

Igsf9 Cas9-CKO Strategy

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Reviewer :

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Design Date:

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Project Overview

Project Name

Igsf9

Project type

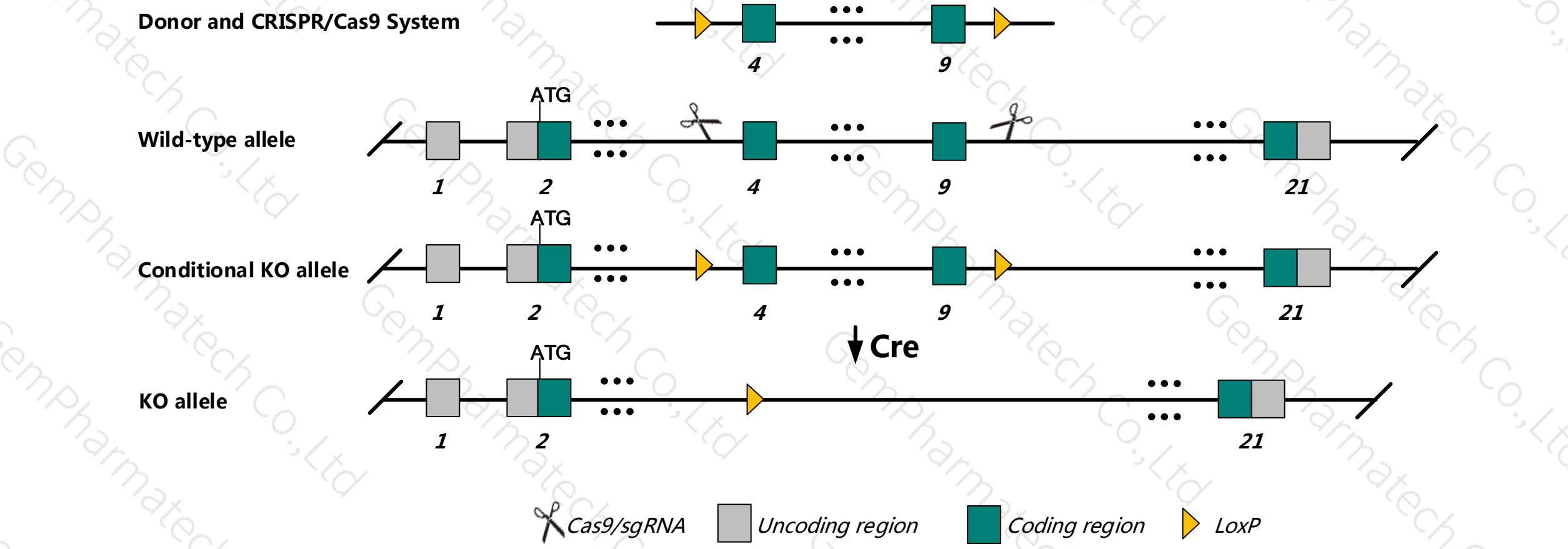
Cas9-CKO

Animal background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Igsf9* gene. The schematic diagram is as follows:



Technical routes

- The *Igsf9* gene has 14 transcripts, According to the structure of *Igsf9* gene, exon4-exon9 of *Igsf9-201* transcript is recommended as the knockout region. The region contains the 857bp coding sequence. Knock out the region, result in destruction of protein.
- This project uses CRISPR/Cas9 technology to modify *Igsf9* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed, Cas9, sgRNA and donor were microinjected into fertilized eggs of C57BL/6JGpt mice and homologous recombination was carried out to obtain F0 mice. A stable and hereditary F1 generation mouse model was obtained by mating F0 generation mice with C57BL/6JGpt mice which were confirmed positive by PCR-sequencing.
- 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 , Mice homozygous for a targeted null mutation are viable and fertile but show abnormal miniature inhibitory postsynaptic currents and increased susceptibility to pharmacologically induced seizures.
- The *Igsf9* gene is located in the Chr1. If the knockout mice are mixed with other mice, two target genes are avoided on the same chromosome as possible, otherwise the offspring of mice with double gene positive and homozygous gene knockout can not be obtained.
- This Strategy is designed based on genetic information in existing databases. Due to the complexity of gene transcription and translation processes, all risks cannot be predicted under existing information.

Gene information (NCBI)

Igsf9 immunoglobulin superfamily, member 9 [*Mus musculus* (house mouse)]

Gene ID: 93842, updated on 8-Dec-2018

Summary

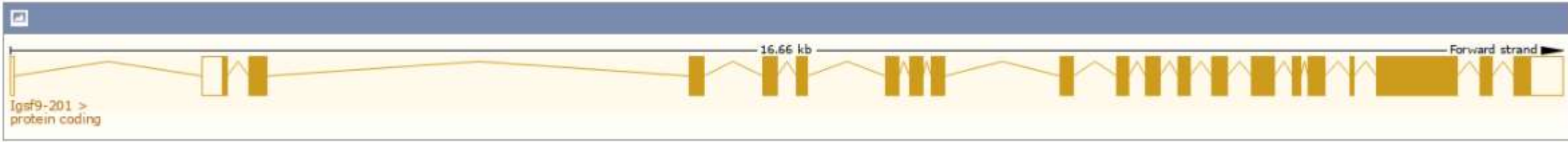
Official Symbol	Igsf9 provided by MGI
Official Full Name	immunoglobulin superfamily, member 9 provided by MGI
Primary source	MGI:MGI:2135283
See related	Ensembl:ENSMUSG000000037995
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	NRT1; Dasm1; Ncaml; 644ETD8; mKIAA1355; Kiaa1355-hp
Expression	Biased expression in duodenum adult (RPKM 132.1), small intestine adult (RPKM 112.2) and 10 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

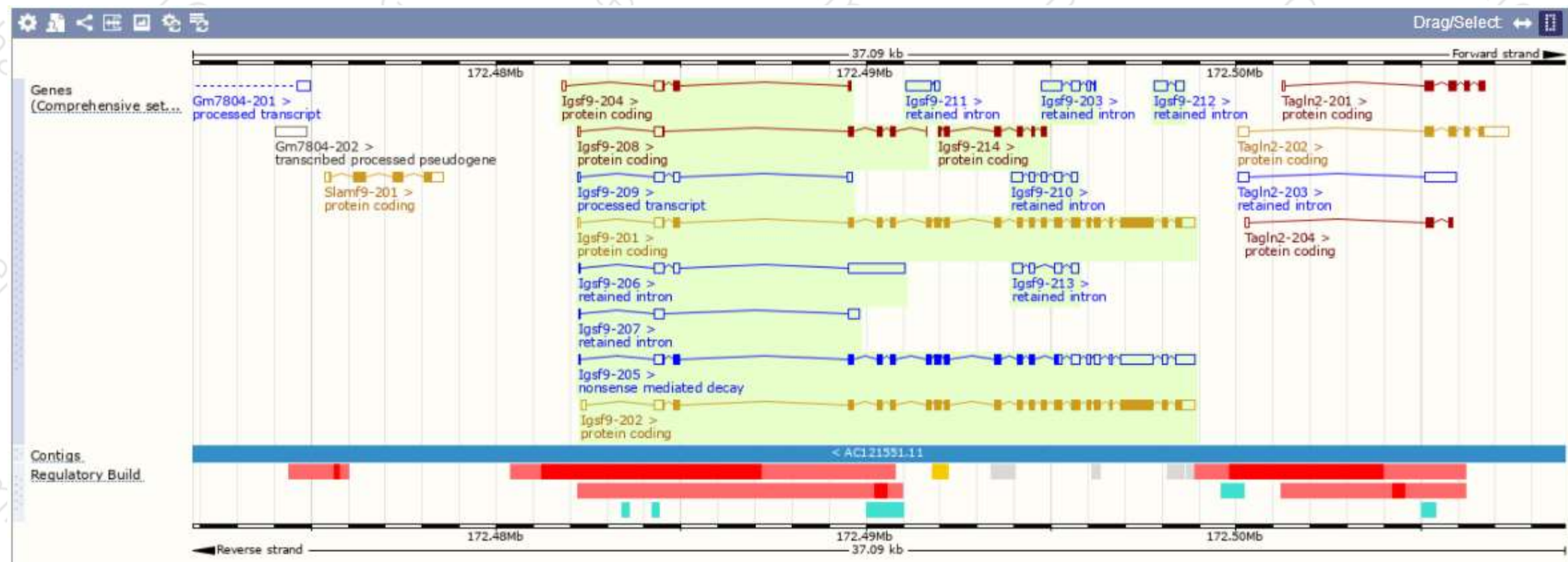
The gene has 14 transcripts, and all transcripts are shown below :

Show/hide columns (1 hidden)								Filter	
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	RefSeq	Flags	
Igsf9-202	ENSMUST00000111235.7	4205	1179aa	Protein coding	CCDS15515	Q05BQ1	NM_033608 NP_291086	TSL:1	GENCODE basic APPRIS P1
Igsf9-201	ENSMUST00000052629.12	4133	1179aa	Protein coding	CCDS15515	Q05BQ1	NM_001145800 NP_001139272	TSL:1	GENCODE basic APPRIS P1
Igsf9-208	ENSMUST00000135267.7	775	168aa	Protein coding	-	D3Z7T6	-	CDS 3' incomplete	TSL:5
Igsf9-214	ENSMUST00000193620.1	636	212aa	Protein coding	-	A0A0A6YXP1	-	CDS 5' and 3' incomplete	TSL:3
Igsf9-204	ENSMUST00000127052.7	617	109aa	Protein coding	-	D3YZD2	-	CDS 3' incomplete	TSL:3
Igsf9-205	ENSMUST00000127482.7	3964	528aa	Nonsense mediated decay	-	Q05BQ1	-	TSL:2	
Igsf9-209	ENSMUST00000140814.7	645	No protein	Processed transcript	-	-	-	TSL:3	
Igsf9-206	ENSMUST00000128638.1	2029	No protein	Retained intron	-	-	-	TSL:1	
Igsf9-203	ENSMUST00000125258.1	926	No protein	Retained intron	-	-	-	TSL:5	
Igsf9-210	ENSMUST00000140816.7	921	No protein	Retained intron	-	-	-	TSL:5	
Igsf9-213	ENSMUST00000155426.1	796	No protein	Retained intron	-	-	-	TSL:3	
Igsf9-211	ENSMUST00000141888.1	786	No protein	Retained intron	-	-	-	TSL:3	
Igsf9-207	ENSMUST00000132141.7	608	No protein	Retained intron	-	-	-	TSL:2	
Igsf9-212	ENSMUST00000150855.1	590	No protein	Retained intron	-	-	-	TSL:2	

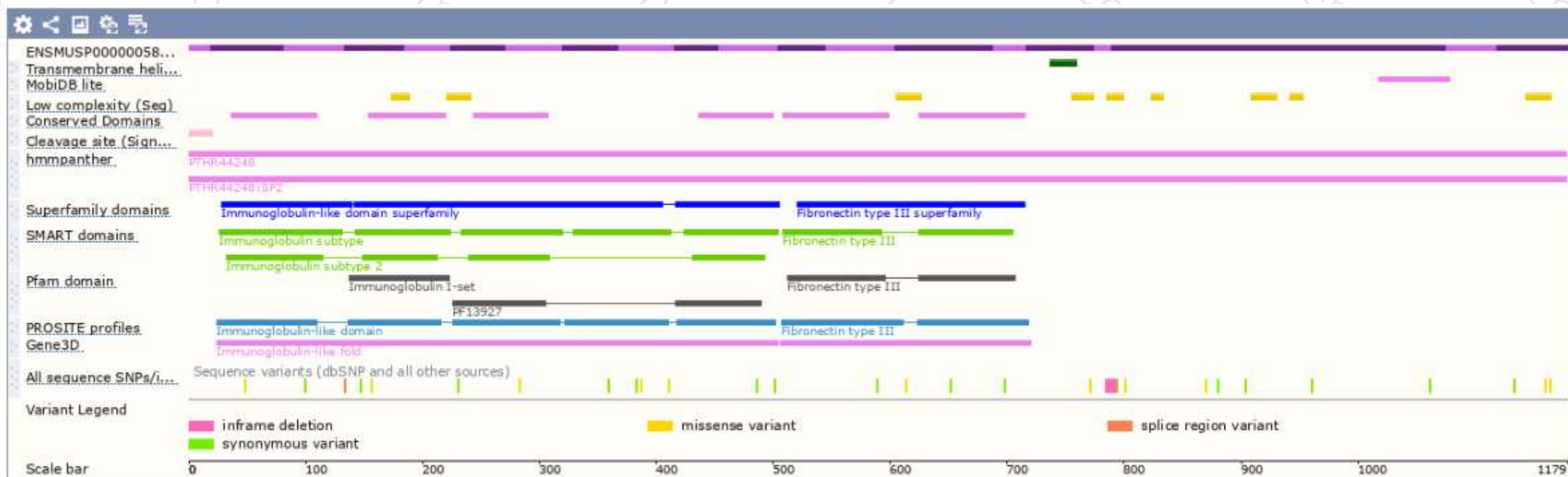
The strategy is based on the design of *Igsf9-201* transcript,The transcription is shown below :



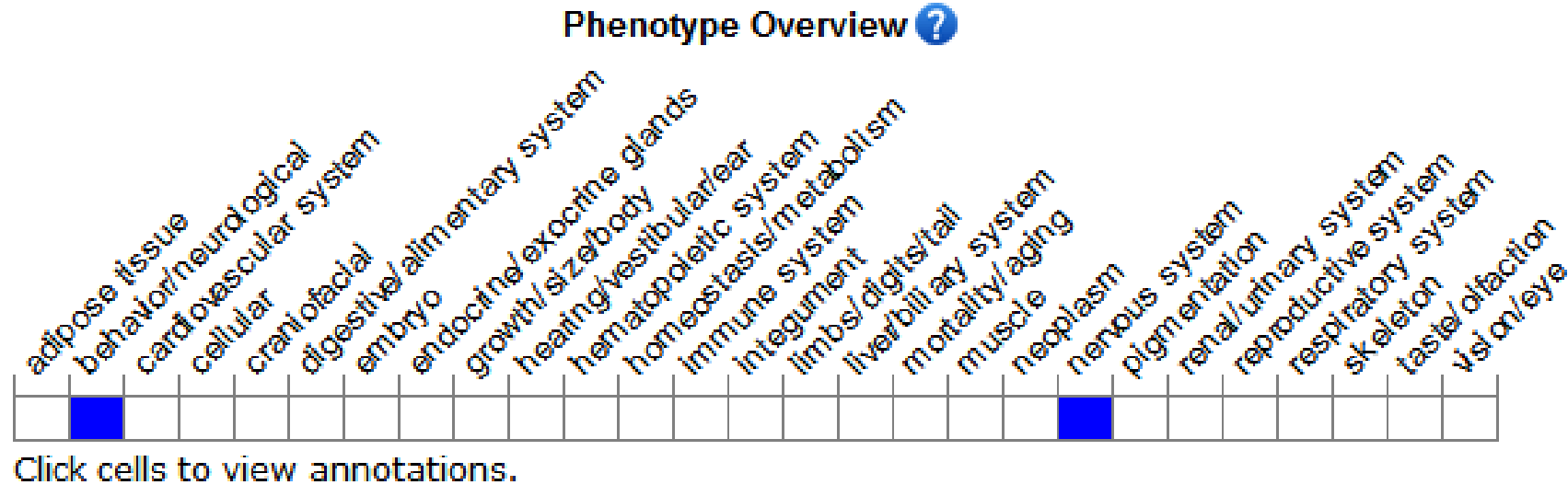
Genomic location distribution



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, Mice homozygous for a targeted null mutation are viable and fertile but show abnormal miniature inhibitory postsynaptic currents and increased susceptibility to pharmacologically induced seizures.

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