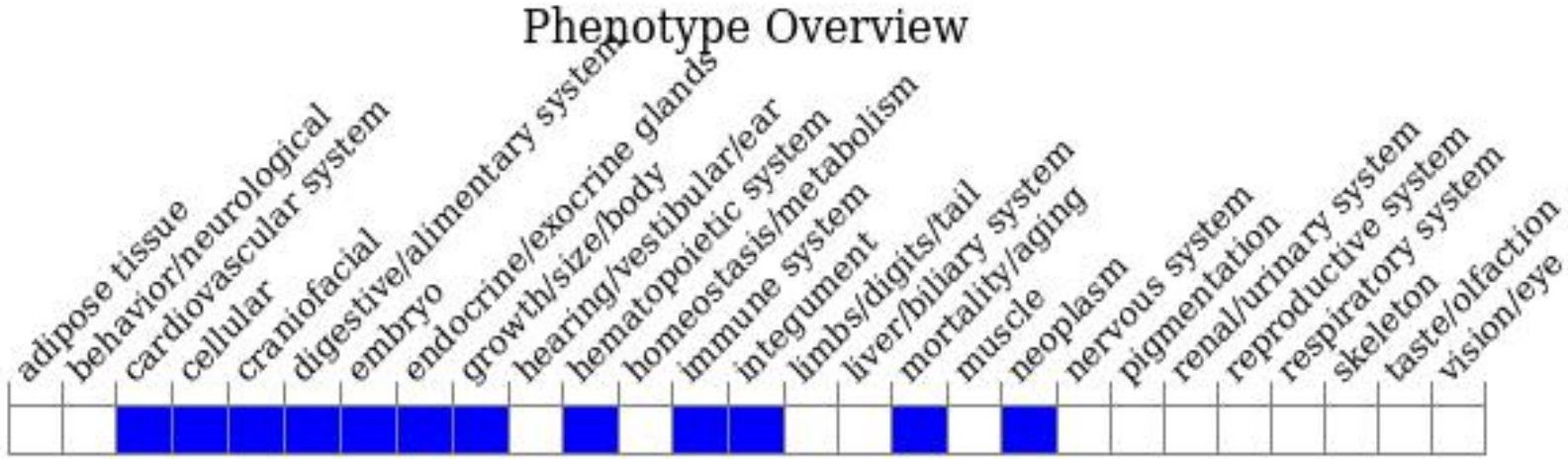
Genomic location distribution



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,mice homozygous for a null mutation display embryonic lethality during organogenesis with failure of yolk sac vascular remodeling and abnormal embryonic vascular development.

集萃药康
GemPharmatech

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

Tel: 400-9660890

集萃药康生物科技
GemPharmatech Co.,Ltd