Vps16 Cas9-KO Strategy

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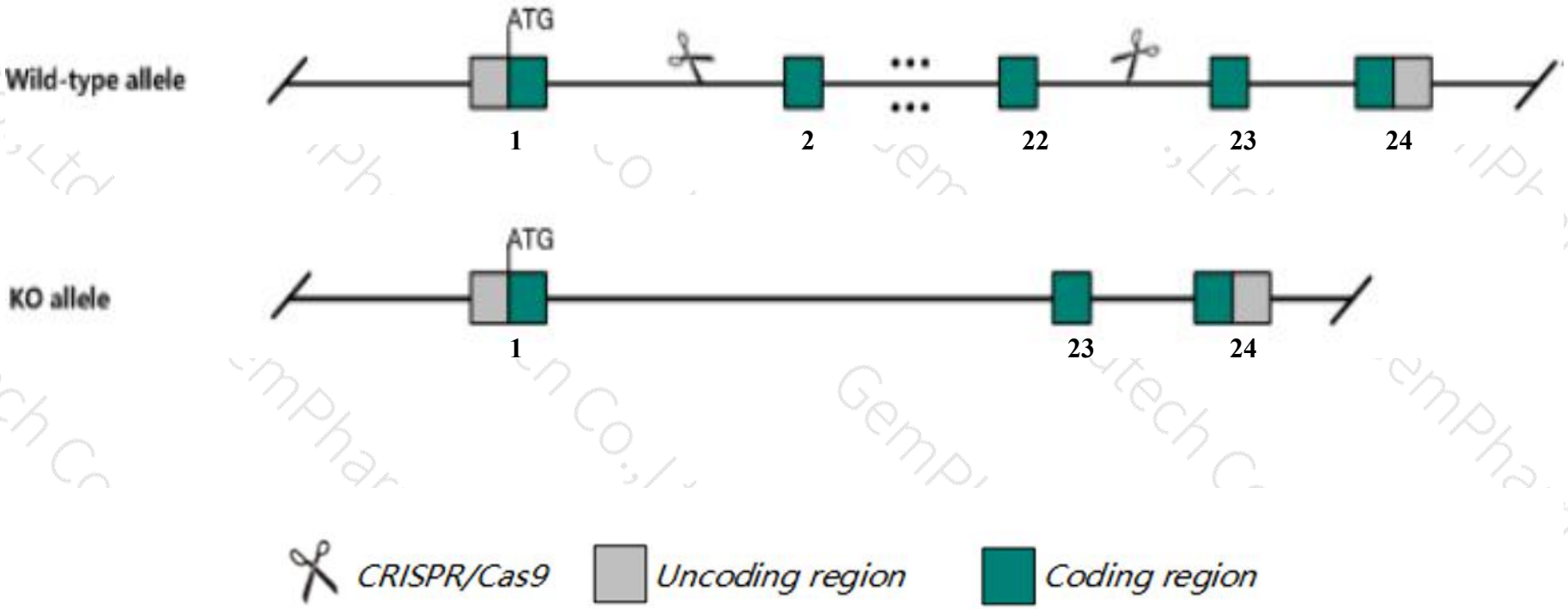
Design Date: 2020-3-4

Project Overview

Project Name	***Vps16***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Vps16* gene. The schematic diagram is as follows:



Technical routes

➢ The *Vps16* gene has 9 transcripts. According to the structure of *Vps16* gene, exon2-exon22 of *Vps16-201* (ENSMUST00000028900.10) transcript is recommended as the knockout region.The region contains 2218bp coding sequenc Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Vps16* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

- According to the existing MGI data,Mice with a homozygous point mutation in exon 3 display impaired motor function.

- The *Vps16* gene is located on the Chr2. 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 gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information（NCBI）

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Vps16 VSP16 CORVET/HOPS core subunit [Mus musculus (house mouse)]

Gene ID: 80743, updated on 31-Jan-2019

Summary

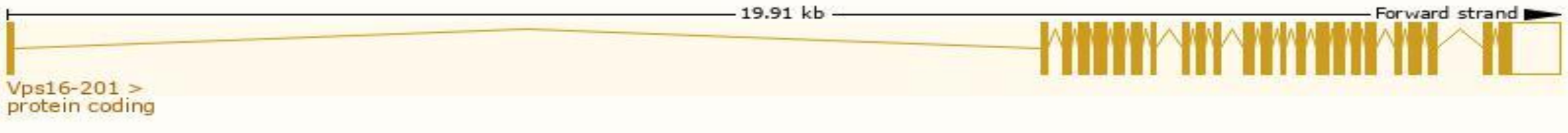
Official Symbol	Vps16 provided by MGI
Official Full Name	VSP16 CORVET/HOPS core subunit provided by MGI
Primary source	MGI:MGI:2136772
See related	Ensembl:ENSMUSG00000027411
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1810074M16Rik, mVPS16
Expression	Ubiquitous expression in thymus adult (RPKM 21.6), CNS E14 (RPKM 19.5) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

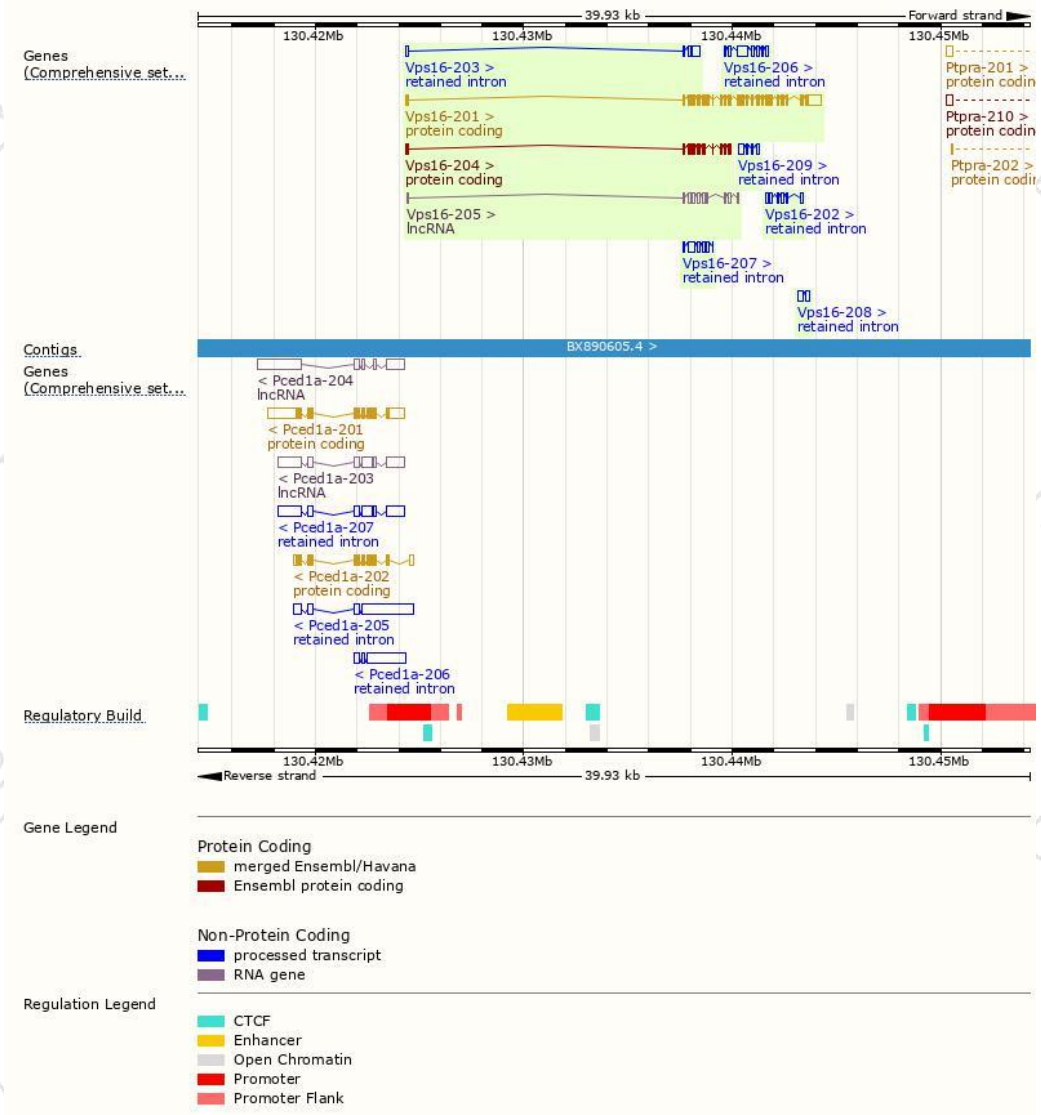
The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Vps16-201	ENSMUST00000028900.10	3161	839aa	Protein coding	CCDS38242	G3X8X7	TSL:1 GENCODE basic APPRIS P1
Vps16-204	ENSMUST00000128994.7	978	316aa	Protein coding	-	A2BI90	CDS 3' incomplete TSL:5
Vps16-206	ENSMUST00000131220.2	1136	No protein	Retained intron	-	-	TSL:5
Vps16-207	ENSMUST00000132388.1	792	No protein	Retained intron	-	-	TSL:3
Vps16-202	ENSMUST00000125098.1	655	No protein	Retained intron	-	-	TSL:5
Vps16-203	ENSMUST00000125973.7	653	No protein	Retained intron	-	-	TSL:2
Vps16-209	ENSMUST00000137084.2	546	No protein	Retained intron	-	-	TSL:3
Vps16-208	ENSMUST00000134677.1	454	No protein	Retained intron	-	-	TSL:2
Vps16-205	ENSMUST00000130258.7	907	No protein	lncRNA	-	-	TSL:5

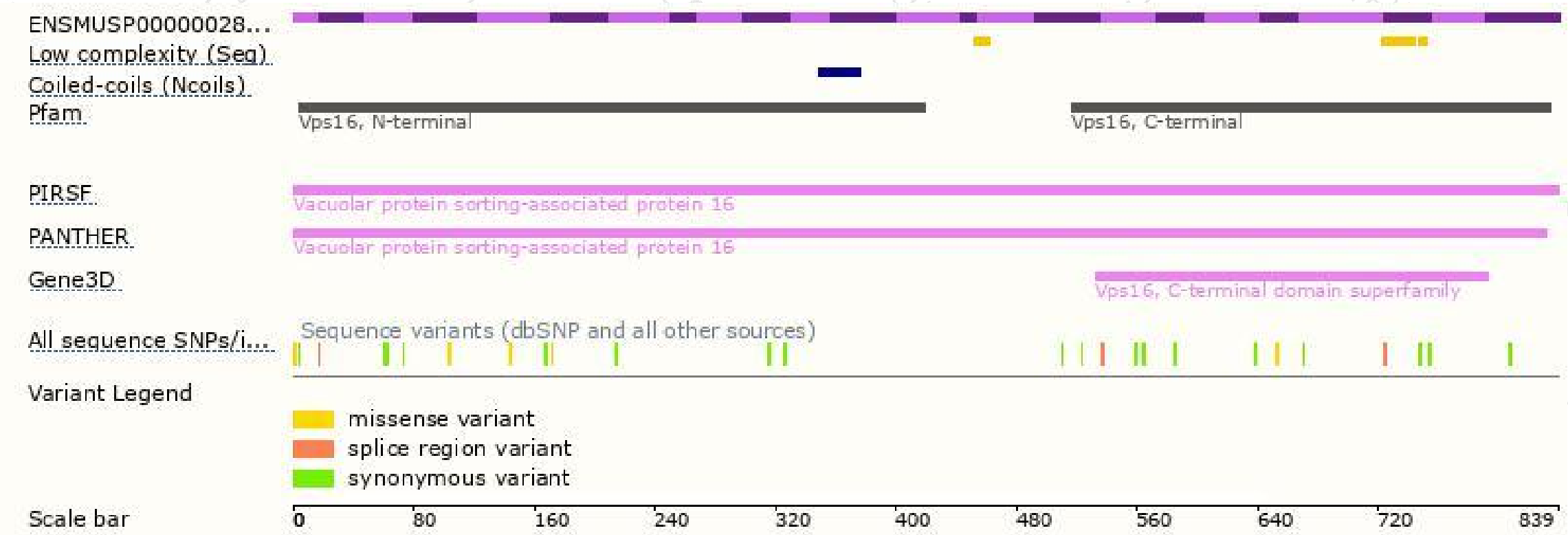
The strategy is based on the design of *Vps16-201* transcript,The transcription is shown below



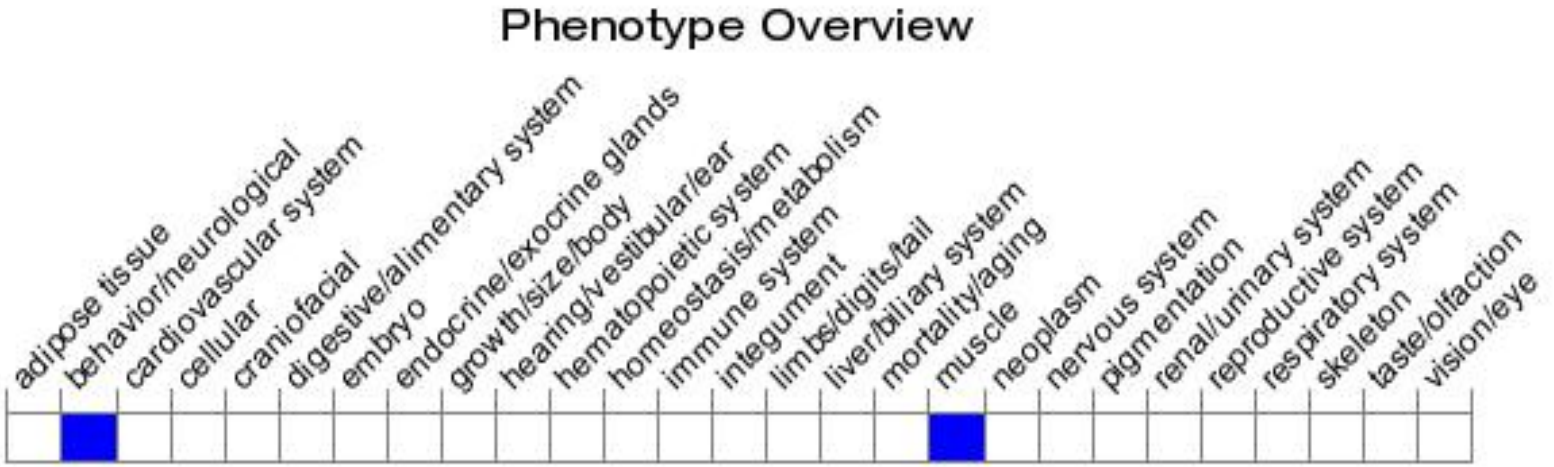
Genomic location distribution



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 with a homozygous point mutation in exon 3 display impaired motor function.

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

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