Zranb1 Cas9-KO Strategy

Designer: Longyun Hu

Reviewer: Jiayuan Yao

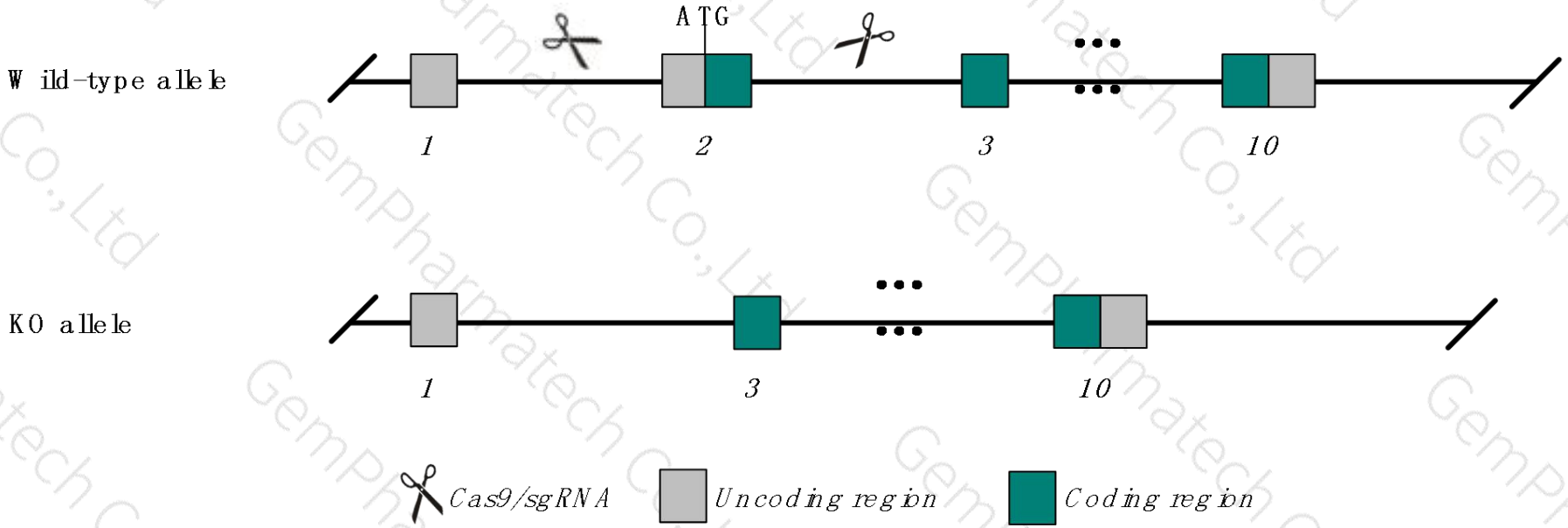
Design Date: 2019-11-29

Project Overview

Project Name	***Zranb1***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Zranb1* gene. The schematic diagram is as follows:



Technical routes

➢ The *Zranb1* gene has 5 transcripts. According to the structure of *Zranb1* gene, exon2 of *Zranb1-202* (ENSMUST00000106157.7) 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 *Zranb1* gene. The brief process is as follows: CRISPR/Cas9 syster

Notice

- According to the existing MGI data,Mice homozygous for a knock-out allele exhibit decreased CD4+ T cells and decreased susceptibility to experimental autoimmune encephalomyelitis.

- The *Zranb1* gene is located on the Chr7. 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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Zranb1 zinc finger, RAN-binding domain containing 1 [Mus musculus (house mouse)]

Gene ID: 360216, updated on 19-Mar-2019

Summary

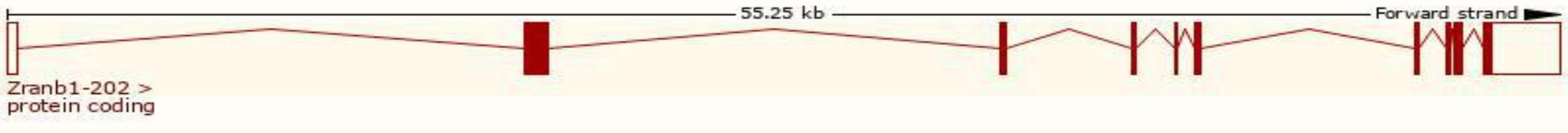
Official Symbol	Zranb1 provided by MGI
Official Full Name	zinc finger, RAN-binding domain containing 1 provided by MGI
Primary source	MGI:MGI:106441
See related	Ensembl:ENSMUSG00000030967
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	9330160G10Rik, D7Wsu87e, Gm1956, Trabid
Expression	Ubiquitous expression in cerebellum adult (RPKM 10.0), testis adult (RPKM 9.1) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

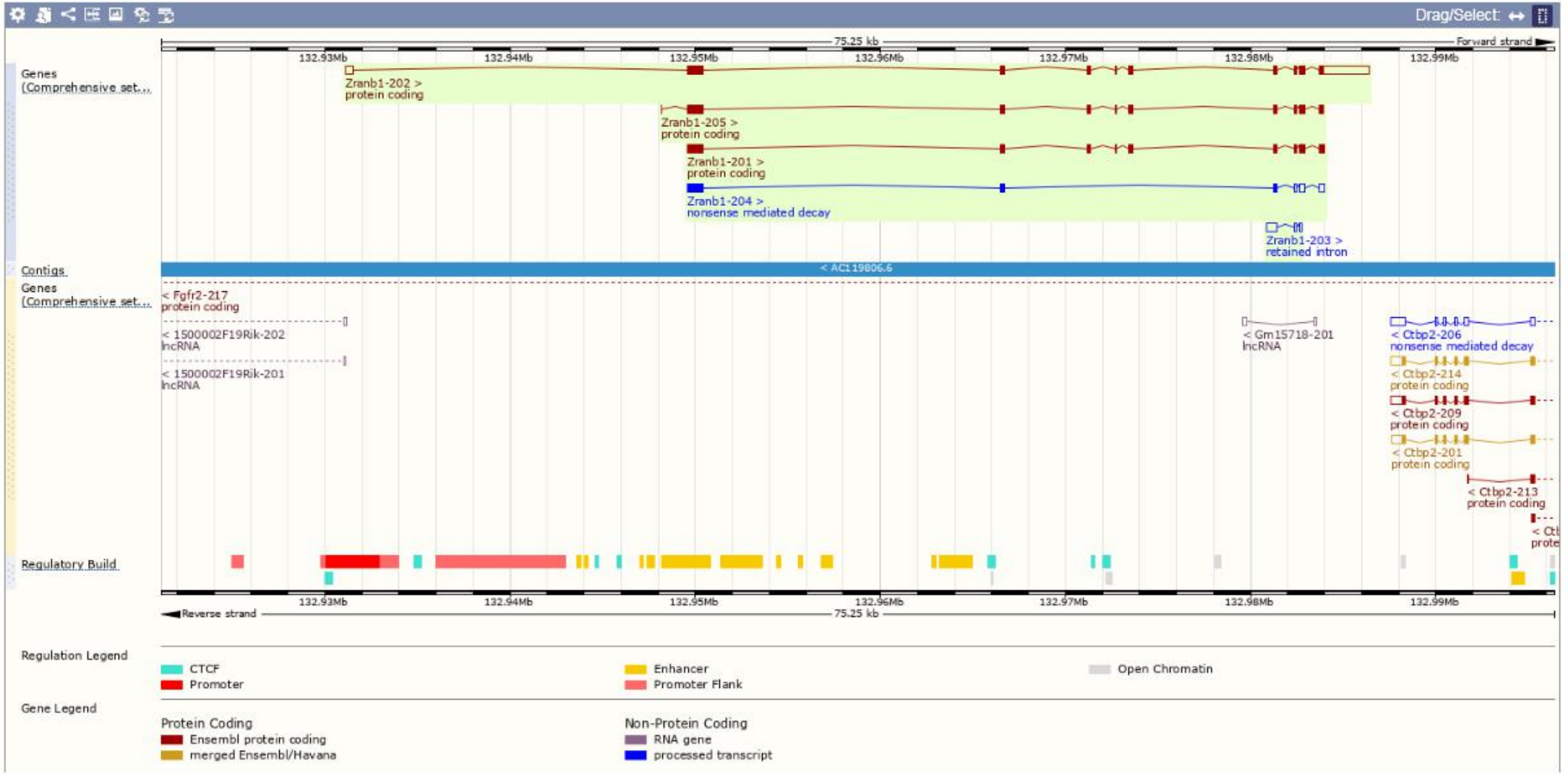
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Zranb1-202	ENSMUST00000106157.7	5008	708aa	Protein coding	CCDS21929	Q7M760	TSL:5 GENCODE basic APPRIS P2
Zranb1-201	ENSMUST00000033265.4	2210	708aa	Protein coding	CCDS21929	Q7M760	TSL:2 GENCODE basic APPRIS P2
Zranb1-205	ENSMUST00000215716.1	2205	734aa	Protein coding	-	A0A1L1SQ24	TSL:5 GENCODE basic APPRIS ALT1
Zranb1-204	ENSMUST00000210507.1	1785	372aa	Nonsense mediated decay	-	A0A1B0GQZ6	TSL:1
Zranb1-203	ENSMUST00000153335.1	757	No protein	Retained intron	-	-	TSL:2

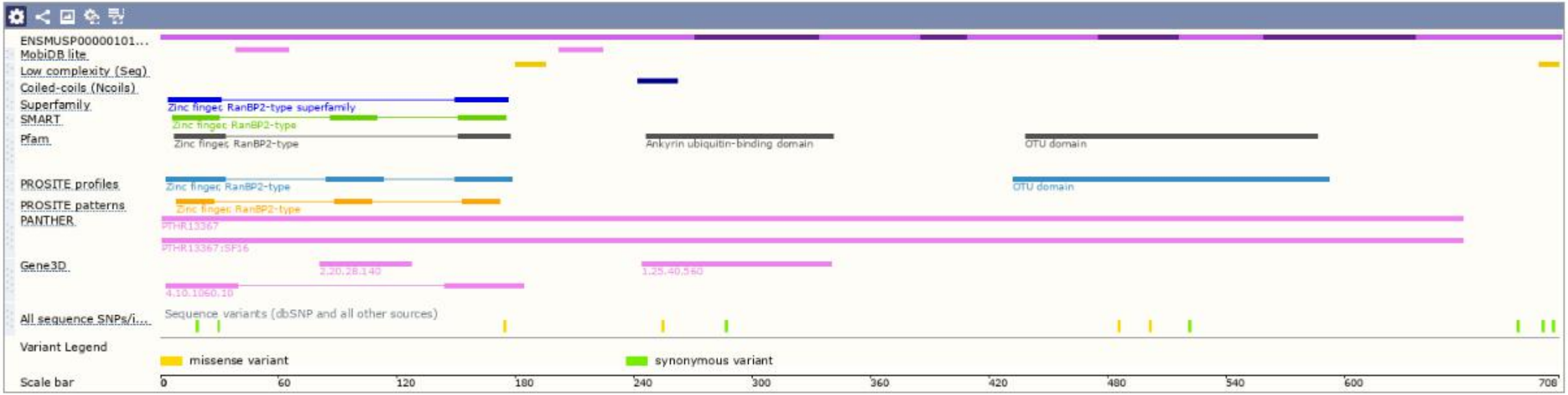
The strategy is based on the design of *Zranb1-202* transcript,The transcription is shown below



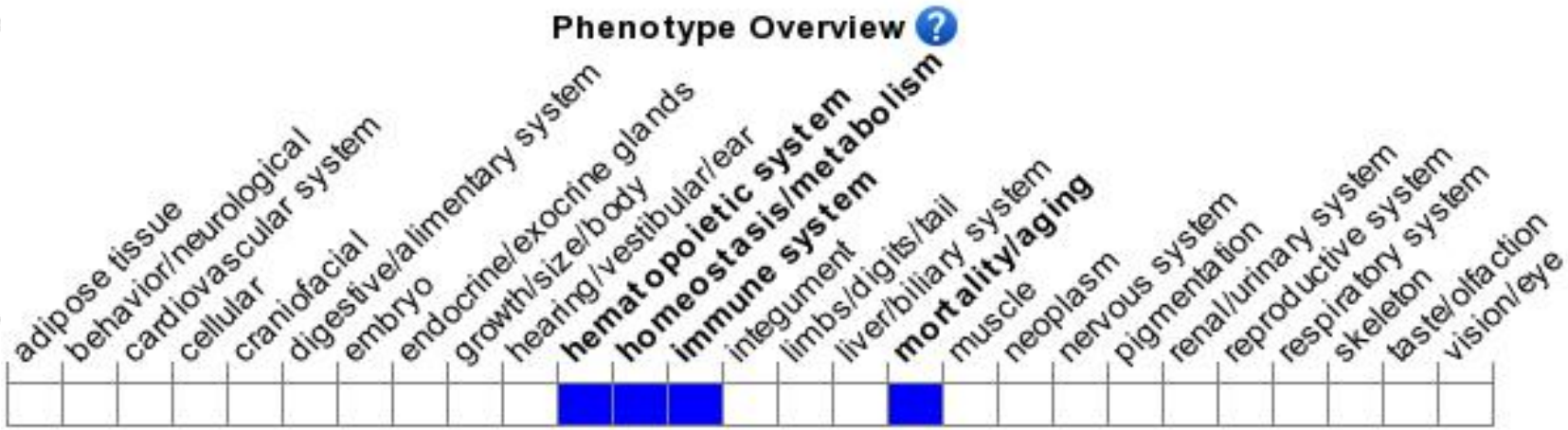
Genomic location distribution



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 knock-out allele exhibit decreased CD4+ T cells and decreased susceptibility to experimental autoimmune encephalomyelitis.

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

Tel: 400-9660890

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