Camkmt Cas9-CKO Strategy

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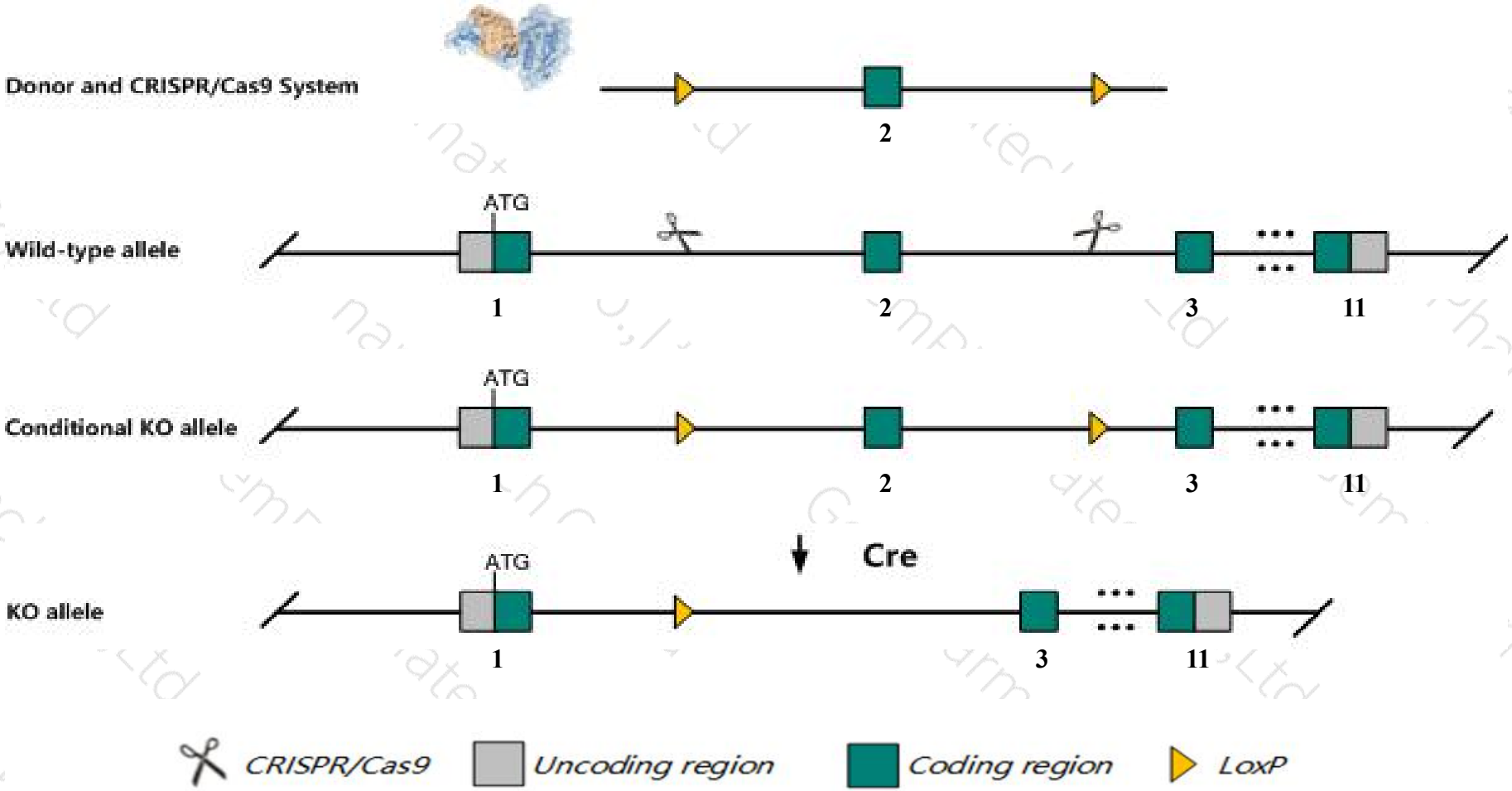
Project Overview

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

Conditional Knockout strategy

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



Technical routes

- The *Camkmt* gene has 3 transcripts. According to the structure of *Camkmt* gene, exon2 of *Camkmt-201* (ENSMUST00000095188.6) transcript is recommended as the knockout region.The region contains 173bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Camkmt* 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,mice homozygous for a knock-out allele exhibit reduced body weight, reduced muscle strength and altered somatosensory development and brain function.
- Some amino acids will remain at the N-terminus and some functions may be retained.
- The *Camkmt* gene is located on the Chr17. 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）

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Camkmt calmodulin-lysine N-methyltransferase [Mus musculus (house mouse)]

Gene ID: 73582, updated on 13-Mar-2020

Summary

Official Symbol	Camkmt provided by MGI
Official Full Name	calmodulin-lysine N-methyltransferase provided by MGI
Primary source	MGI:MGI:1920832
See related	Ensembl:ENSMUSG00000071037
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	1700106N22Rik, AI480743, AV099781, CLNMT, CaM KMT
Expression	Ubiquitous expression in cerebellum adult (RPKM 1.2), testis adult (RPKM 0.8) and 28 other tissues See more
Orthologs	human all

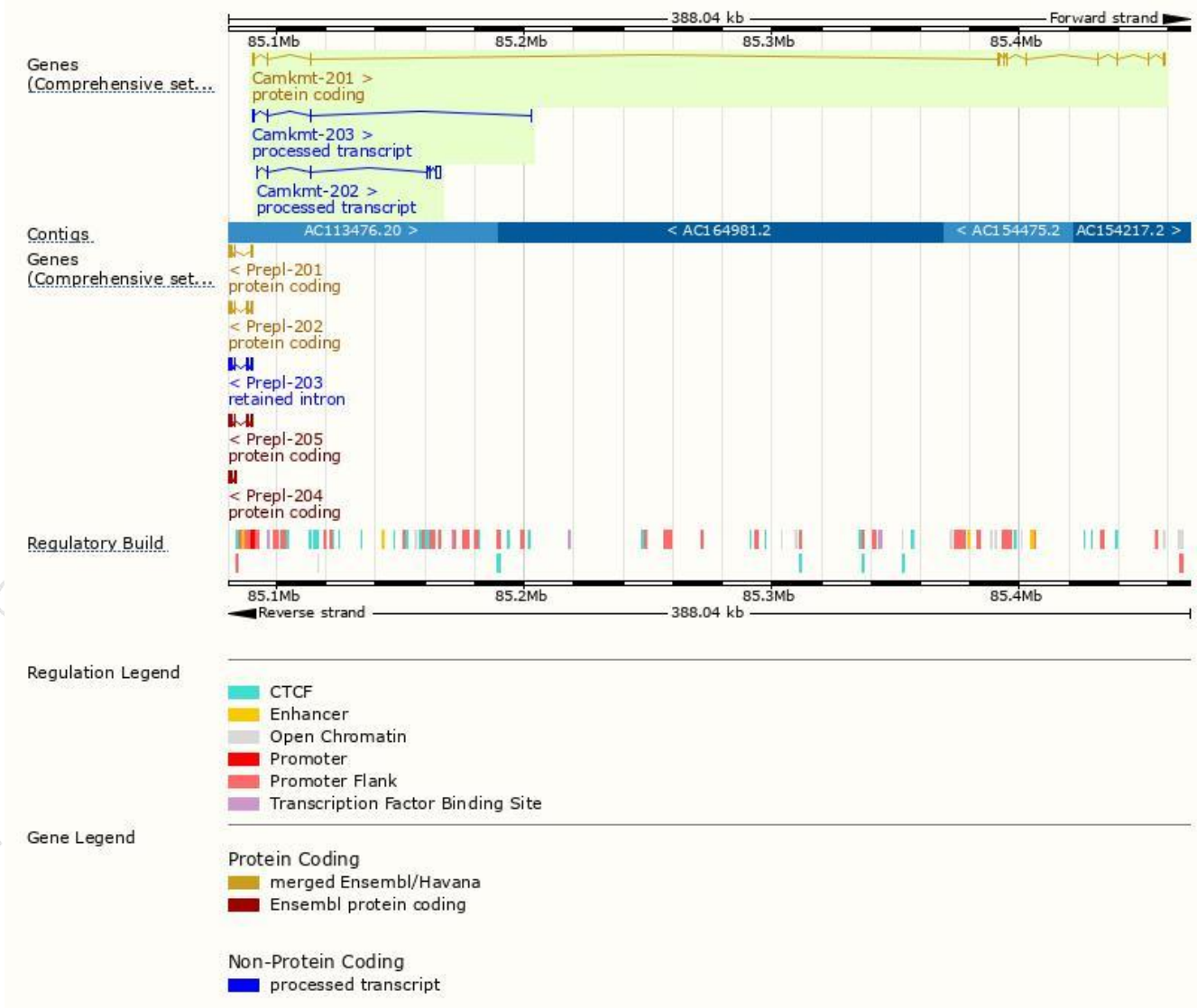
Transcript information（Ensembl）

The gene has 3 transcripts,all transcripts are shown below:

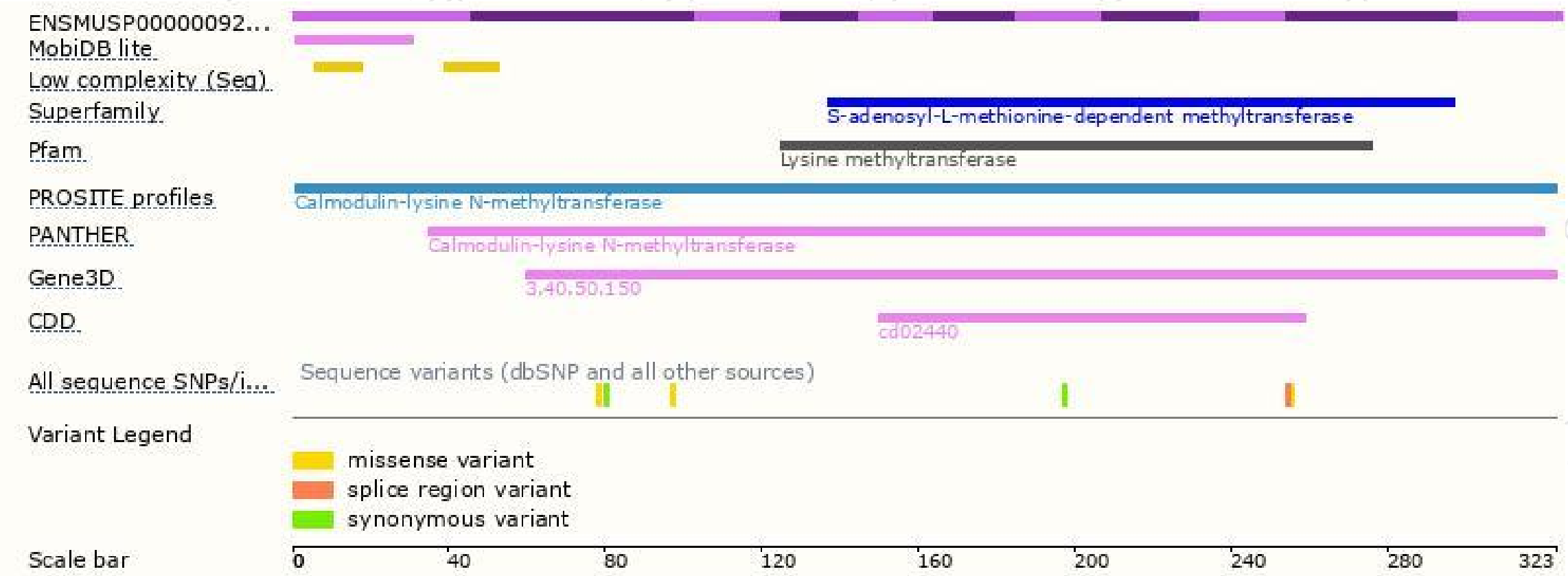
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Camkmt-201	ENSMUST00000095186.6	1595	323aa	Protein coding	CCDS37712	B9EHP1 Q3U2J5	TSL:1 GENCODE basic APPRIS is a system to annotate alternatively spliced transcripts based on a range of computational methods to identify the most functionally important transcript(s) of a gene. APPRIS P1
Camkmt-202	ENSMUST00000234501.1	2512	No protein	Processed transcript	-	-	
Camkmt-203	ENSMUST00000234822.1	741	No protein	Processed transcript	-	-	

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

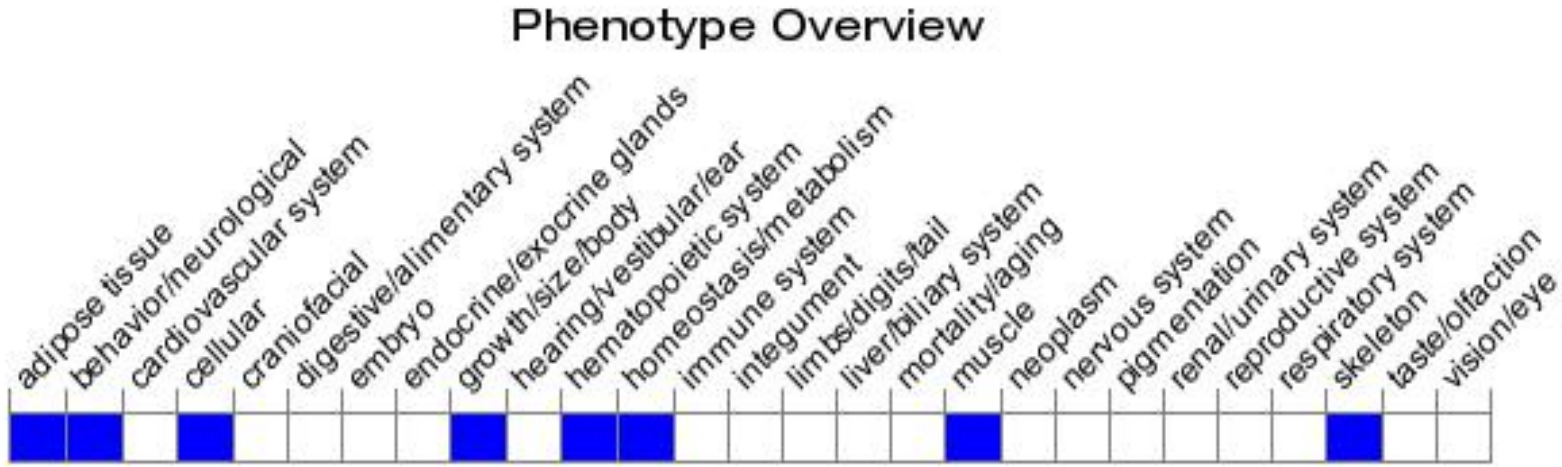
Genomic location distribution



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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