Sept7 Cas9-CKO Strategy

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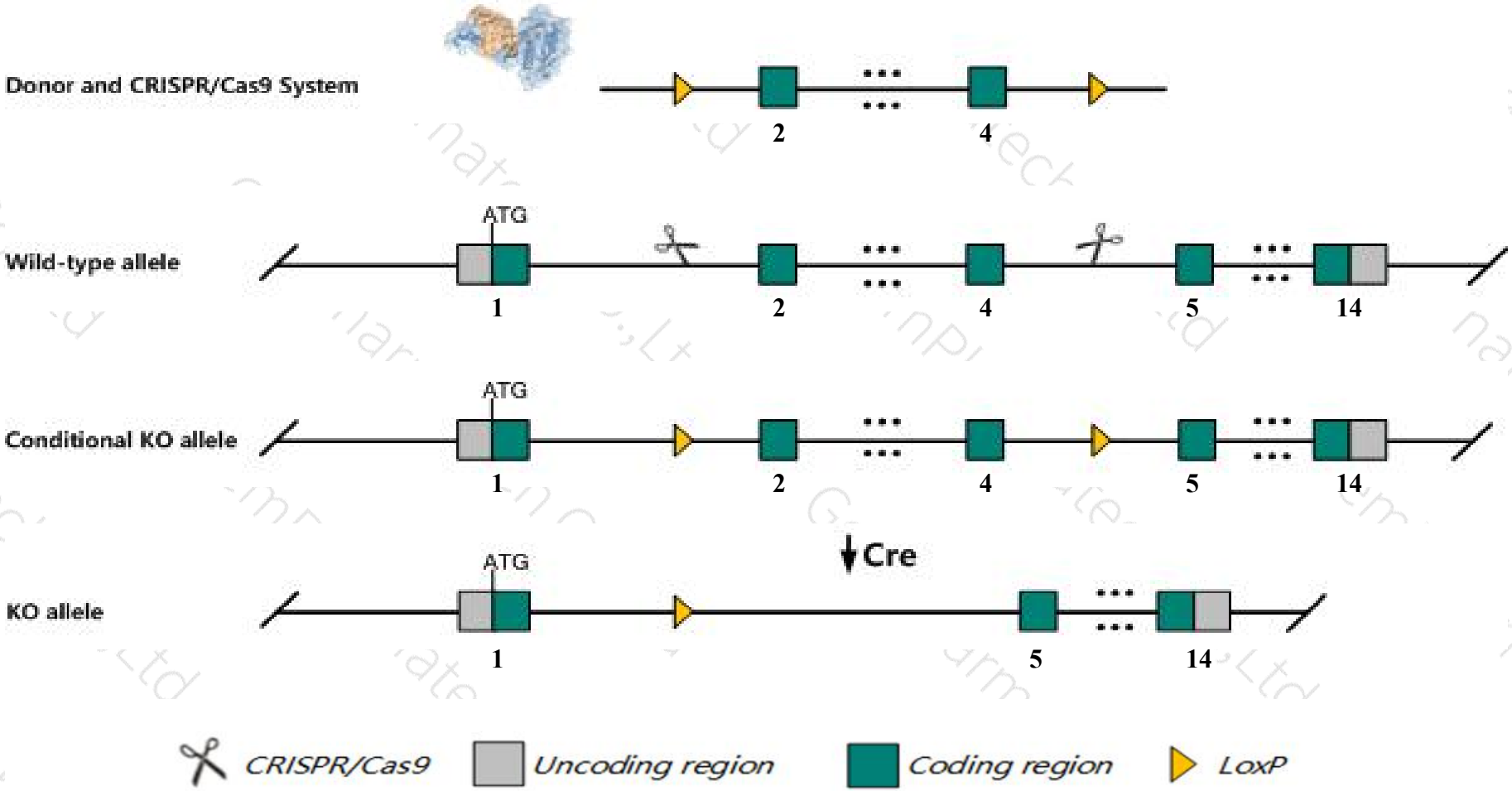
Project Overview

Project Name	***Sept7***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Sept7* gene. The schematic diagram is as follows:



Technical routes

- The *Sept7* gene has 10 transcripts. According to the structure of *Sept7* gene, exon2-exon4 of *Sept7-202* (ENSMUST00000165594.3) transcript is recommended as the knockout region.The region contains 215bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Sept7* 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 conditional allele activated in neurons exhibit reduced axon and dendrite length and complexity. Mice homozygous for a knock-out allele die prior to E10.5.

- The *Sept7* gene is located on the Chr9. 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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Sept7 septin 7 [Mus musculus (house mouse)]

Gene ID: 235072, updated on 7-Apr-2019

Summary

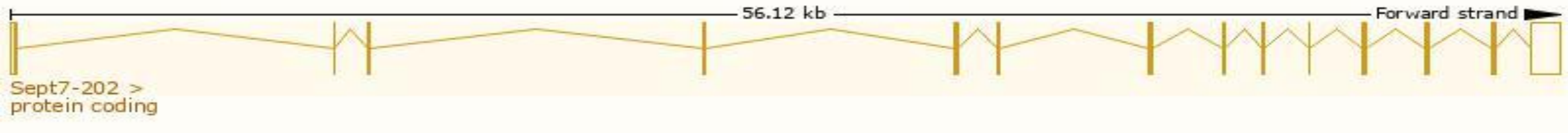
Official Symbol	Sept7 provided by MGI
Official Full Name	septin 7 provided by MGI
Primary source	MGI:MGI:1335094
See related	Ensembl:ENSMUSG00000001833
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Cdc10, E430034N22
Expression	Broad expression in cortex adult (RPKM 50.7), frontal lobe adult (RPKM 42.1) and 18 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

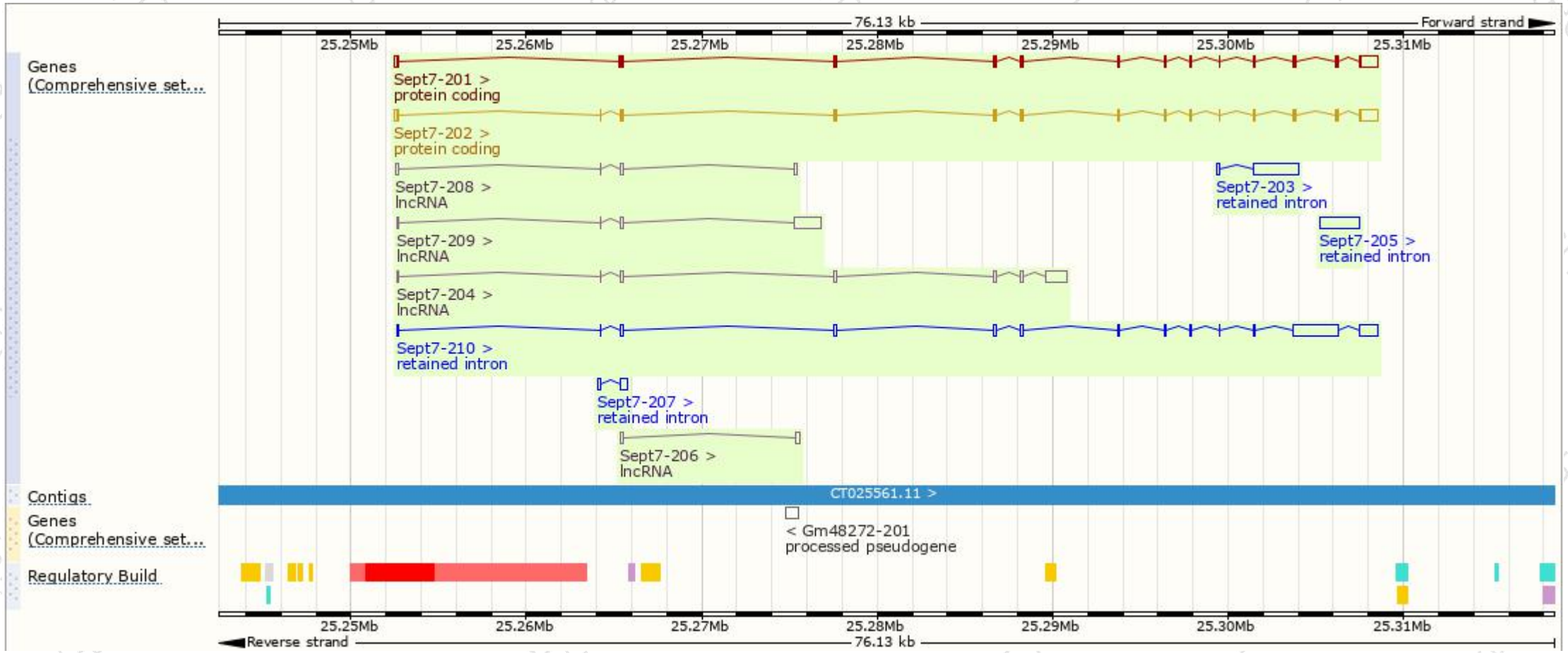
The gene has 10 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Sept7-202	ENSMUST00000165594.3	2516	437aa	Protein coding	CCDS40565	E9Q1G8	TSL:5 GENCODE basic APPRIS P2
Sept7-201	ENSMUST00000115272.8	2533	437aa	Protein coding	-	E9Q9F5	TSL:5 GENCODE basic APPRIS ALT1
Sept7-210	ENSMUST00000217598.1	4569	No protein	Retained intron	-	-	TSL:5
Sept7-203	ENSMUST00000213435.1	2864	No protein	Retained intron	-	-	TSL:1
Sept7-205	ENSMUST00000214360.1	2251	No protein	Retained intron	-	-	TSL:NA
Sept7-207	ENSMUST00000214911.1	532	No protein	Retained intron	-	-	TSL:3
Sept7-204	ENSMUST00000213980.1	1727	No protein	lncRNA	-	-	TSL:3
Sept7-209	ENSMUST00000215721.1	1685	No protein	lncRNA	-	-	TSL:3
Sept7-208	ENSMUST00000215692.1	444	No protein	lncRNA	-	-	TSL:3
Sept7-206	ENSMUST00000214520.1	340	No protein	lncRNA	-	-	TSL:5

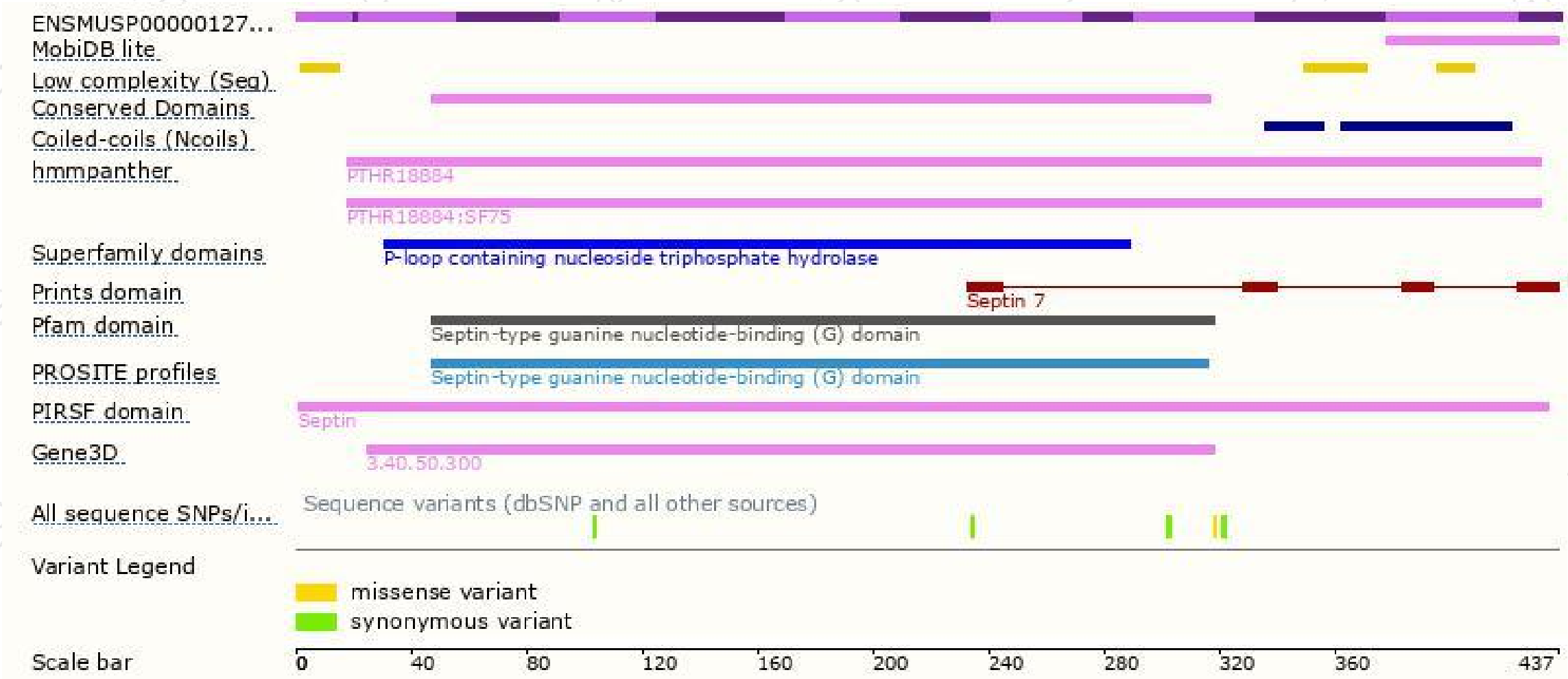
The strategy is based on the design of *Sept7-202* transcript,The transcription is shown below



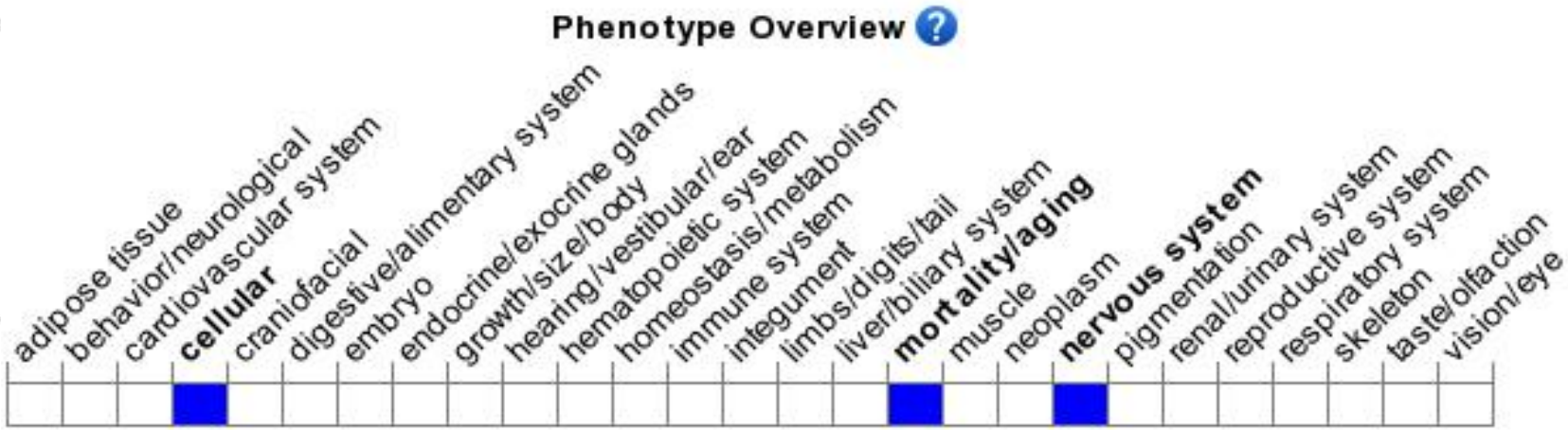
Genomic location distribution



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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