Unc5c Cas9-CKO *Strategy*

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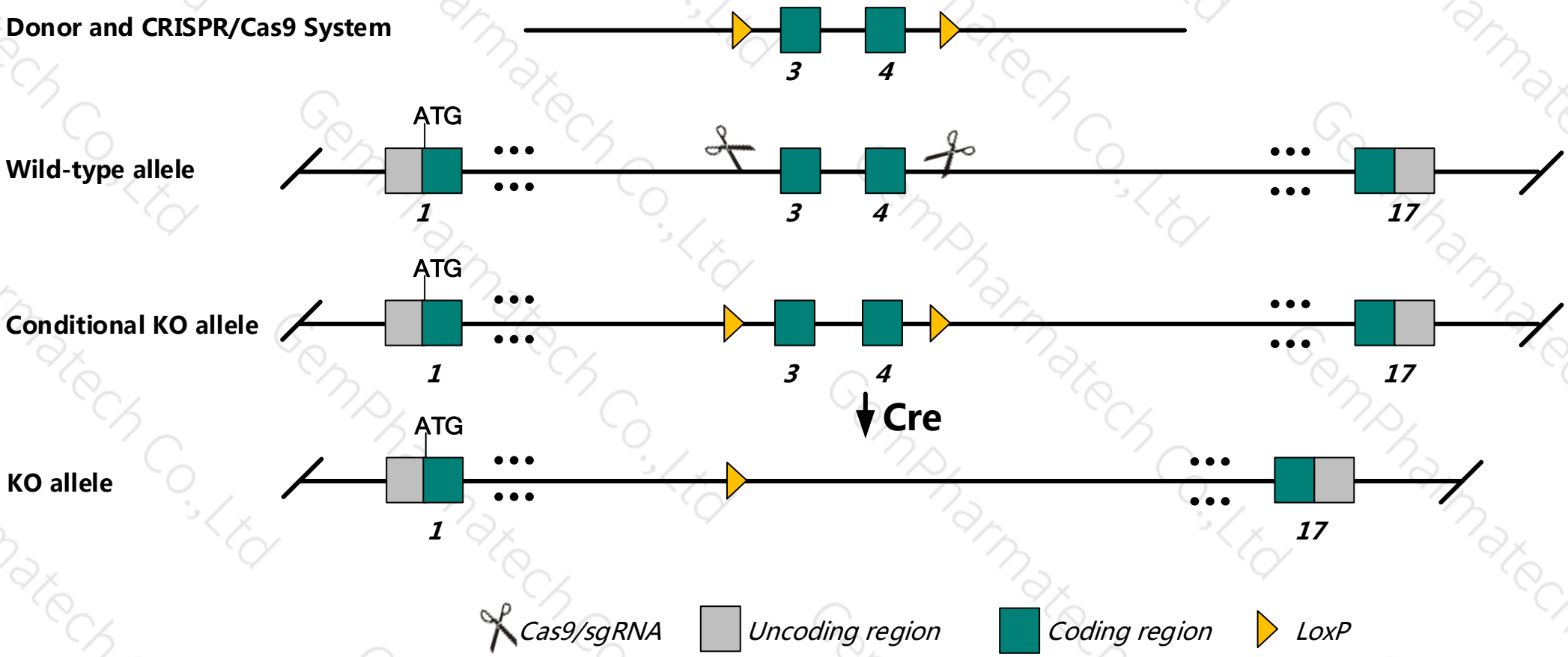
Project Overview

Project Name	***Unc5c***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Unc5c* gene. The schematic diagram is as follows:



Technical routes

- The *Unc5c* gene has 8 transcripts.According to the structure of *Unc5c* gene, exon3-exon4 of *Unc5c*-201 (ENSMUST00000075282.9) transcript is recommended as the knockout region.The region contains 248bp coding sequence.Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Unc5c* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector 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 or cell types.

Notice

- According to the existing MGI data，Mutants exhibit ataxia, and reduced size early in life. Mutants exhibit cerebellar defects including reduced size and ectopic cerebellar cells in the midbrain.
- The *Unc5c* gene is located on the Chr3. 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information （NCBI）

Unc5c unc-5 netrin receptor C [*Mus musculus* (house mouse)]

Gene ID: 22253, updated on 7-Aug-2018

Summary

Official Symbol	Unc5c provided by MGI
Official Full Name	unc-5 netrin receptor C provided by MGI
Primary source	MGI:MGI:1095412
See related	Ensembl:ENSMUSG00000059921 Vega:OTTMUSG00000025311
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	rcm; Unc5h3; B130051O18Rik
Expression	Biased expression in cerebellum adult (RPKM 4.5), limb E14.5 (RPKM 4.2) and 11 other tissues See more
Orthologs	human all

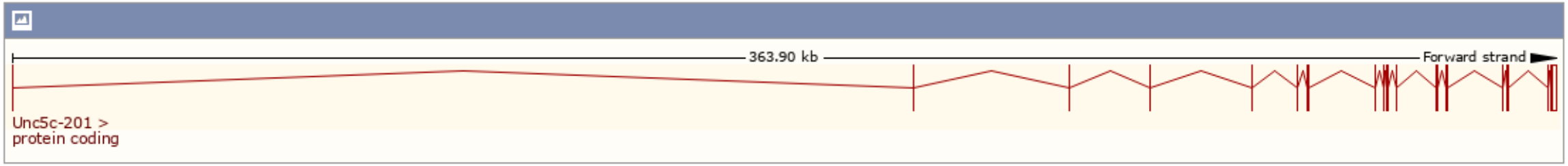
Transcript information（ Ensembl ）

The gene has 8 transcripts, and all transcripts are shown below:

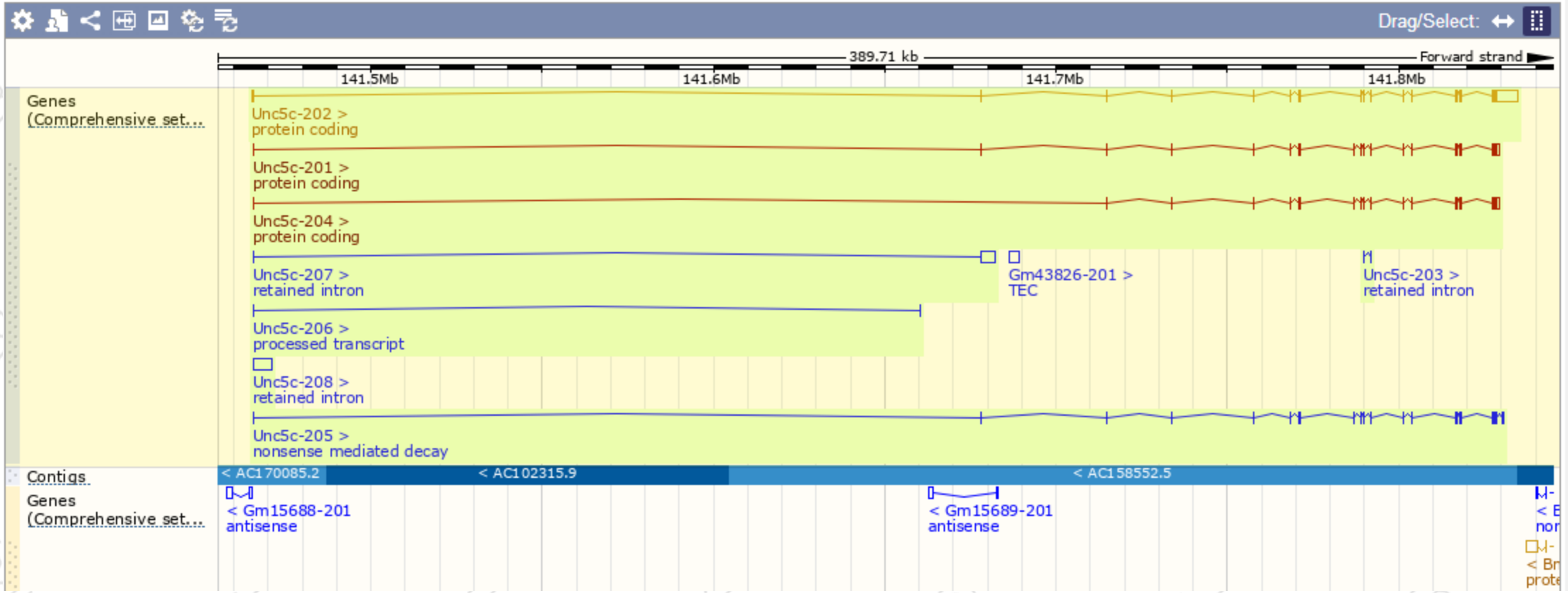
Show/hide columns (1 hidden) Filter

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	RefSeq	Flags
Unc5c-202	ENSMUST00000106236.8	9646	931aa	Protein coding	CCDS17873	O08747	NM_009472 NP_033498	TSL:1 GENCODE basic APPRIS P3
Unc5c-201	ENSMUST00000075282.9	3890	950aa	Protein coding	CCDS80034	O08747 Q3UQ08	NM_001293561 NP_001280490	TSL:1 GENCODE basic APPRIS ALT1
Unc5c-204	ENSMUST00000130636.7	3595	876aa	Protein coding	-	E9PVI4	-	TSL:1 GENCODE basic
Unc5c-205	ENSMUST00000142762.1	3498	950aa	Nonsense mediated decay	CCDS80034	O08747 Q3UQ08	-	TSL:1
Unc5c-206	ENSMUST00000151007.5	357	No protein	Processed transcript	-	-	-	TSL:3
Unc5c-208	ENSMUST00000200114.1	5330	No protein	Retained intron	-	-	-	TSL:NA
Unc5c-207	ENSMUST00000155416.4	4577	No protein	Retained intron	-	-	-	TSL:2
Unc5c-203	ENSMUST00000123631.1	417	No protein	Retained intron	-	-	-	TSL:3

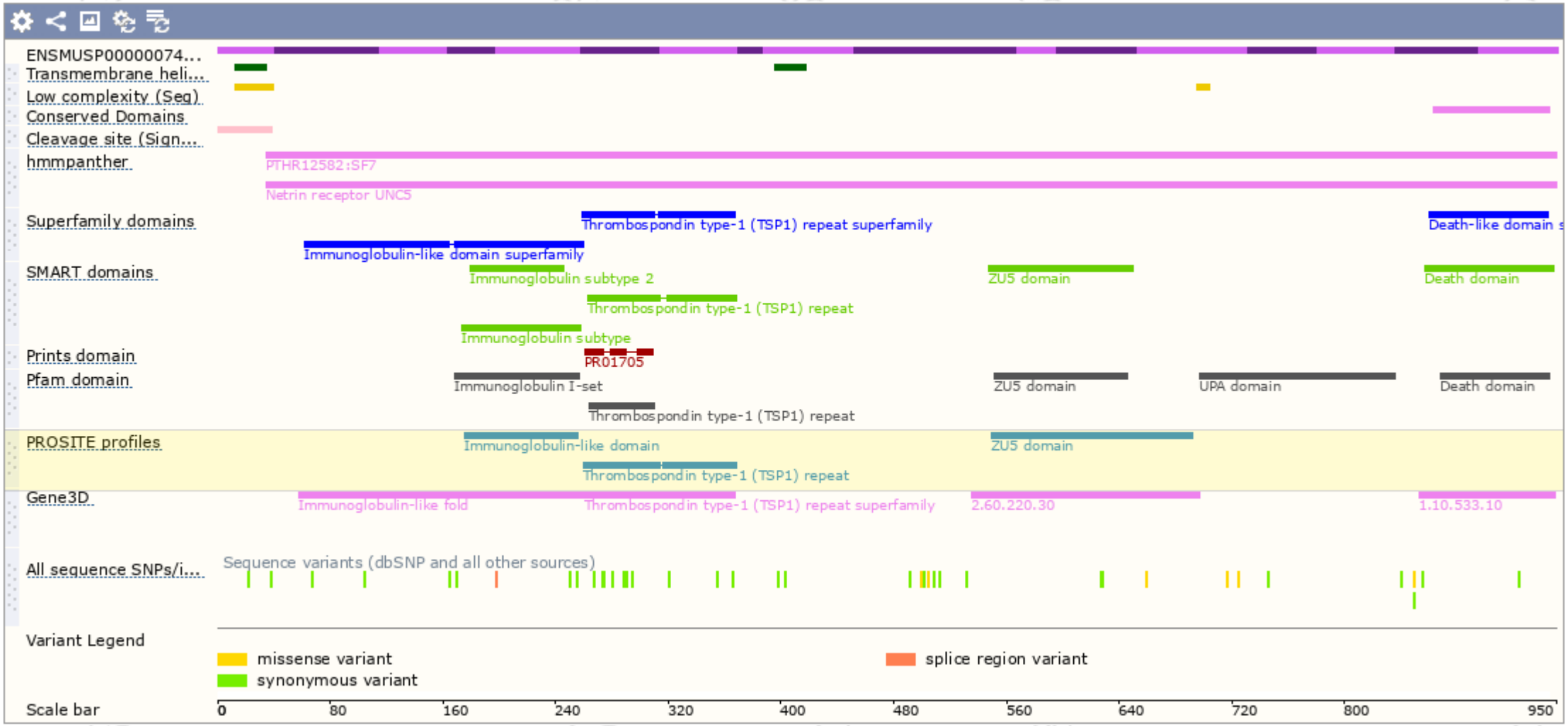
The strategy is based on the design of *Unc5c*-201 transcript,The transcription is shown below



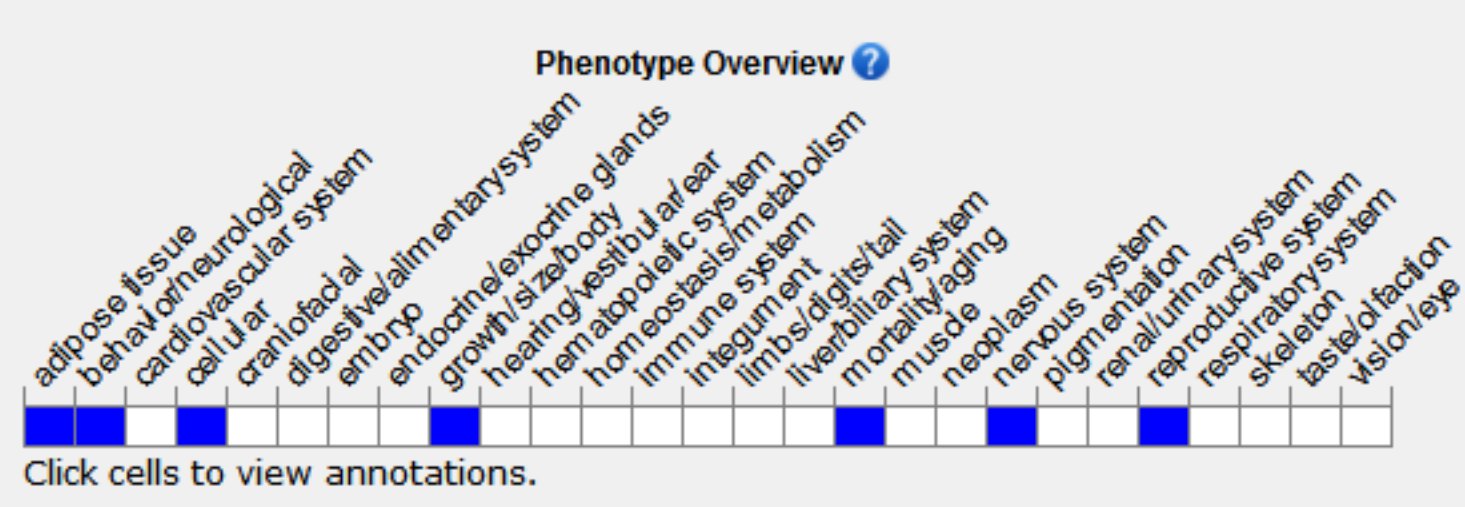
Genomic location distribution



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,Mutants exhibit ataxia, and reduced size early in life. Mutants exhibit cerebellar defects including reduced size and ectopic cerebellar cells in the midbrain.

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

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