

***Septin12* Cas9-CKO Strategy**

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Project Overview

Project Name

Septin12

Project type

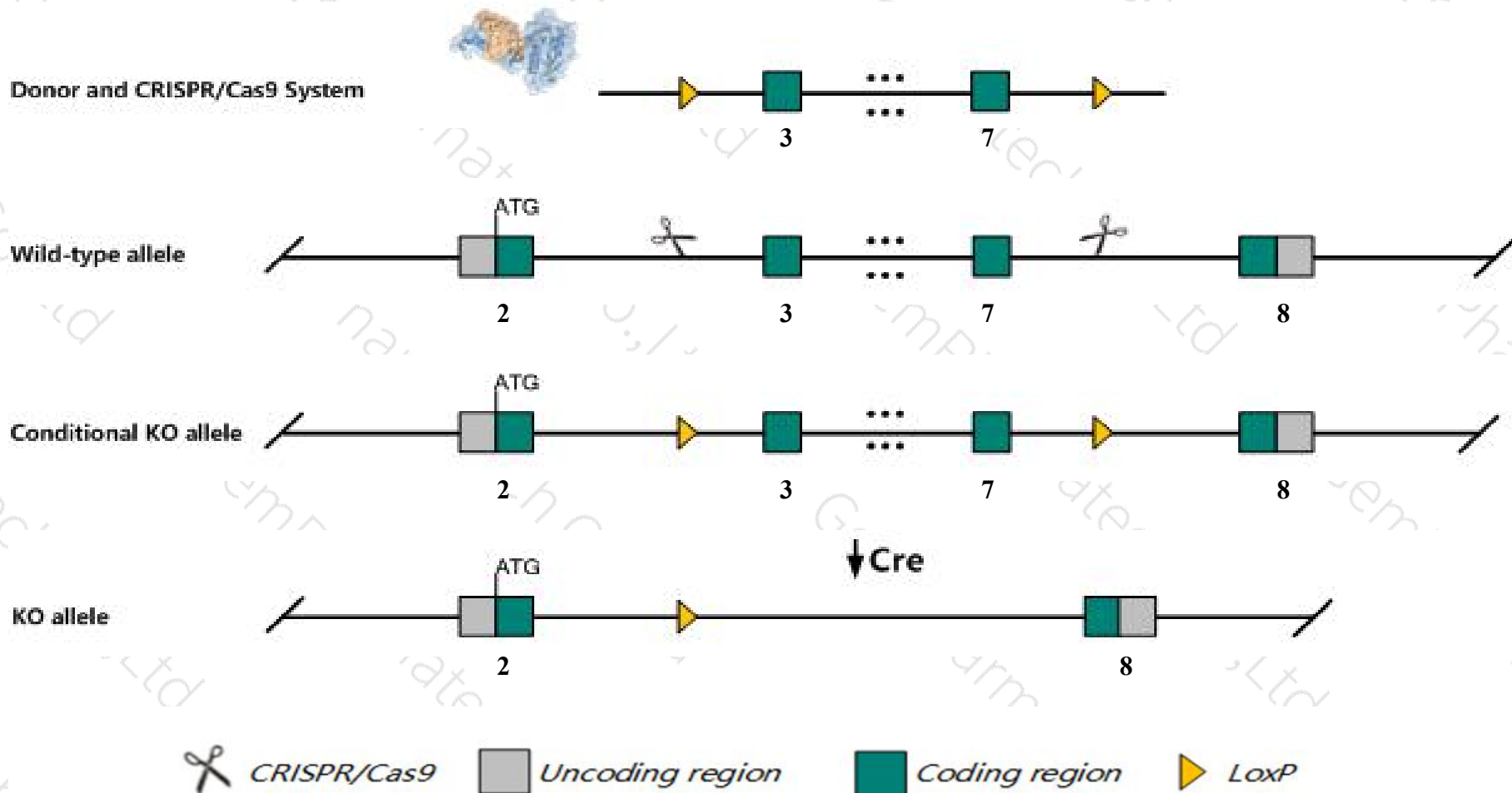
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Septin12* gene. The schematic diagram is as follows:



- The *Septin12* gene has 4 transcripts. According to the structure of *Septin12* gene, exon3-exon7 of *Septin12-201*(ENSMUST00000170323.2) transcript is recommended as the knockout region. The region contains 560bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Septin12* 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.

- According to the existing MGI data, male chimeric knockout mice are sterile. Various amino-acid substitutions lead to male sub-fertility.
- The *Septin12* gene is located on the Chr16. 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)

Septin12 septin 12 [Mus musculus (house mouse)]

Gene ID: 71089, updated on 13-Mar-2020

Summary



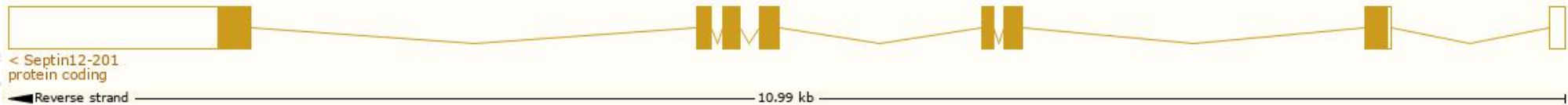
Official Symbol	Septin12 provided by MGI
Official Full Name	septin 12 provided by MGI
Primary source	MGI:MGI:1918339
See related	Ensembl:ENSMUSG00000022542
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1700028G04Rik, 4933413B09Rik, Sept12
Expression	Restricted expression toward testis adult (RPKM 124.0) See more
Orthologs	human all

Transcript information (Ensembl)

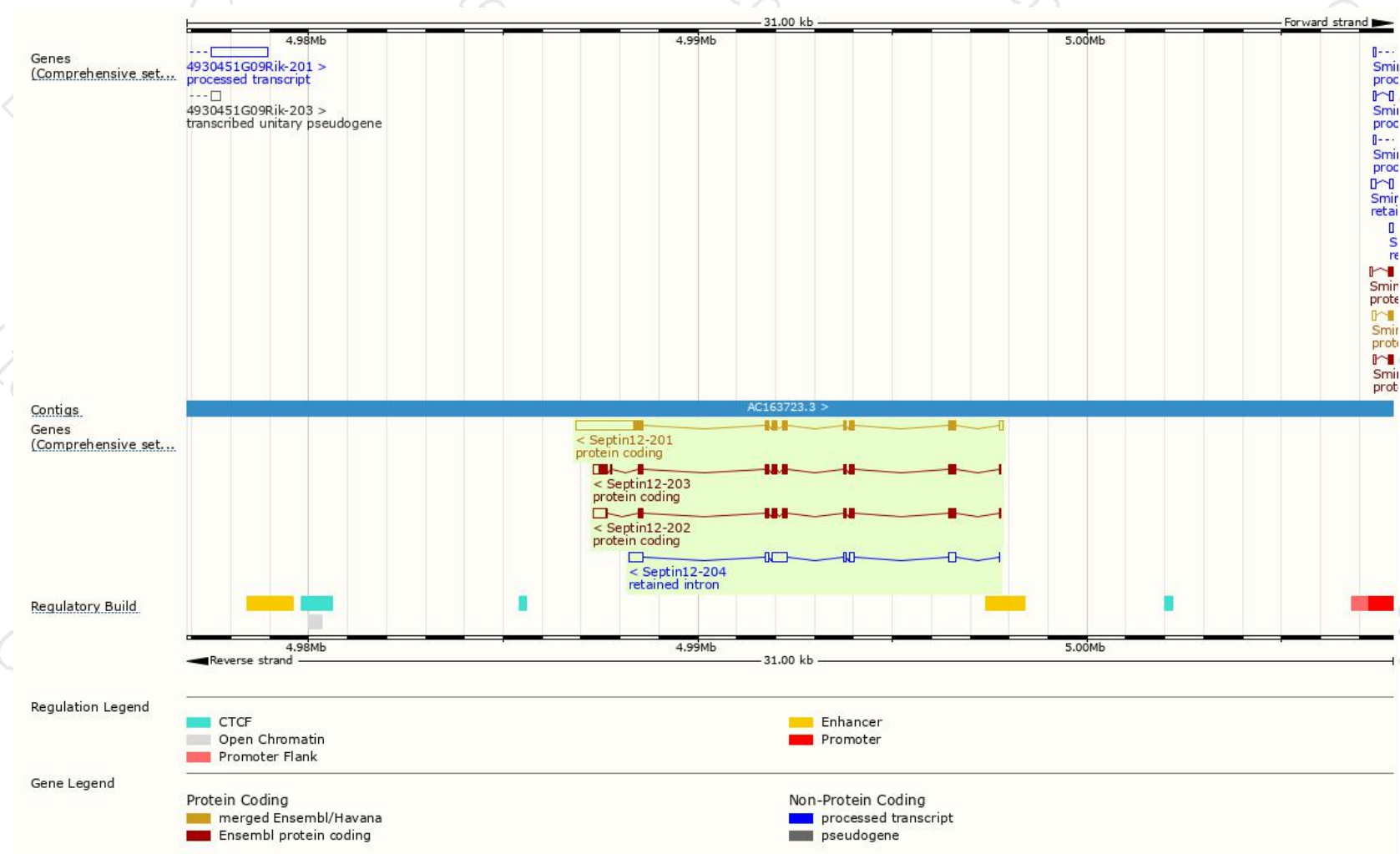
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Septin12-202	ENSMUST00000229321.1	1227	278aa	Protein coding	-	Q9D9U8	GENCODE basic
Septin12-201	ENSMUST00000170323.2	2576	317aa	Protein coding	CCDS27929	Q9D451	TSL:1 GENCODE basic
Septin12-203	ENSMUST00000230362.1	1295	357aa	Protein coding	-	A0A2R8VJU7	GENCODE basic APPRIS P1
Septin12-204	ENSMUST00000230878.1	1239	No protein	Retained intron	-	-	-

The strategy is based on the design of *Sept12-201* transcript,the transcription is shown below:



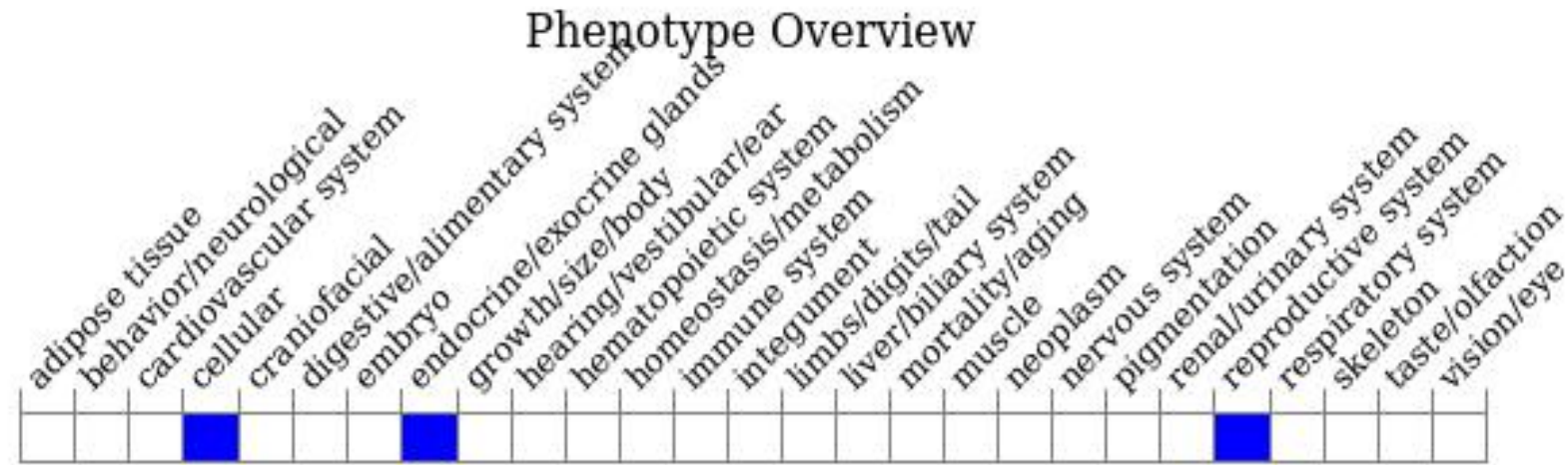
Genomic location distribution



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/>).

According to the existing MGI data, male chimeric knockout mice are sterile. Various amino-acid substitutions lead to male sub-fertility.

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

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