

Septin4 Cas9-CKO Strategy

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Project Overview

Project Name

Septin4

Project type

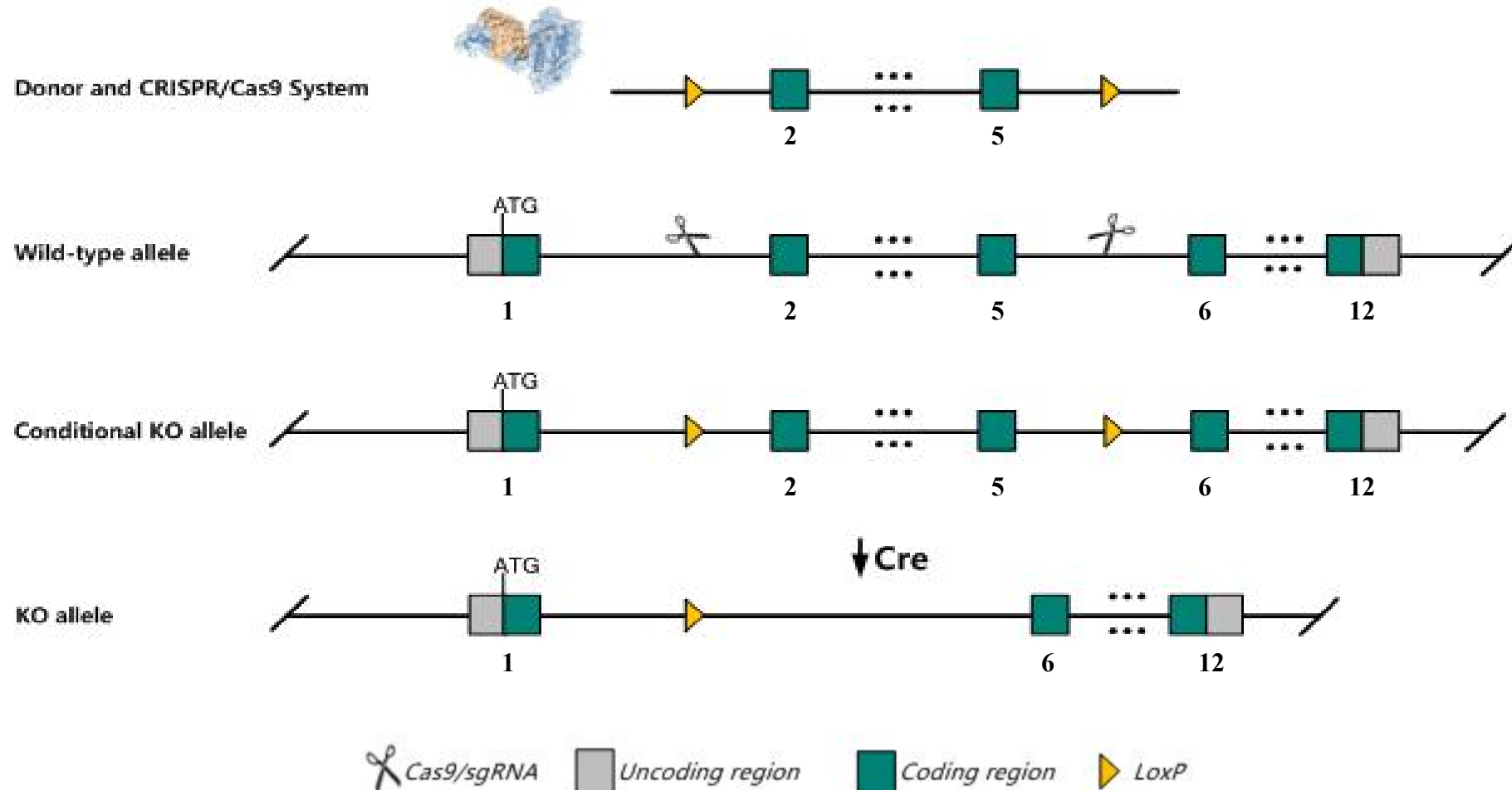
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Septin4* gene. The schematic diagram is as follows:



The *Septin4* gene has 20 transcripts. According to the structure of *Septin4* gene, exon2-exon5 of *Septin4-201*(ENSMUST00000018544.12) transcript is recommended as the knockout region. The region contains 602bp coding sequence. Knock out the region will result in disruption of protein function.

In this project we use CRISPR/Cas9 technology to modify *Septin4* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor 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.

According to the existing MGI data, homozygous null males are sterile and have immotile and structurally defective sperm that is bent and lacks the annulus.

Transcript *Septin4*-202 may not be affected.

The *Septin4* 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.

Septin4 septin 4 [Mus musculus (house mouse)]

Gene ID: 18952, updated on 23-Jan-2021

Summary**Official Symbol** Septin4 provided by [MGI](#)**Official Full Name** septin 4 provided by [MGI](#)**Primary source** [MGI:MGI:1270156](#)**See related** [Ensembl:ENSMUSG00000020486](#)**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** A, ARTS, Bh5, Pnu, Pnutl2, Sep, Sept4**Expression** Biased expression in cerebellum adult (RPKM 67.1), testis adult (RPKM 31.3) and 9 other tissues [See more](#)**Orthologs** [human](#) [all](#)

Transcript information Ensembl

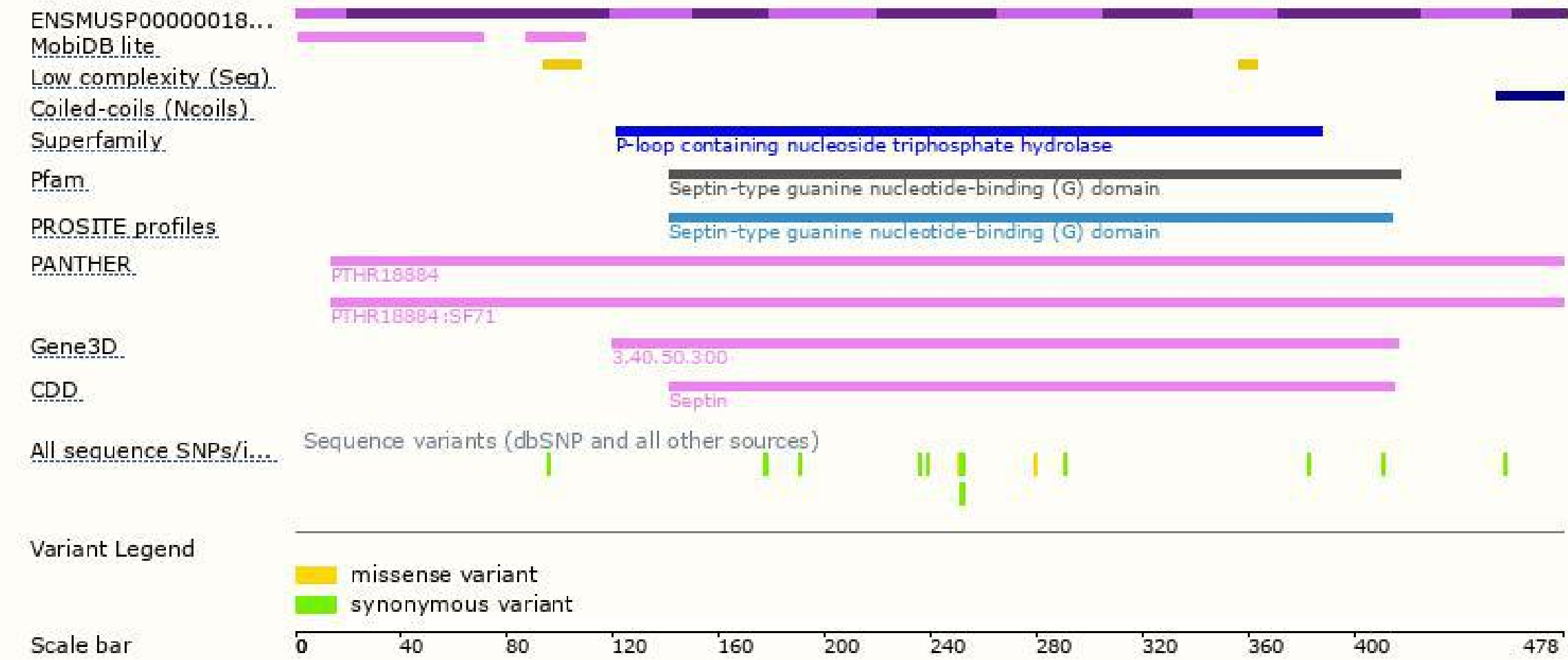
The gene has 20 transcripts, all transcripts are shown below:

The strategy is based on the design of *Septin4-201* transcript, the transcription is shown below:

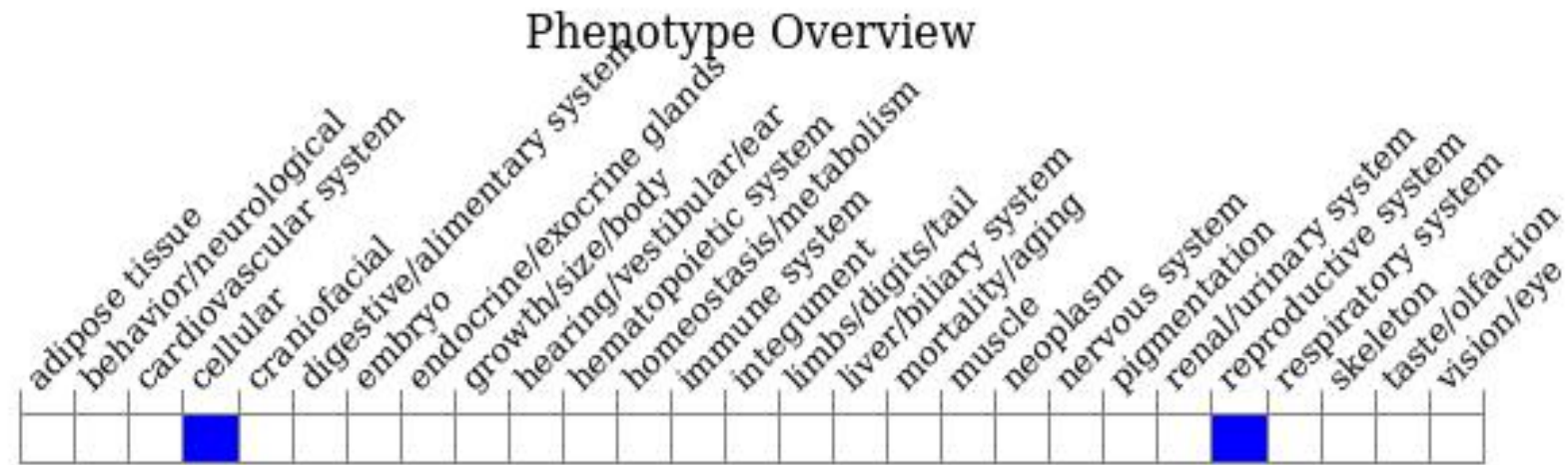


Genomic location distribution

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, homozygous null males are sterile and have immotile and structurally defective sperm that is bent and lacks the annulus.

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

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