

Stx1a Cas9-KO Strategy

Designer:	Huan Wang
Reviewer:	Huan Fan
Design Date:	2020-1-4

Project Overview

Project Name

Stx1a

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Stx1a* gene. The schematic diagram is as follows:



- The *Stx1a* gene has 6 transcripts. According to the structure of *Stx1a* gene, exon2-exon3 of *Stx1a-201* (ENSMUST00000005509.10) transcript is recommended as the knockout region. The region contains 178bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Stx1a* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Homozygous mice for one targeted mutation display impairments in LTP, cued fear memory consolidation and cued fear memory extinction while mice with another targeted mutation show no behavioral abnormalities.
- The *Stx1a* gene is located on the Chr5. 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)

Stx1a syntaxin 1A (brain) [Mus musculus (house mouse)]

Gene ID: 20907, updated on 31-Jan-2019

Summary



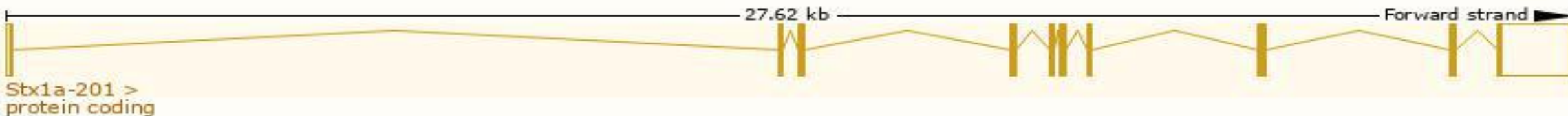
Official Symbol	Stx1a provided by MGI
Official Full Name	syntaxin 1A (brain) provided by MGI
Primary source	MGI:MGI:109355
See related	Ensembl:ENSMUSG00000007207
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	HPC-1
Expression	Biased expression in cortex adult (RPKM 99.5), frontal lobe adult (RPKM 66.0) and 8 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

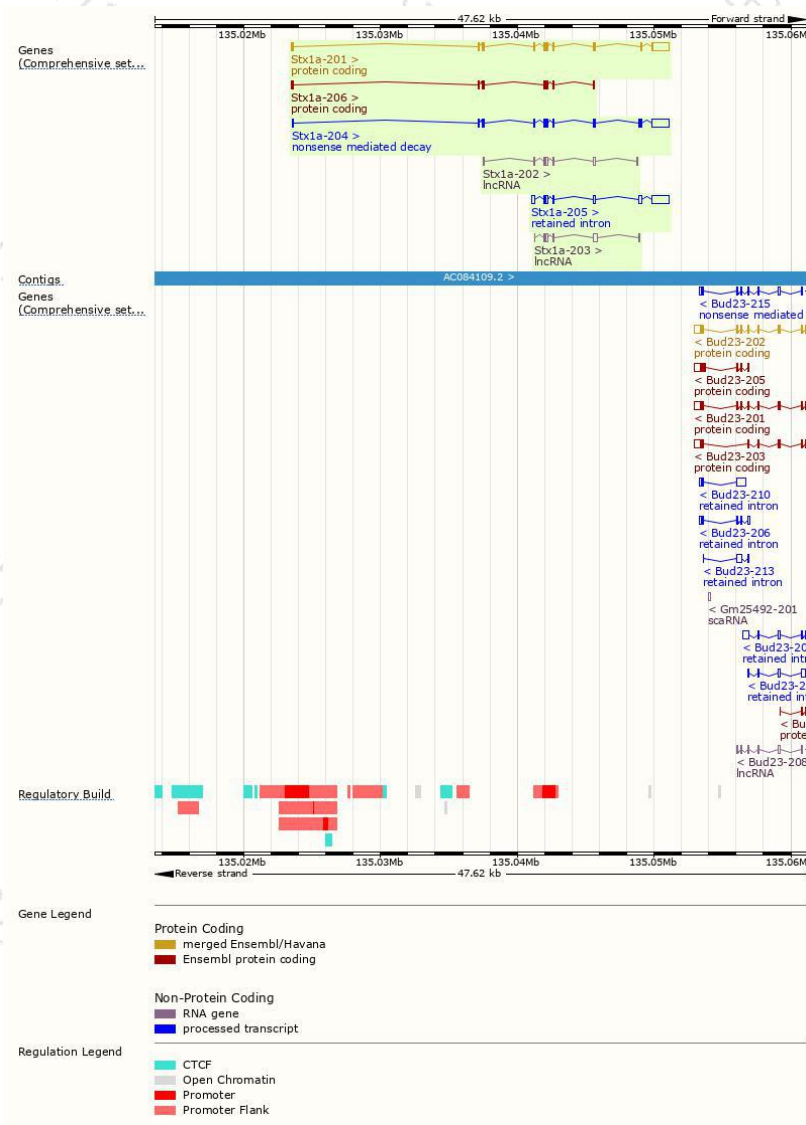
The gene has 6 transcripts, all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Stx1a-201	ENSMUST00000005509.10	2162	288aa	Protein coding	CCDS19731	O35526 Q497P1	TSL:1 GENCODE basic APPRIS P1
Stx1a-206	ENSMUST00000201008.3	550	158aa	Protein coding	-	A0A0J9YUA0	CDS 3' incomplete TSL:5
Stx1a-204	ENSMUST00000150838.1	2167	256aa	Nonsense mediated decay	-	D6RFB9	TSL:1
Stx1a-205	ENSMUST00000156626.7	2114	No protein	Retained intron	-	-	TSL:1
Stx1a-202	ENSMUST00000133812.7	655	No protein	lncRNA	-	-	TSL:3
Stx1a-203	ENSMUST00000144198.1	594	No protein	lncRNA	-	-	TSL:5

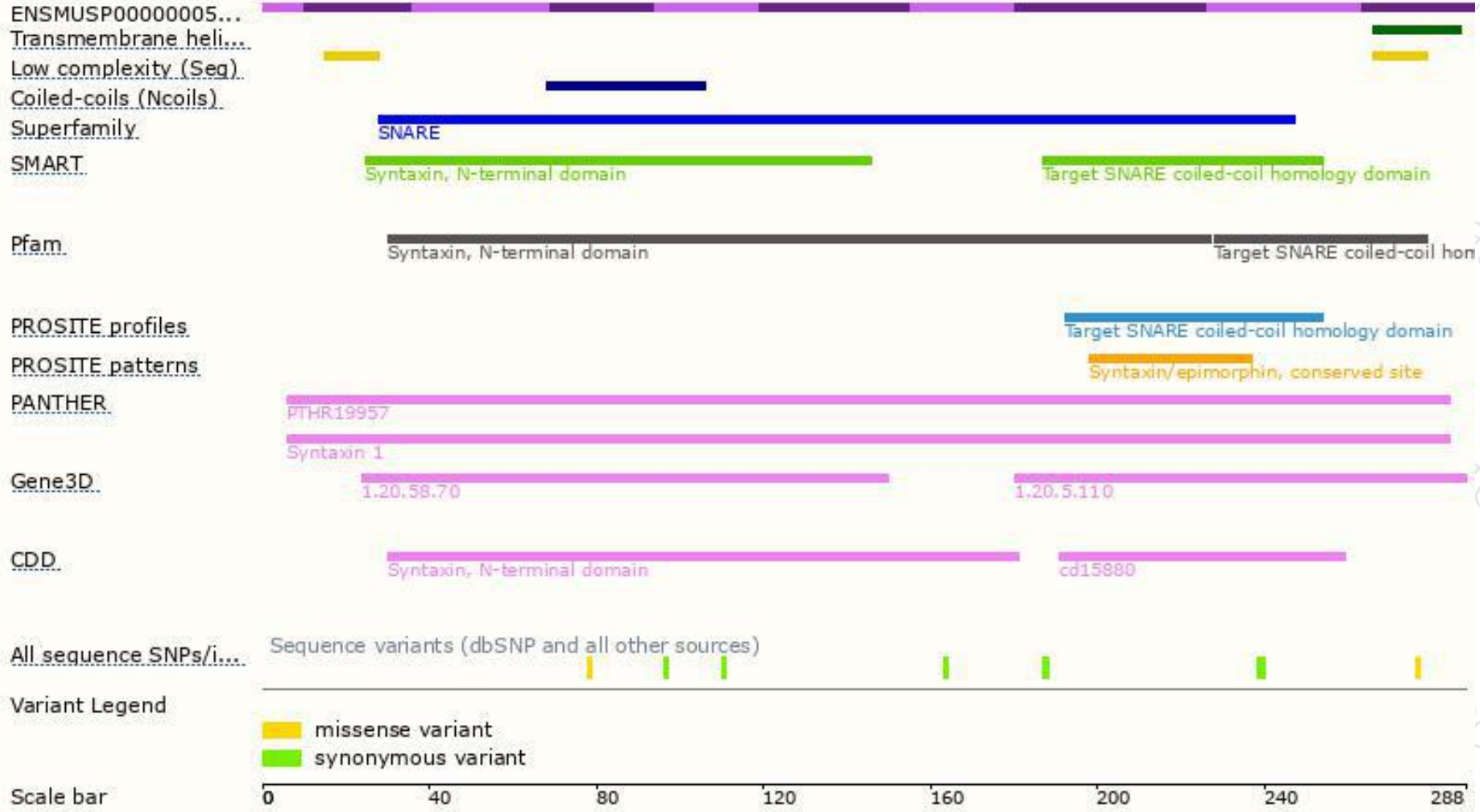
The strategy is based on the design of *Stx1a-201* transcript, The transcription is shown below



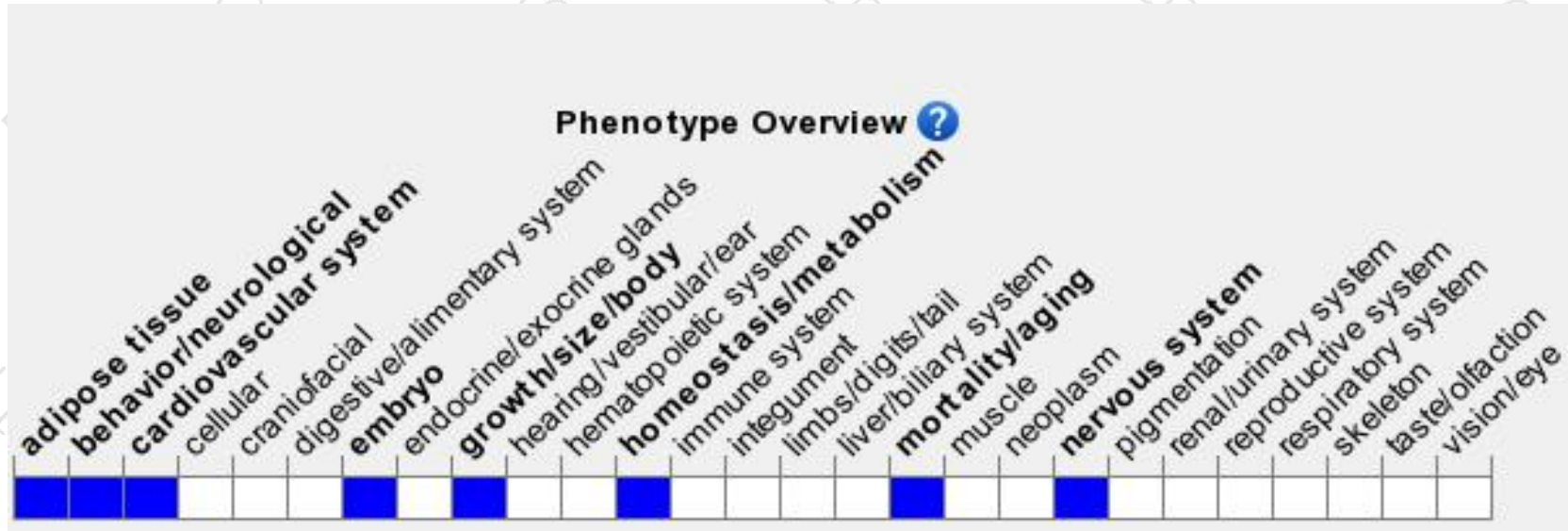
Genomic location distribution



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 mice for one targeted mutation display impairments in LTP, cued fear memory consolidation and cued fear memory extinction while mice with another targeted mutation show no behavioral abnormalities.

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

Tel: 400-9660890

