Casc3 Cas9-CKO Strategy

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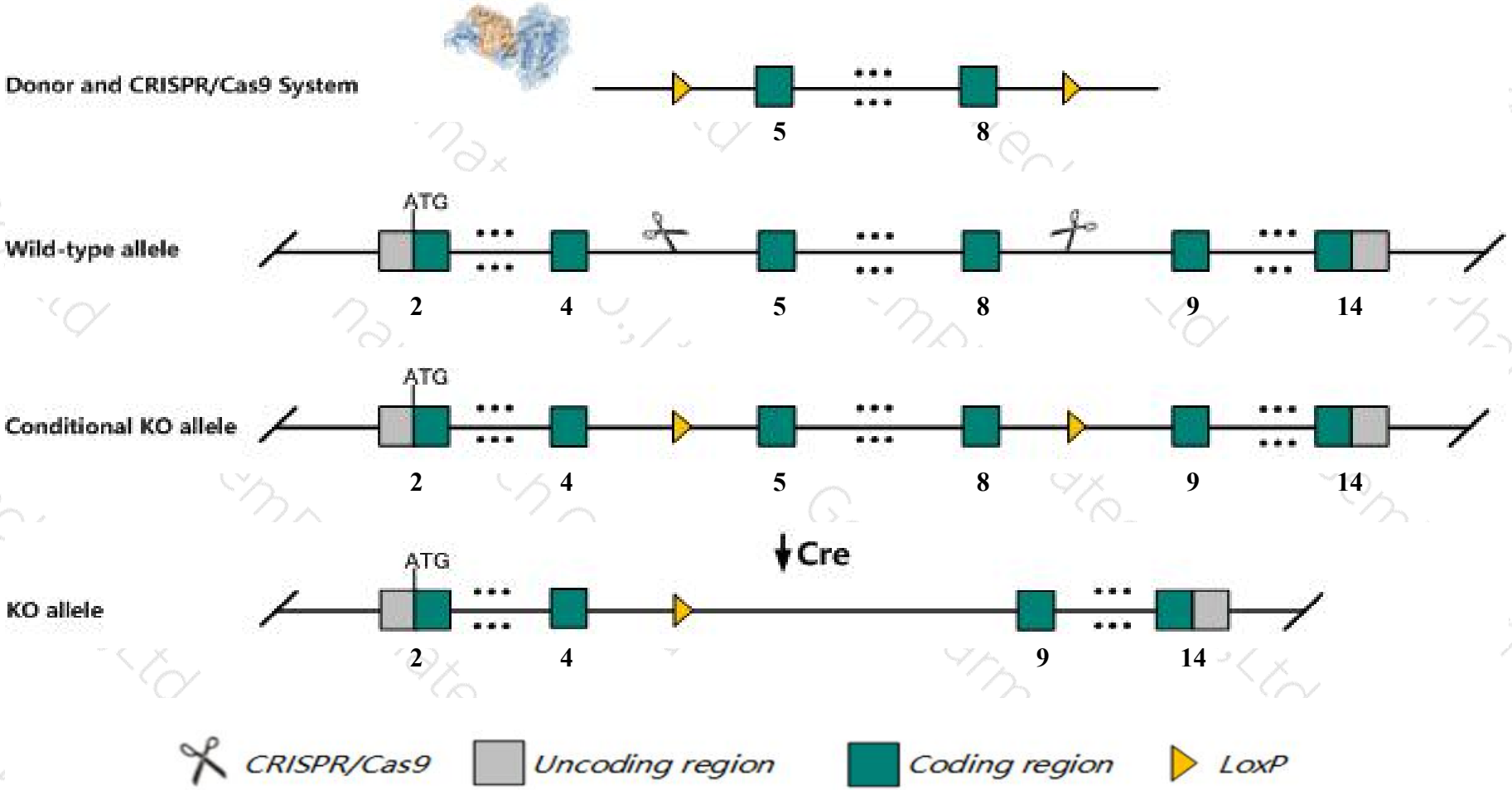
Project Overview

Project Name	***Casc3***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Casc3* gene. The schematic diagram is as follows:



Technical routes

- The *Casc3* gene has 4 transcripts. According to the structure of *Casc3* gene, exon5-exon8 of *Casc3-201* (ENSMUST00000017384.13) transcript is recommended as the knockout region.The region contains 1162bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Casc3* gene. The brief process is as follows:CRISPR/Cas9 system 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 will be 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

- According to the existing MGI data,homozygosity for a null or hypomorphic allele causes embryonic and postnatal lethality, respectively. compound heterozygous embryos are smaller and exhibit proportionately reduced brain size with fewer neurons and progenitors, but no apoptosis, largely due to developmental delay.
- The *Casc3* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information （NCBI）

集萃药康 GemPharmatech

Casc3 cancer susceptibility candidate 3 [Mus musculus (house mouse)]

Gene ID: 192160, updated on 13-Mar-2020

Summary

Official Symbol	Casc3 provided by MGI
Official Full Name	cancer susceptibility candidate 3 provided by MGI
Primary source	MGI:MGI:2179723
See related	Ensembl:ENSMUSG00000078676
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	Btz, Mln51
Expression	Ubiquitous expression in CNS E14 (RPKM 23.9), thymus adult (RPKM 23.8) and 28 other tissues See more
Orthologs	human all

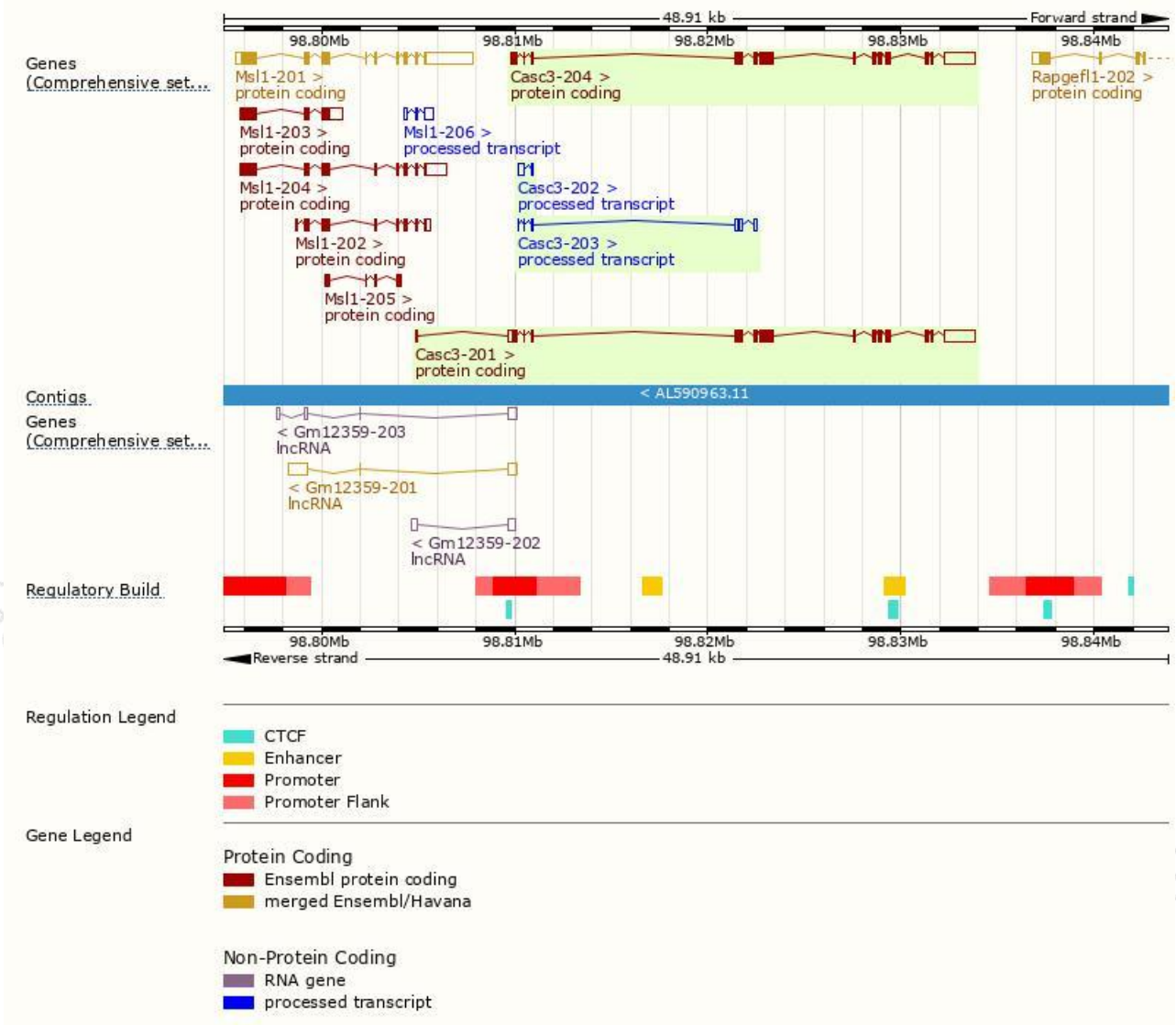
Transcript information（Ensembl）

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

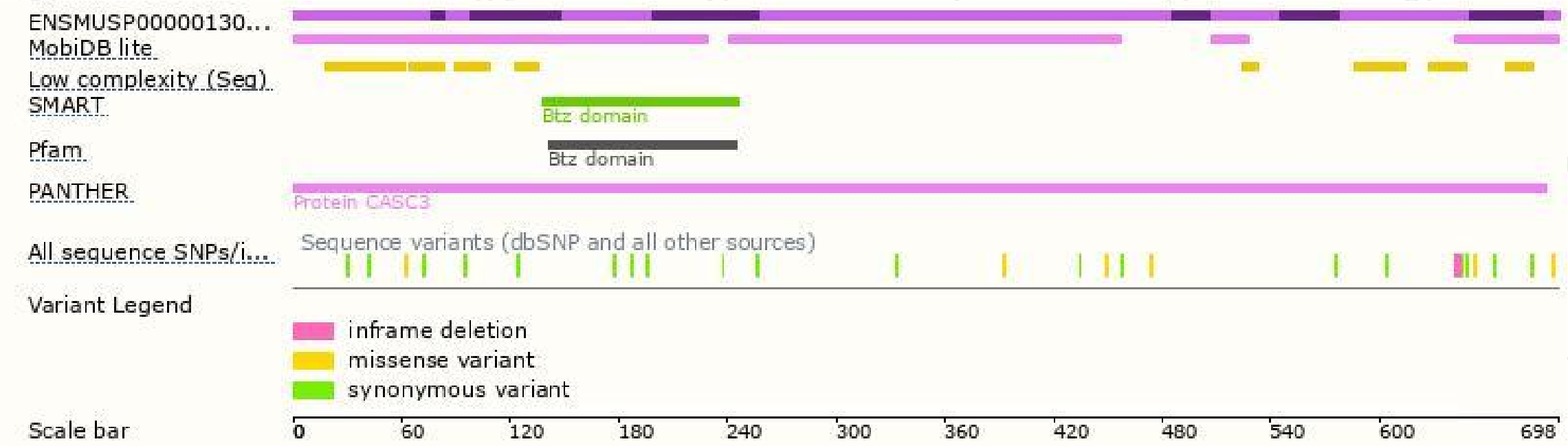
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Casc3-201	ENSMUST00000017384.13	3963	698aa	Protein coding	CCDS36302	Q8K3W3	TSL:2 GENCODE basic APPRIS P1
Casc3-204	ENSMUST00000169695.1	3741	698aa	Protein coding	CCDS36302	Q8K3W3	TSL:1 GENCODE basic APPRIS P1
Casc3-203	ENSMUST00000147065.1	605	No protein	Processed transcript	-	-	TSL:5
Casc3-202	ENSMUST00000144220.1	368	No protein	Processed transcript	-	-	TSL:3

The strategy is based on the design of *Casc3-201* transcript,the transcription is shown below:

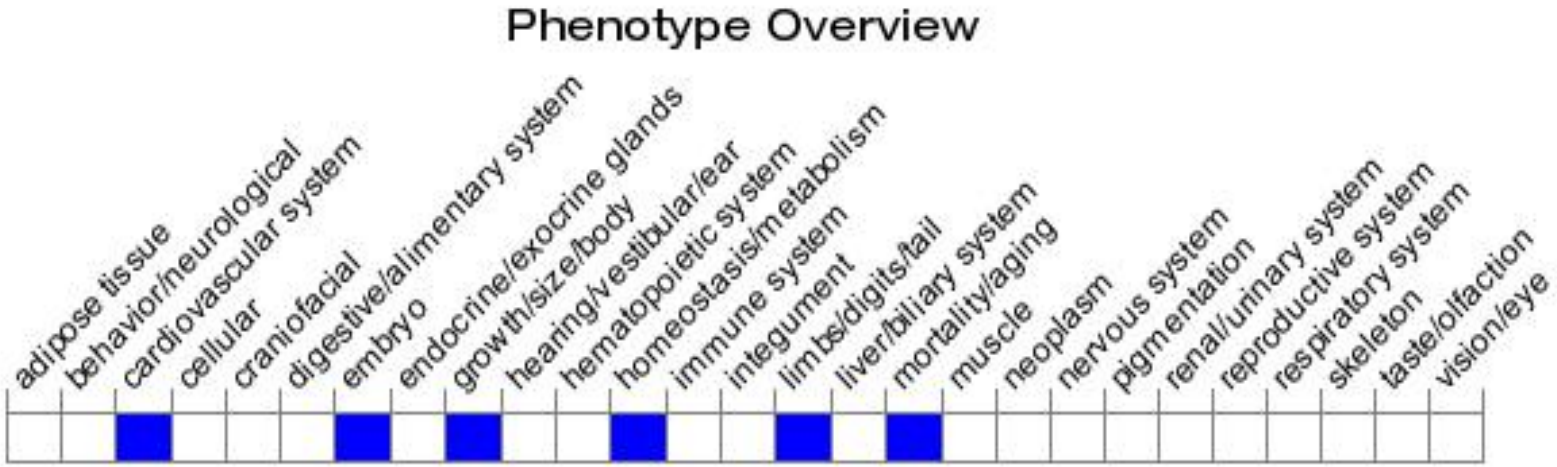
Genomic location distribution



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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