Camsap3 Cas9-KO Strategy

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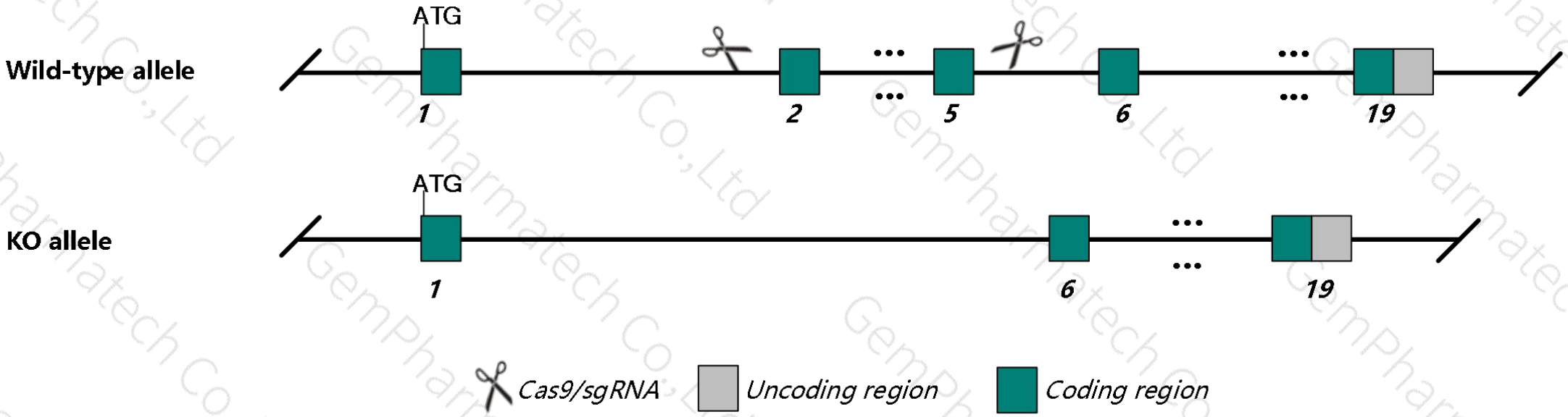
Project Overview

Project Name	***Camsap3***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Camsap3* gene. The schematic diagram is as follows:



Technical routes

➢ The *Camsap3* gene has 12 transcripts. According to the structure of *Camsap3* gene, exon2-exon5 of *Camsap3-205* (ENSMUST00000207432.1) transcript is recommended as the knockout region.The region contains 506 bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Camsap3* gene. The brief process is as follows: gRNA was transcribed in vitro.Cas9 and gRNA 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,Mice homozygous for a null allele display variable penetrance of vascular, liver, nervous system, rib and eye abnormalities. Mice homozygous for an allele with loss of microtubule binding show partial lethality, decreased body size and abnormal alignment of microtubles in polarized epithelial cells.

- The *Camsap3* gene is located on the Chr8. 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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Camsap3 calmodulin regulated spectrin-associated protein family, member 3 [*Mus musculus* (house mouse)]

Gene ID: 69697, updated on 14-Aug-2019

Summary

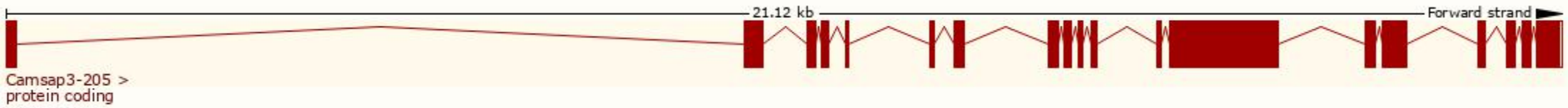
Official Symbol	Camsap3 provided by MGI
Official Full Name	calmodulin regulated spectrin-associated protein family, member 3 provided by MGI
Primary source	MGI:MGI:1916947
See related	Ensembl:ENSMUSG00000044433
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Nezha; Kiaa1543; 2310057J16Rik
Expression	Broad expression in colon adult (RPKM 25.0), small intestine adult (RPKM 23.5) and 23 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

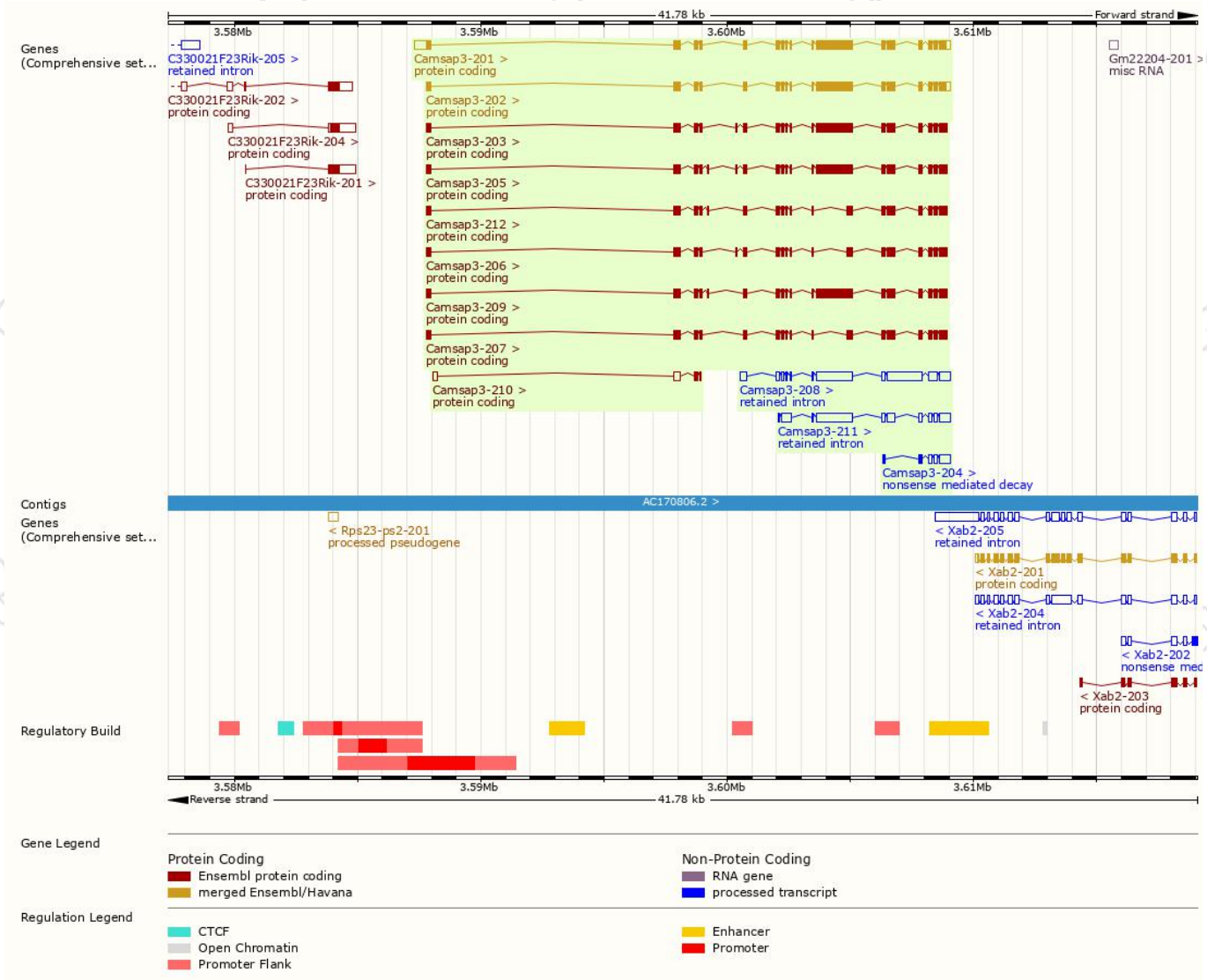
The gene has 12 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Camsap3-201	ENSMUST00000057028.14	4450	1252aa	Protein coding	CCDS22064	Q80VC9	TSL:1 GENCODE basic APPRIS P3
Camsap3-202	ENSMUST00000171962.2	3925	1253aa	Protein coding	CCDS52469	Q80VC9	TSL:1 GENCODE basic APPRIS ALT2
Camsap3-205	ENSMUST00000207432.1	3865	1279aa	Protein coding	CCDS85488	Q80VC9	TSL:1 GENCODE basic APPRIS ALT2
Camsap3-203	ENSMUST00000207077.1	3832	1268aa	Protein coding	CCDS85490	Q80VC9	TSL:1 GENCODE basic APPRIS ALT2
Camsap3-209	ENSMUST00000207970.1	3817	1263aa	Protein coding	CCDS85489	Q80VC9	TSL:1 GENCODE basic APPRIS ALT2
Camsap3-206	ENSMUST00000207533.1	2584	852aa	Protein coding	-	Q80VC9	TSL:1 GENCODE basic
Camsap3-212	ENSMUST00000208240.1	2572	848aa	Protein coding	-	Q80VC9	TSL:1 GENCODE basic
Camsap3-207	ENSMUST00000207712.1	2539	837aa	Protein coding	-	Q80VC9	TSL:1 GENCODE basic
Camsap3-210	ENSMUST00000208036.1	591	53aa	Protein coding	-	A0A140LJI9	CDS 3' incomplete TSL:3
Camsap3-204	ENSMUST00000207152.1	846	47aa	Nonsense mediated decay	-	A0A140LJ93	CDS 5' incomplete TSL:1
Camsap3-208	ENSMUST00000207930.1	4466	No protein	Retained intron	-	-	TSL:1
Camsap3-211	ENSMUST00000208064.1	3241	No protein	Retained intron	-	-	TSL:5

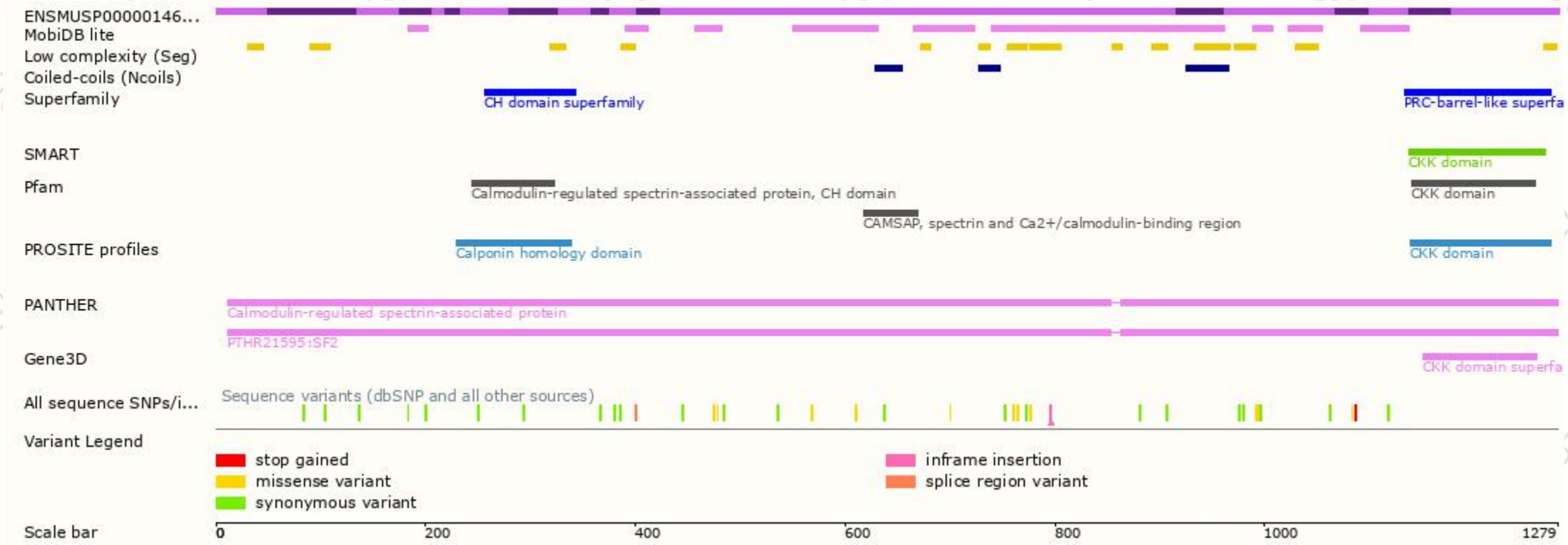
The strategy is based on the design of *Camsap3-205* transcript,The transcription is shown below



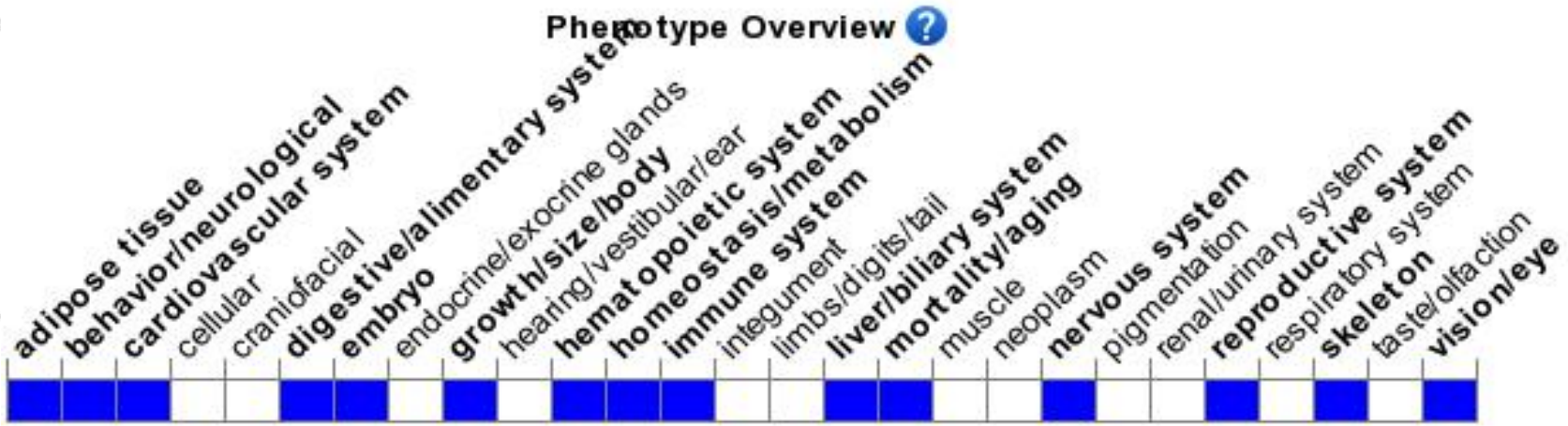
Genomic location distribution



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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