

# *Slc6a9* Cas9-KO Strategy

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**Reviewer: Yumeng Wang**

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# Project Overview

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**Project Name**

*Slc6a9*

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**Project type**

**Cas9-KO**

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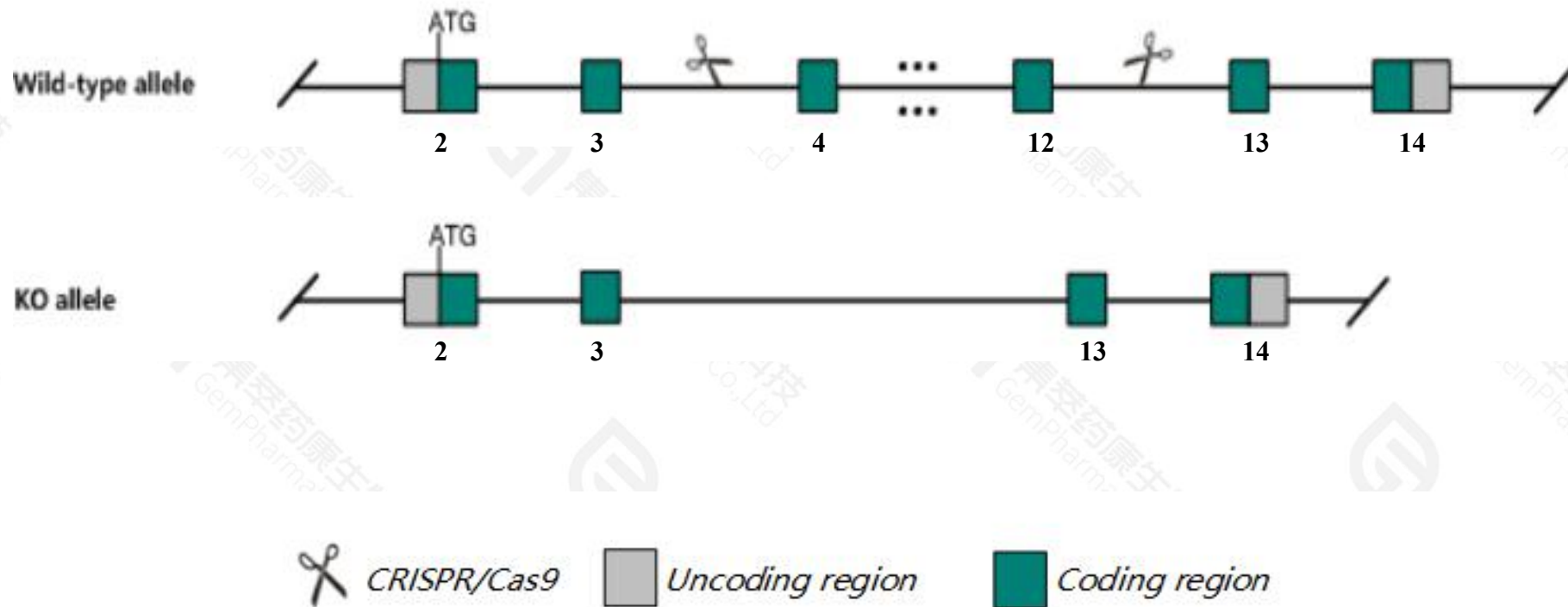
**Strain background**

**C57BL/6JGpt**

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# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Slc6a9* gene. The schematic diagram is as follows:



- The *Slc6a9* gene has 12 transcripts. According to the structure of *Slc6a9* gene, exon4-exon12 of *Slc6a9-201*(ENSMUST00000030269.14) transcript is recommended as the knockout region. The region contains 1349bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Slc6a9* gene. The brief process is as follows: CRISPR/Cas9 system 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 partial intron of *Gm17114* gene will be deleted together after Cre recombination in this strategy.
- Transcript *Slc6a9-208* may not be affected.
- According to the existing MGI data, homozygous null mice die shortly after birth exhibiting breathing and movement deficiencies.
- The *Slc6a9* 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 gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

## Slc6a9 solute carrier family 6 (neurotransmitter transporter, glycine), member 9 [Mus musculus (house mouse)]

Gene ID: 14664, updated on 2-Mar-2021

### Summary



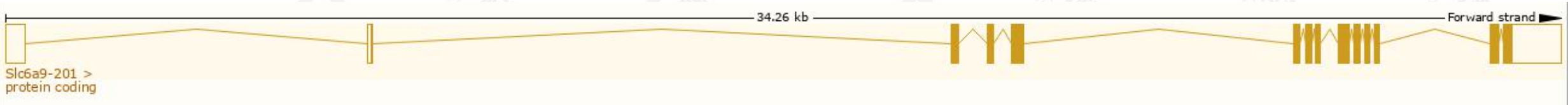
<b>Official Symbol</b>	Slc6a9 provided by <a href="#">MGI</a>
<b>Official Full Name</b>	solute carrier family 6 (neurotransmitter transporter, glycine), member 9 provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:95760</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000028542</a>
<b>Gene type</b>	protein coding
<b>RefSeq status</b>	VALIDATED
<b>Organism</b>	<a href="#">Mus musculus</a>
<b>Lineage</b>	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
<b>Also known as</b>	Glyt, Glyt-, Glyt-1, Glyt1
<b>Expression</b>	Ubiquitous expression in liver E14.5 (RPKM 33.4), cerebellum adult (RPKM 30.9) and 27 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

The gene has 12 transcripts,all transcripts are shown below:

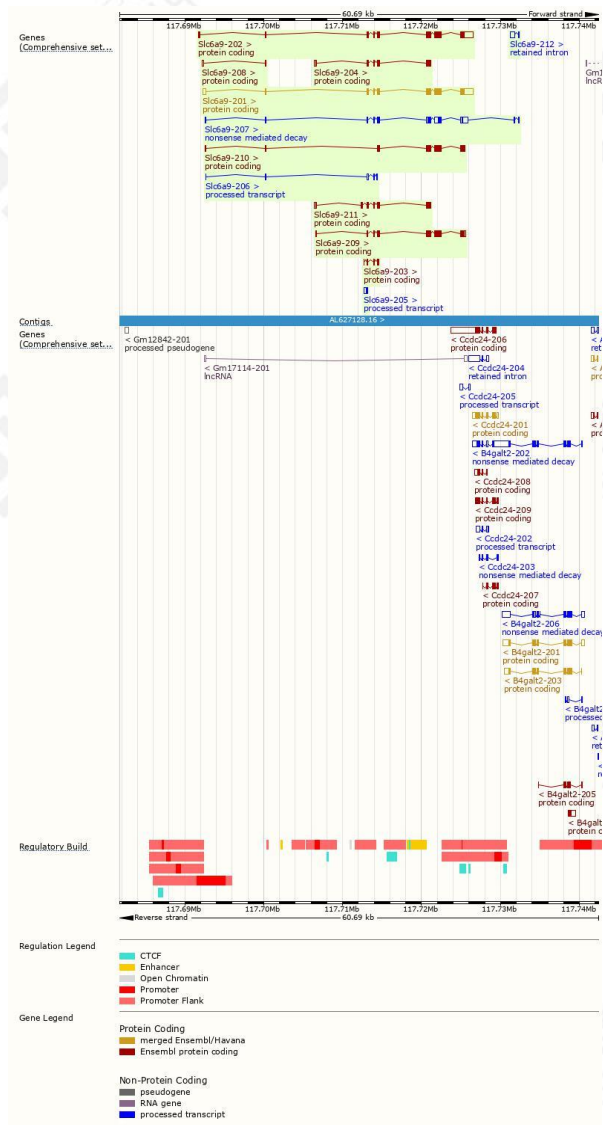
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Slc6a9-201	<a href="#">ENSMUST00000030269.14</a>	3479	<a href="#">633aa</a>	Protein coding	<a href="#">CCDS18538</a>		TSL:1 , GENCODE basic , APPRIS P1 ,
Slc6a9-202	<a href="#">ENSMUST00000063857.11</a>	3146	<a href="#">633aa</a>	Protein coding	<a href="#">CCDS18538</a>		TSL:1 , GENCODE basic , APPRIS P1 ,
Slc6a9-209	<a href="#">ENSMUST00000163288.2</a>	2107	<a href="#">637aa</a>	Protein coding	-		TSL:5 , GENCODE basic ,
Slc6a9-210	<a href="#">ENSMUST00000169885.8</a>	1876	<a href="#">521aa</a>	Protein coding	-		TSL:5 , GENCODE basic ,
Slc6a9-211	<a href="#">ENSMUST00000169990.8</a>	1344	<a href="#">373aa</a>	Protein coding	-		CDS 3' incomplete , TSL:5 ,
Slc6a9-204	<a href="#">ENSMUST00000132043.9</a>	1194	<a href="#">321aa</a>	Protein coding	-		CDS 3' incomplete , TSL:5 ,
Slc6a9-203	<a href="#">ENSMUST00000123994.3</a>	456	<a href="#">116aa</a>	Protein coding	-		CDS 3' incomplete , TSL:5 ,
Slc6a9-208	<a href="#">ENSMUST00000151316.2</a>	244	<a href="#">1aa</a>	Protein coding	-		CDS 3' incomplete , TSL:5 ,
Slc6a9-207	<a href="#">ENSMUST00000149168.2</a>	2834	<a href="#">126aa</a>	Nonsense mediated decay	-		TSL:1 ,
Slc6a9-206	<a href="#">ENSMUST00000136476.2</a>	488	No protein	Processed transcript	-		TSL:5 ,
Slc6a9-205	<a href="#">ENSMUST00000135769.2</a>	370	No protein	Processed transcript	-		TSL:2 ,
Slc6a9-212	<a href="#">ENSMUST00000170733.2</a>	678	No protein	Retained intron	-		TSL:3 ,

The strategy is based on the design of *Slc6a9-201* transcript,the transcription is shown below:



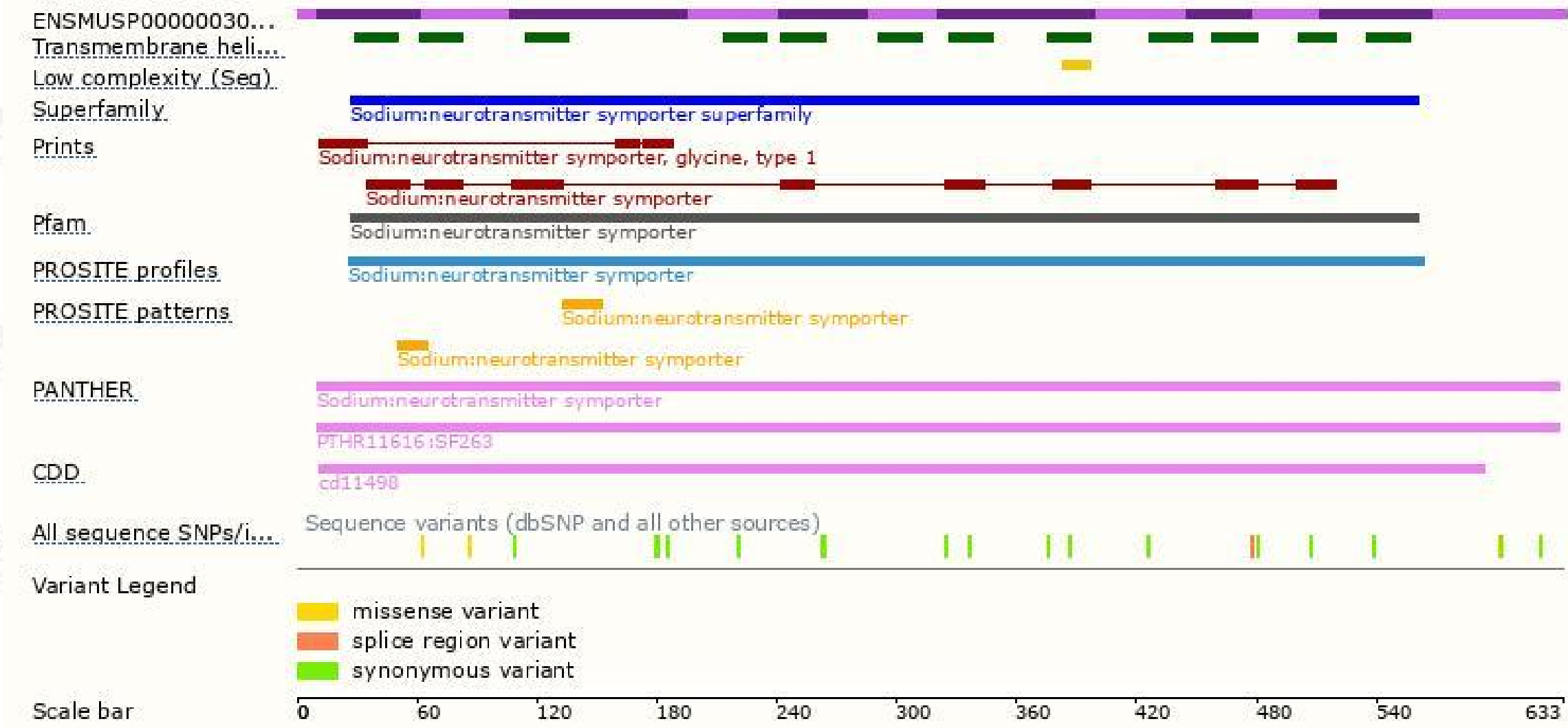


# Genomic location distribution

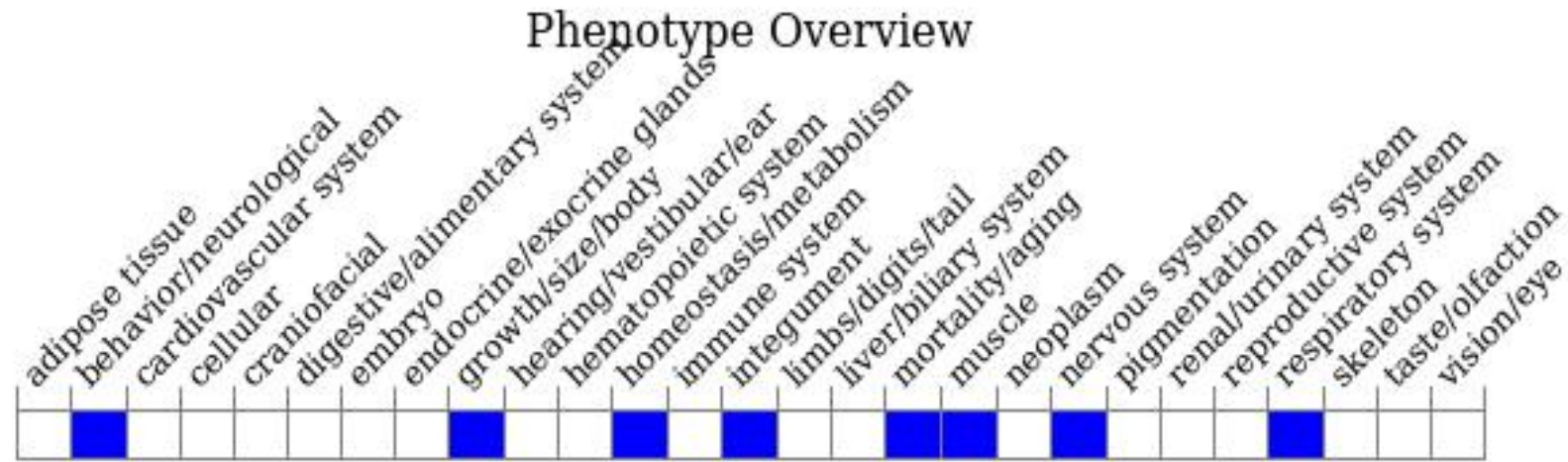




# Protein domain



# 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, homozygous null mice die shortly after birth exhibiting breathing and movement deficiencies.

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