Ikzf3 Cas9-KO Strategy

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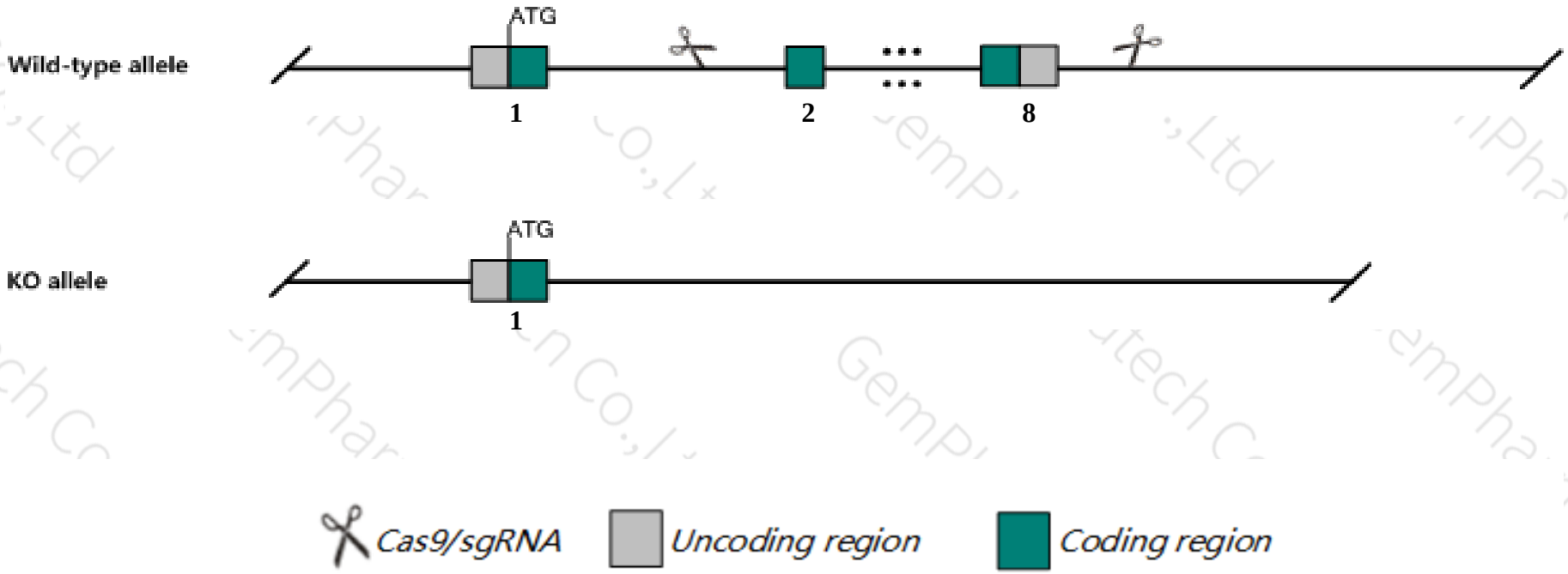
Project Overview

Project Name	***Ikzf3***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ikzf3* gene. The schematic diagram is as follows:



Technical routes

- The *Ikzf3* gene has 4 transcripts. According to the structure of *Ikzf3* gene, exon2-exon8 of *Ikzf3-201* (ENSMUST00000103141.3) transcript is recommended as the knockout region.The region contains most of coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Ikzf3* gene. The brief process is as follows: sgRNA was transcribed in vitro.Cas9 and sgRNA 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,Homozygous mutants exhibit greatly reduced B cell populations in the peritoneum, marginal zone and recirculating bone marrow. Aging mutants express autoantibodies, frequently develop B cell lymphomas, and display symptoms characteristic of SLE.

➢The KO region contains *Gm25106-201* gene.Knockout the region may affect the function of *Gm25106-201* gene.

➢ The *Ikzf3* gene is located on the Chr11. 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.

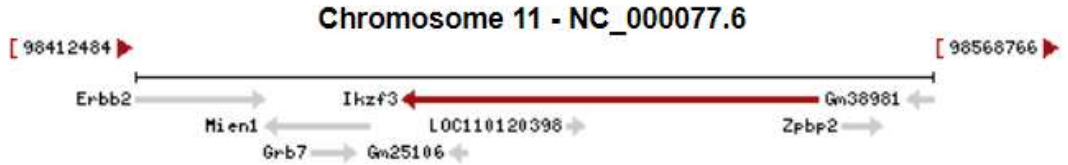
Gene information （NCBI）

Ikzf3 IKAROS family zinc finger 3 [*Mus musculus* (house mouse)]

Gene ID: 22780, updated on 12-Aug-2019

Summary

Official Symbol	Ikzf3 provided by MGI
Official Full Name	IKAROS family zinc finger 3 provided by MGI
Primary source	MGI:MGI:1342542
See related	Ensembl:ENSMUSG00000018168
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	Aiolos; Zfpn1a3; Znfn1a3; 5830411O07Rik
Expression	Biased expression in thymus adult (RPKM 23.1), spleen adult (RPKM 20.2) and 5 other tissues See more
Orthologs	human all

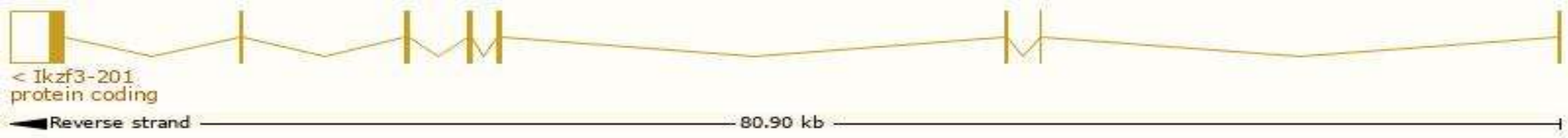


Transcript information（Ensembl）

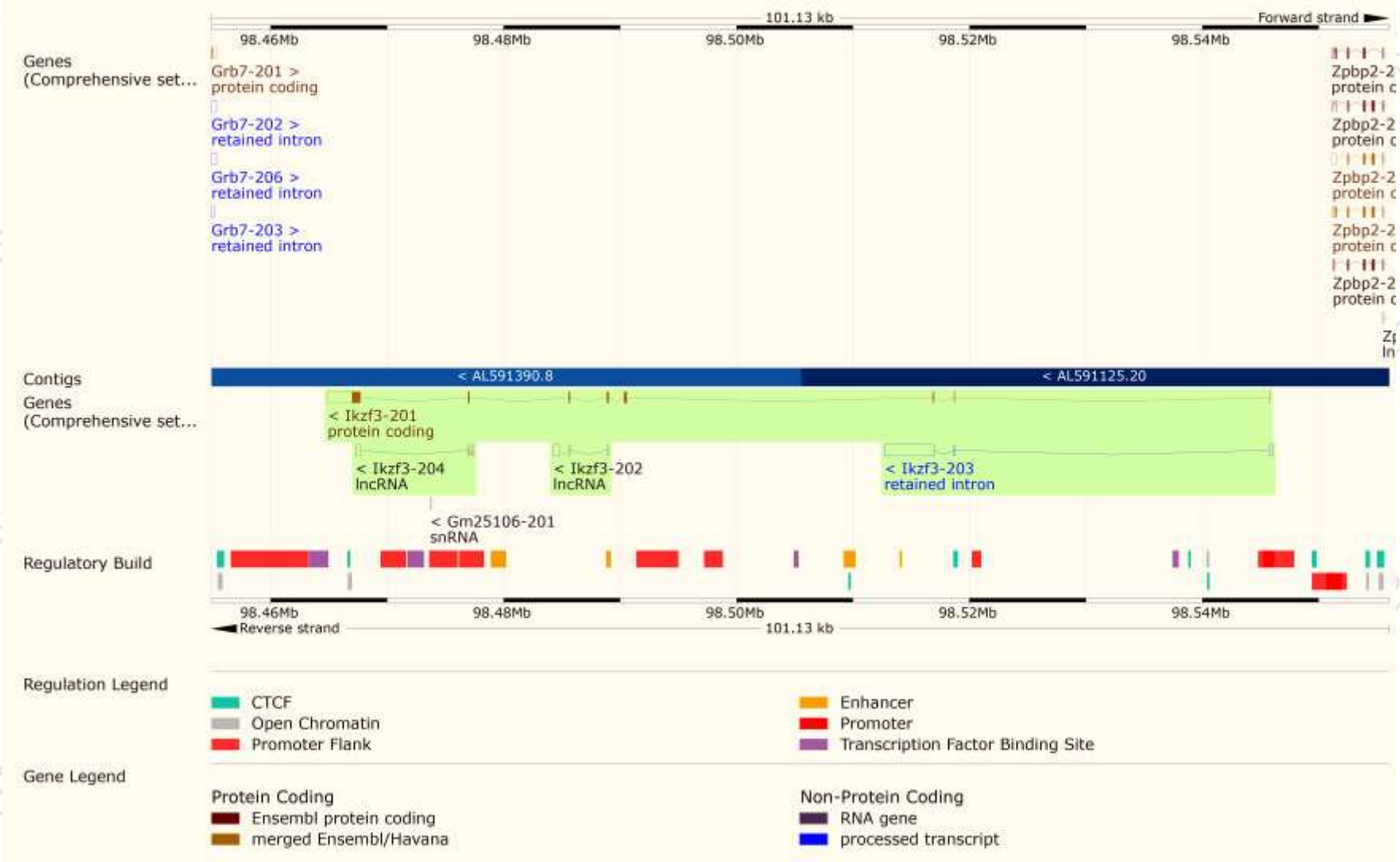
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Translation ID	Biotype	CCDS	UniProt	Flags
Ikzf3-201	ENSMUST00000103141.3	3658	507aa	ENSMUSP00000099430.3	Protein coding	CCDS25352	O08900	TSL:5 GENCODE basic APPRIS P1
Ikzf3-203	ENSMUST00000152400.1	4607	No protein	-	Retained intron	-	-	TSL:1
Ikzf3-202	ENSMUST00000140876.1	863	No protein	-	lncRNA	-	-	TSL:1
Ikzf3-204	ENSMUST00000153902.1	670	No protein	-	lncRNA	-	-	TSL:3

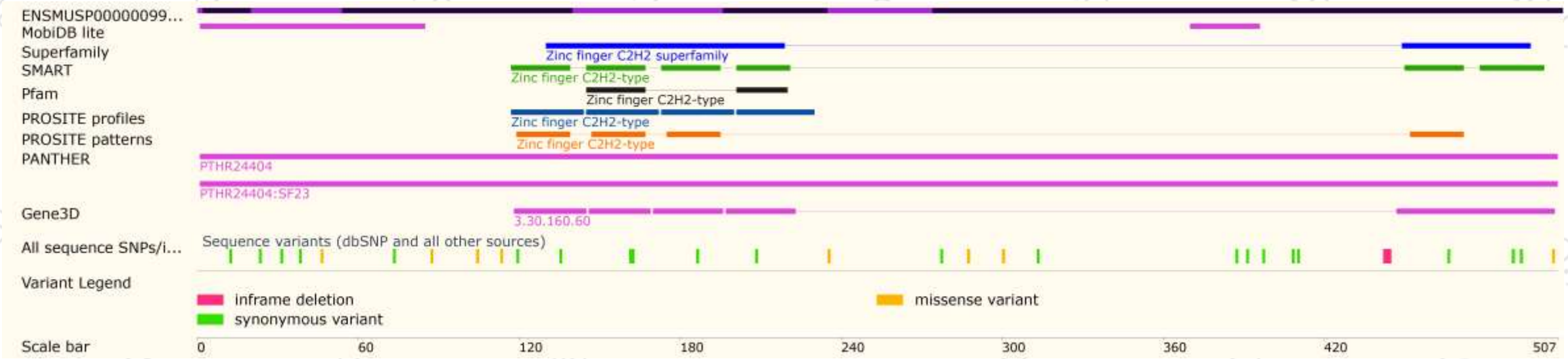
The strategy is based on the design of *Ikzf3-201* transcript,The transcription is shown below



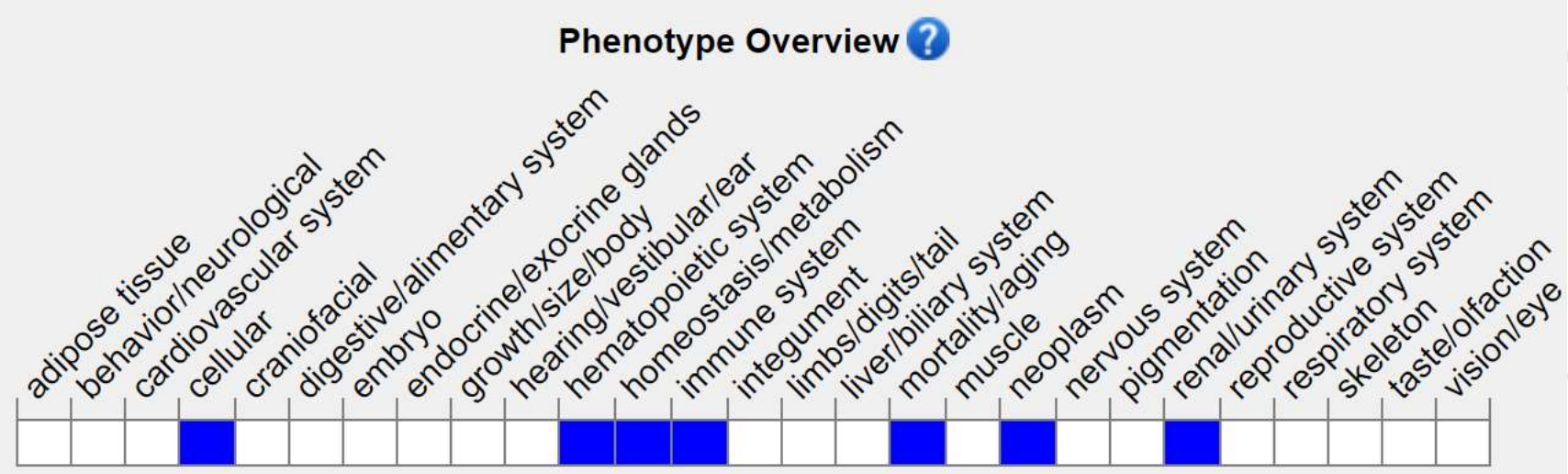
Genomic location distribution



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/).

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

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