Zcchc2 Cas9-CKO Strategy

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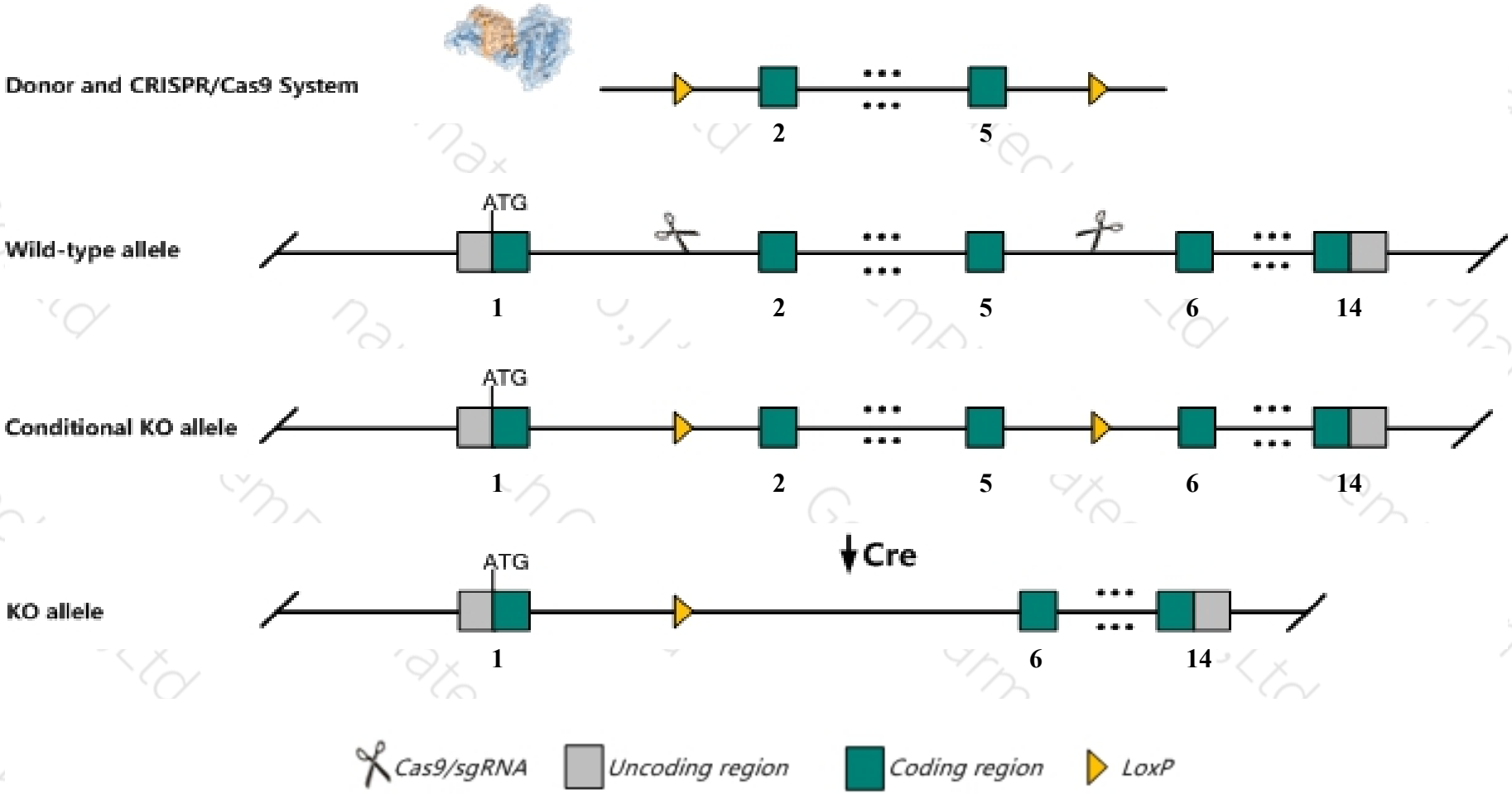
Project Overview

Project Name	***Zcchc2***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Zcchc2* gene. The schematic diagram is as follows:



Technical routes

➢ The *Zcchc2* gene has 5 transcripts. According to the structure of *Zcchc2* gene, exon2-exon5 of *Zcchc2-201*(ENSMUST00000118196.7) transcript is recommended as the knockout region.The region contains 374bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Zcchc2* gene. The brief process is as follows:sgRNA was transcribed in vitro, donor vector was constructed.Cas9, sgRNA and Donor 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.

➢ The flox mice was knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

Notice

➢ The *Zcchc2* gene is located on the Chr1. 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.

➢Transcript 204 CDS 5' incomplete the influences is unknown.

➢Transcript 205 CDS 5' and 3' incomplete the influences is unknown.

➢ This strategy is designed based on genetic information in existing databases.Due to the complexity of biological processes,all risk of loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information （NCBI）

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Zcchc2 zinc finger, CCHC domain containing 2 [Mus musculus (house mouse)]

Gene ID: 227449, updated on 13-Mar-2020

Summary

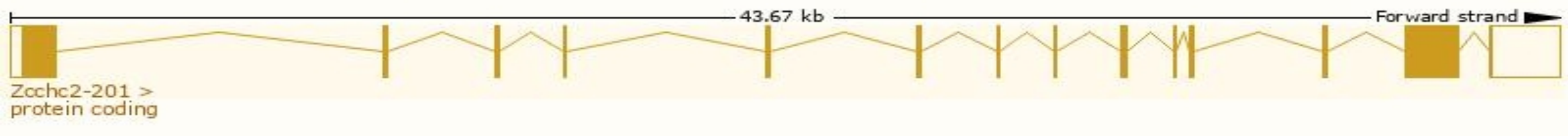
Official Symbol	Zcchc2 provided by MGI
Official Full Name	zinc finger, CCHC domain containing 2 provided byMGI
Primary source	MGI:MGI:2444114
See related	Ensembl:ENSMUSG00000038866
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	9930114B20Rik, AW212015
Expression	Ubiquitous expression in testis adult (RPKM 19.4), thymus adult (RPKM 8.8) and 28 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

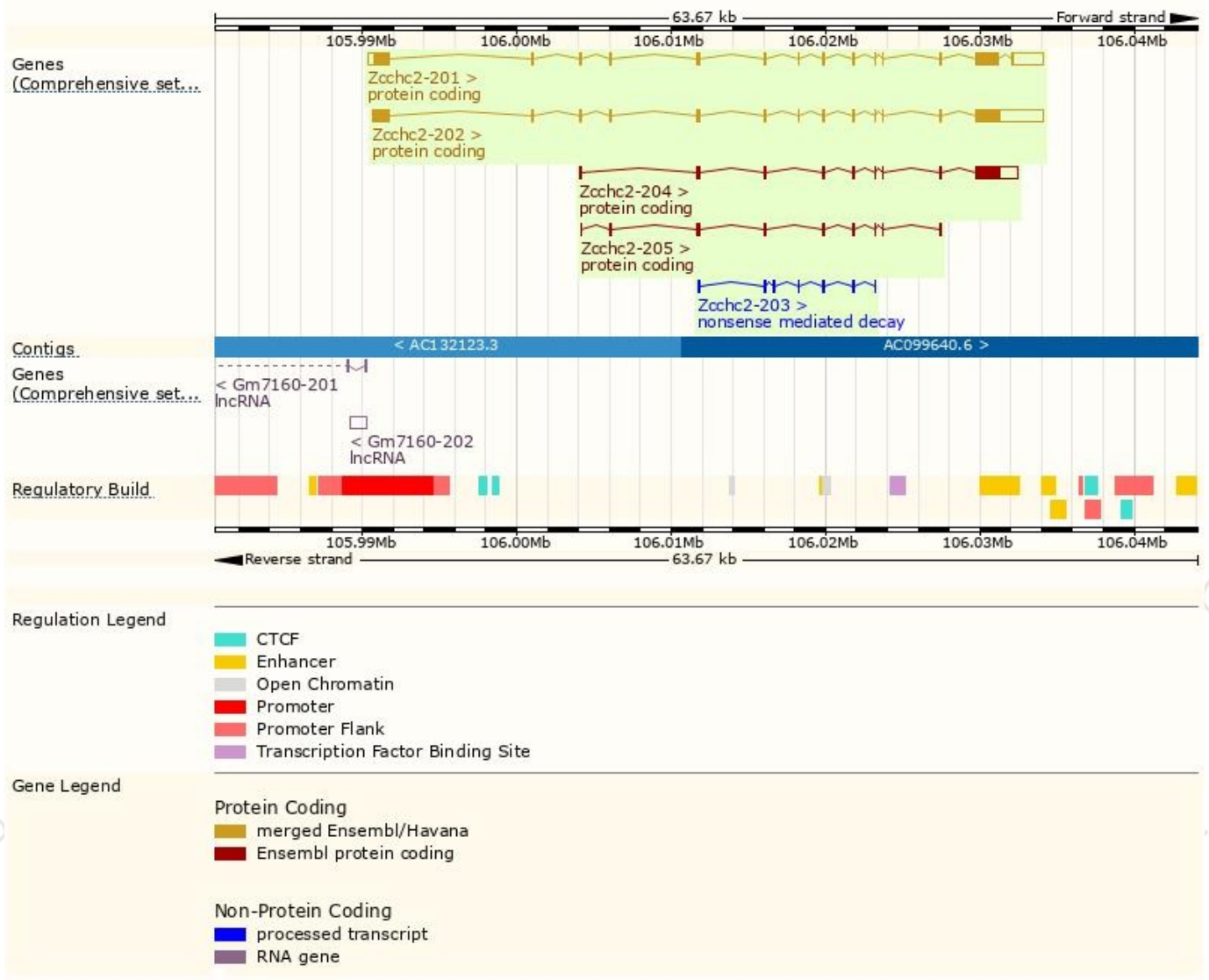
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Zcchc2-202	ENSMUST00000119166.7	6368	1155aa	Protein coding	CCDS48336	Q69ZB8	TSL:1 GENCODE basic APPRIS ALT2
Zcchc2-201	ENSMUST00000118196.7	5796	1166aa	Protein coding	CCDS48335	Q69ZB8	TSL:5 GENCODE basic APPRIS P4
Zcchc2-204	ENSMUST00000186983.6	3455	758aa	Protein coding	-	A0A087WSQ9	CDS 5' incomplete TSL:1
Zcchc2-205	ENSMUST00000188954.6	770	257aa	Protein coding	-	A0A087WPY9	CDS 5' and 3' incomplete TSL:3
Zcchc2-203	ENSMUST00000131830.2	601	79aa	Nonsense mediated decay	-	A0A087WRA5	CDS 5' incomplete TSL:3

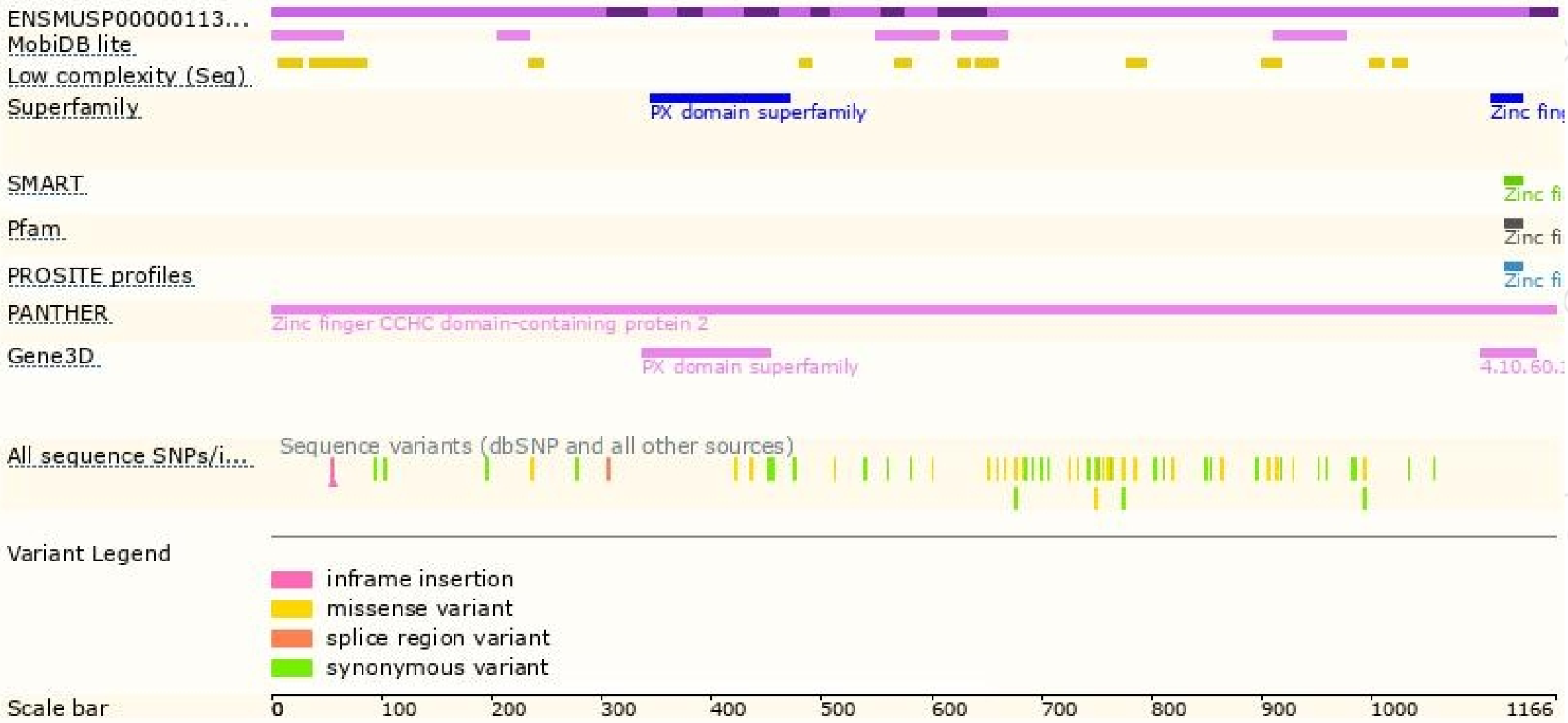
The strategy is based on the design of *Zcchc2-201* transcript,the transcription is shown below:



Genomic location distribution



Protein domain



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

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