

Vps13d Cas9-CKO Strategy

Designer:

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Project Overview

Project Name

Vps13d

Project type

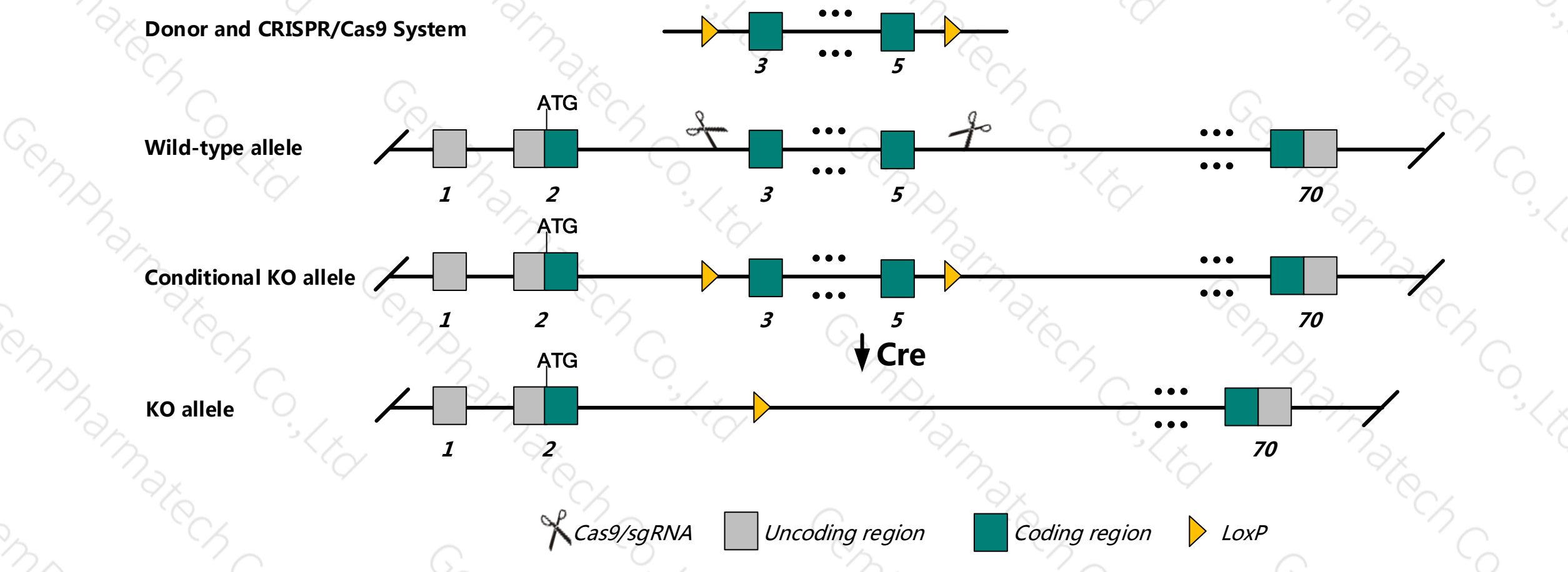
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Vps13d* gene. The schematic diagram is as follows:



- The *Vps13d* gene has 10 transcripts. According to the structure of *Vps13d* gene, exon3-exon5 of *Vps13d*-202 (ENSMUST00000036579.13) transcript is recommended as the knockout region. The region contains 353bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Vps13d* 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.

- According to the existing MGI data , Mice homozygous for a transgenic gene disruption exhibit embryonic lethality at E7.
- Transcript *Vps13d-210* may not be affected.
- The *Vps13d* gene is located on the Chr4. 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)

Vps13d vacuolar protein sorting 13D [*Mus musculus* (house mouse)]












Gene ID: 230895, updated on 5-Aug-2018

Summary

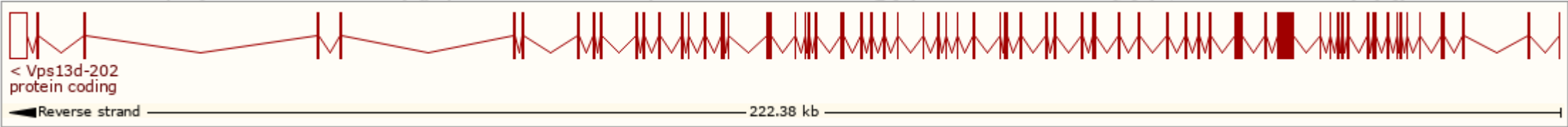
Official Symbol	Vps13d provided by MGI
Official Full Name	vacuolar protein sorting 13D provided by MGI
Primary source	MGI:2448530
See related	Ensembl:ENSMUSG00000020220 Vega:OTTMUSG00000010745
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Expression	Ubiquitous expression in genital fat pad adult (RPKM 5.8), thymus adult (RPKM 4.6) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

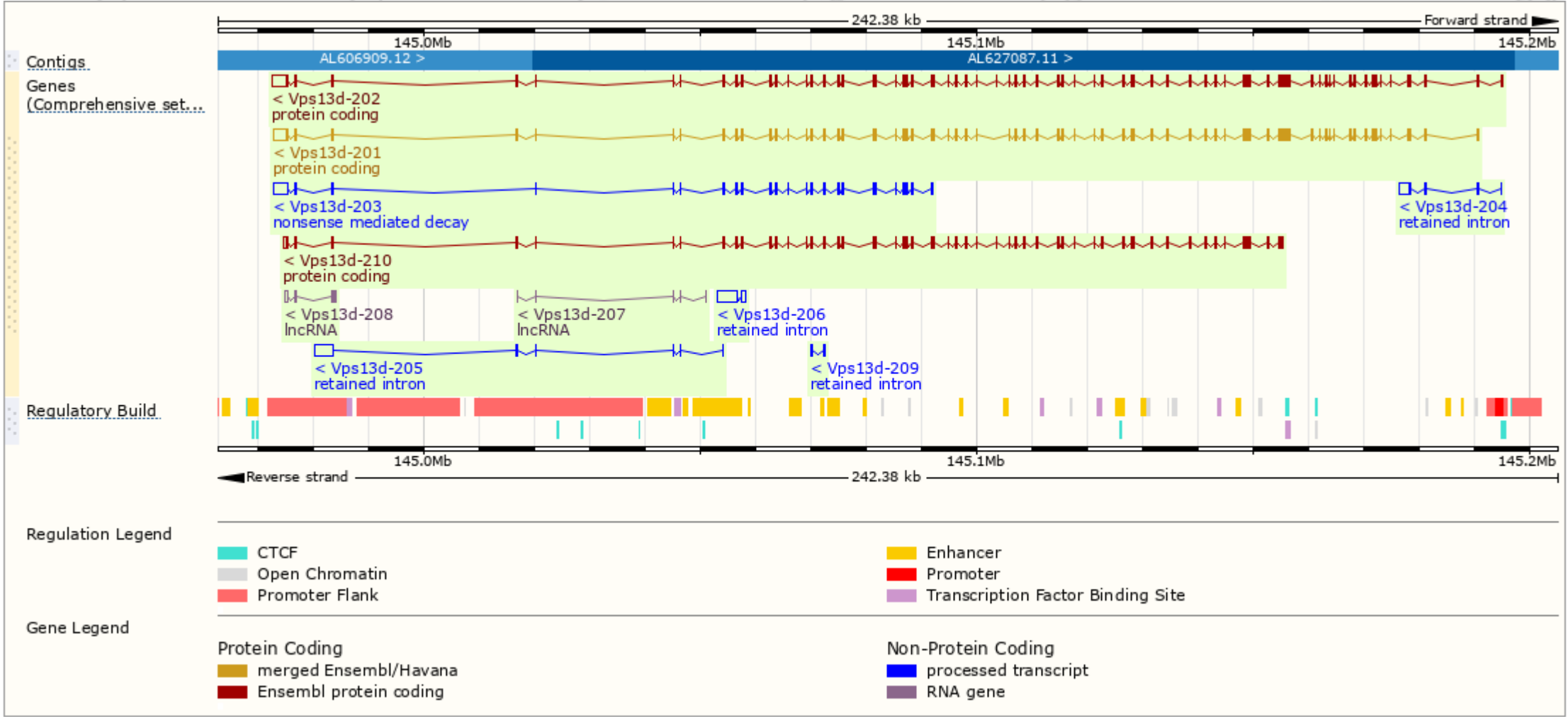
The gene has 10 transcripts, and all transcripts are shown below:

Show/hide columns (1 hidden)							Filter	
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags	
Vps13d-202	ENSMUST00000036579.13	15849	4390aa	 Protein coding	CCDS71517	B1ART2	TSL:5	GENCODE basic APPRIS P1
Vps13d-201	ENSMUST00000020441.12	15665	4359aa	 Protein coding	-	B1ART1	TSL:5	GENCODE basic
Vps13d-210	ENSMUST00000185113.1	10176	3211aa	 Protein coding	-	V9GX23	CDS 5' incomplete	TSL:5
Vps13d-203	ENSMUST00000130704.7	6143	1078aa	 Nonsense mediated decay	-	F6XI52	CDS 5' incomplete	TSL:1
Vps13d-206	ENSMUST00000142308.1	4371	No protein	 Retained intron	-	-	TSL:1	
Vps13d-205	ENSMUST00000141208.7	3811	No protein	 Retained intron	-	-	TSL:1	
Vps13d-204	ENSMUST00000132700.1	2253	No protein	 Retained intron	-	-	TSL:1	
Vps13d-209	ENSMUST00000155670.1	358	No protein	 Retained intron	-	-	TSL:3	
Vps13d-208	ENSMUST00000147511.1	802	No protein	 lncRNA	-	-	TSL:3	
Vps13d-207	ENSMUST00000144835.1	689	No protein	 lncRNA	-	-	TSL:3	

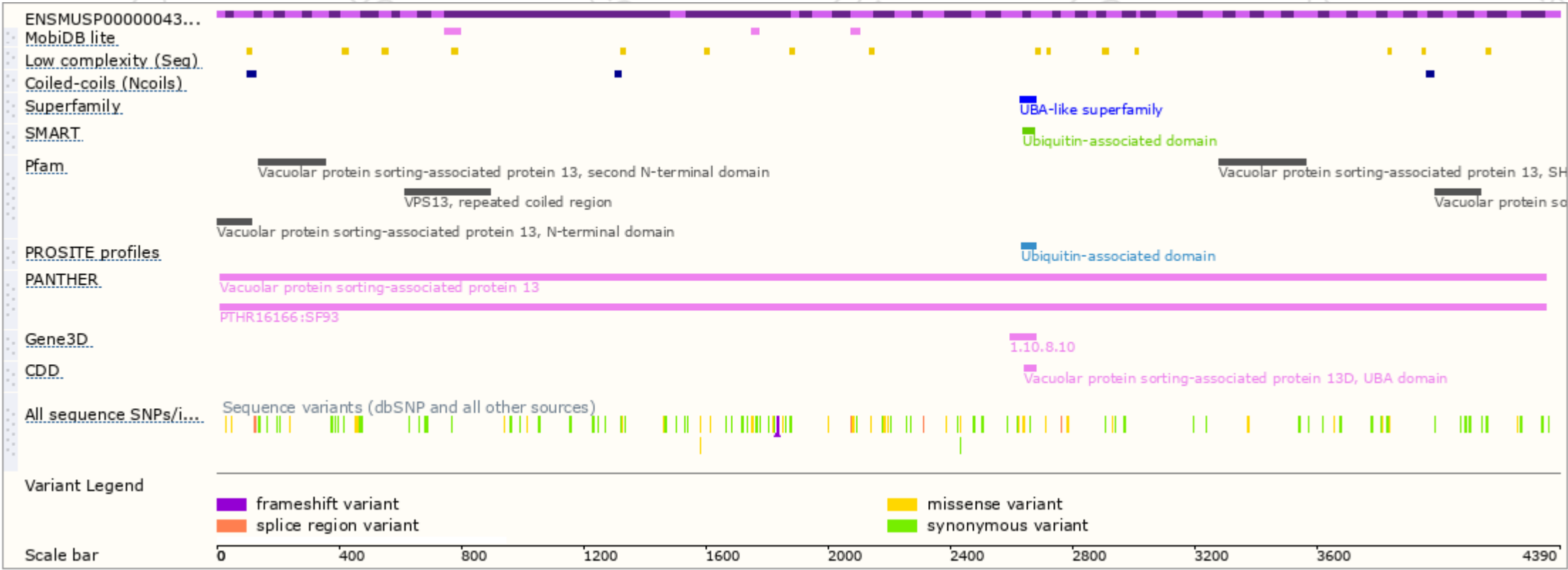
The strategy is based on the design of *Vps13d-202* transcript, The transcription is shown below



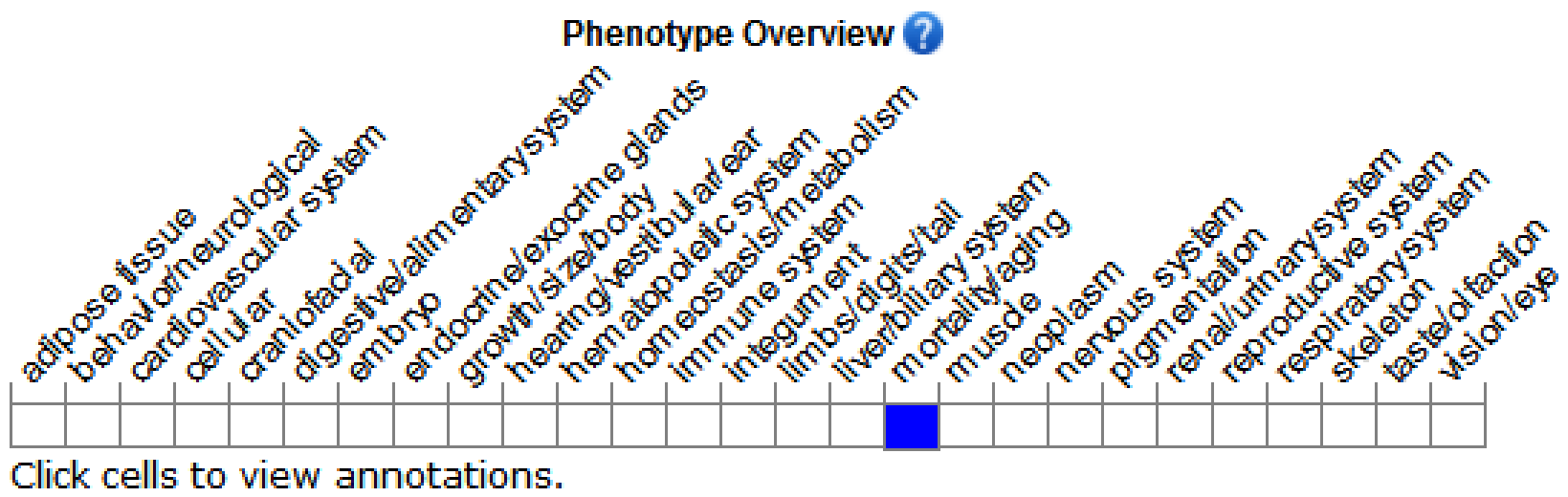
Genomic location distribution



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/>) .

According to the existing MGI data, Mice homozygous for a transgenic gene disruption exhibit embryonic lethality at E7.

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