

# *Vt1a* Cas9-KO Strategy

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# Project Overview

**Project Name**

*Vt1a*

**Project type**

**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Vt1a* gene. The schematic diagram is as follows:



- The *Vt1a* gene has 7 transcripts. According to the structure of *Vt1a* gene, exon2 of *Vt1a-201* (ENSMUST00000095950.2) transcript is recommended as the knockout region. The region contains 59bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Vt1a* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for a knock-out allele are viable and fertile.
- Transcript *Vt1a*-203 may not be affected.
- The knockout region is near to the N-terminal of *Zdhhc6* gene, this strategy may influence the regulatory function of the N-terminal of *Zdhhc6* gene.
- The *Vt1a* gene is located on the Chr19. 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)

## Vti1a vesicle transport through interaction with t-SNAREs 1A [ *Mus musculus* (house mouse) ]

Gene ID: 53611, updated on 26-Nov-2019

### Summary

- Official Symbol** Vti1a provided by MGI
- Official Full Name** vesicle transport through interaction with t-SNAREs 1A provided by MGI
- Primary source** MGI:MGI:1855699
- See related** Ensembl:ENSMUSG00000024983
- 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** Vti1; MVti1; MVti1a; Vti1-rp2; 1110014F16Rik; 1110018K19Rik; 4921537J05Rik
- Expression** Ubiquitous expression in cortex adult (RPKM 1.7), frontal lobe adult (RPKM 1.7) and 28 other tissues [See more](#)
- Orthologs** [human](#) [all](#)

### Genomic context

**Location:** 19; 19 D2 See Vti1a in [Genome Data Viewer](#)

**Exon count:** 16

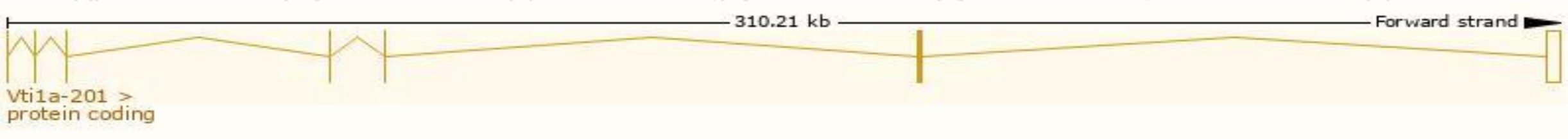
Annotation release	Status	Assembly	Chr	Location
<a href="#">108</a>	current	GRCm38.p6 ( <a href="#">GCF_000001635.26</a> )	19	NC_000085.6 (55316030..55627461)
Build 37.2	previous assembly	MGSCv37 ( <a href="#">GCF_000001635.18</a> )	19	NC_000085.5 (55390841..55701051)

# Transcript information (Ensembl)

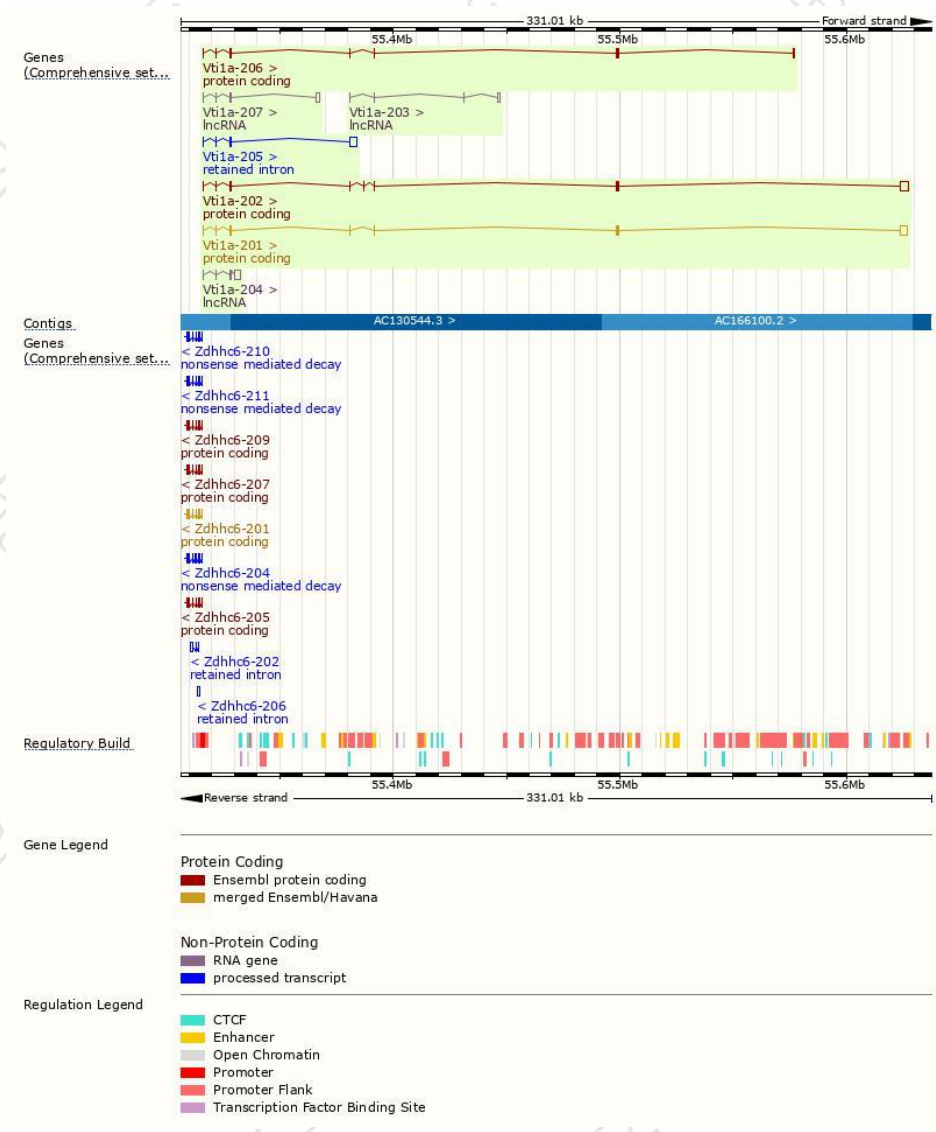
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Vti1a-201	<a href="#">ENSMUST00000095950.2</a>	3405	<a href="#">217aa</a>	Protein coding	<a href="#">CCDS29910</a>	<a href="#">Q89116</a>	TSL:1 GENCODE basic APPRIS P2
Vti1a-202	<a href="#">ENSMUST00000223690.1</a>	4175	<a href="#">224aa</a>	Protein coding	-	<a href="#">Q5FWJ7</a>	GENCODE basic APPRIS ALT1
Vti1a-206	<a href="#">ENSMUST00000225529.1</a>	1244	<a href="#">197aa</a>	Protein coding	-	<a href="#">A0A286YDF2</a>	GENCODE basic
Vti1a-205	<a href="#">ENSMUST00000225392.1</a>	3370	No protein	Retained intron	-	-	
Vti1a-204	<a href="#">ENSMUST00000225051.1</a>	2919	No protein	lncRNA	-	-	
Vti1a-207	<a href="#">ENSMUST00000226069.1</a>	1599	No protein	lncRNA	-	-	
Vti1a-203	<a href="#">ENSMUST00000224396.1</a>	955	No protein	lncRNA	-	-	

The strategy is based on the design of *Vti1a-201* transcript,The transcription is shown below

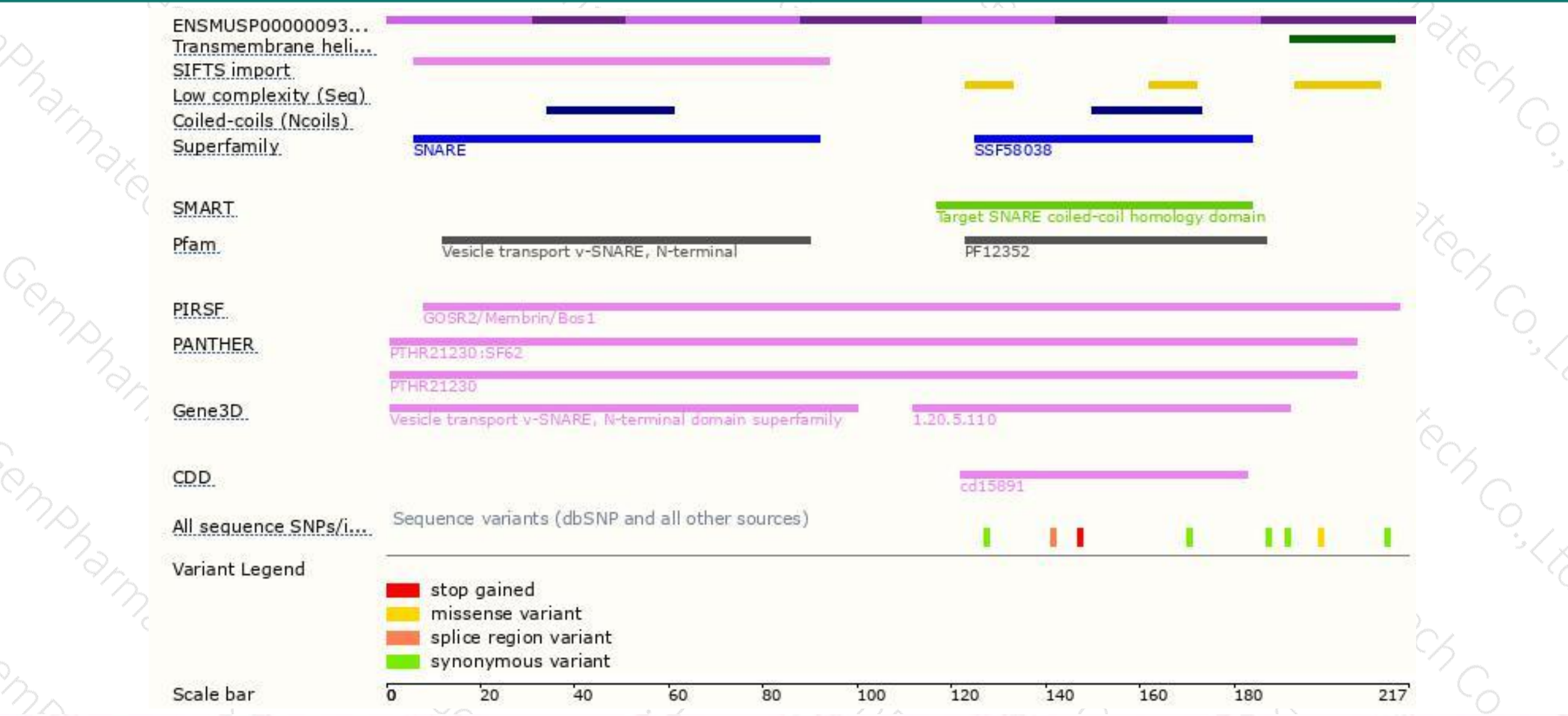


# Genomic location distribution

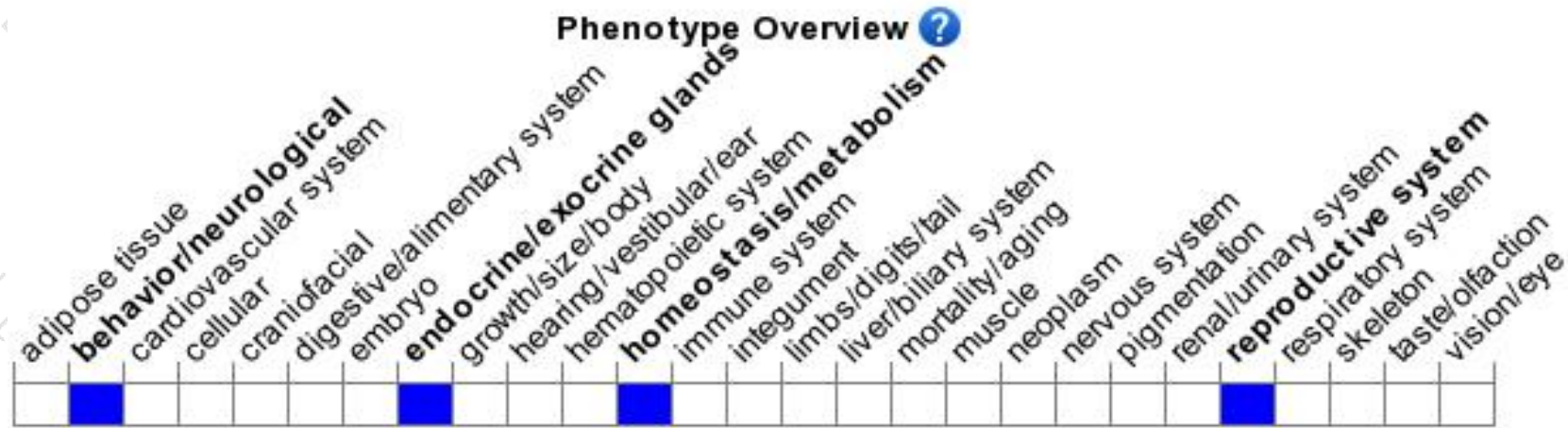




# Protein domain



# 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 knock-out allele are viable and fertile.

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

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