

Stxbp5 Cas9-KO Strategy

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Reviewer:

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Project Overview

Project Name

Stxbp5

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Stxbp5* gene. The schematic diagram is as follows:



- The *Stxbp5* gene has 12 transcripts. According to the structure of *Stxbp5* gene, exon2-exon16 of *Stxbp5*-209 (ENSMUST00000141722.7) transcript is recommended as the knockout region. The region contains 1652bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Stxbp5* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for a null allele exhibit some background sensitive prenatal lethality and increased synaptic transmission.
- Transcript *Stxbp5-206* may not be affected.
- The *Stxbp5* gene is located on the Chr10. 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)

Stxbp5 syntaxin binding protein 5 (tomosyn) [Mus musculus (house mouse)]

Gene ID: 78808, updated on 19-Feb-2019

Summary



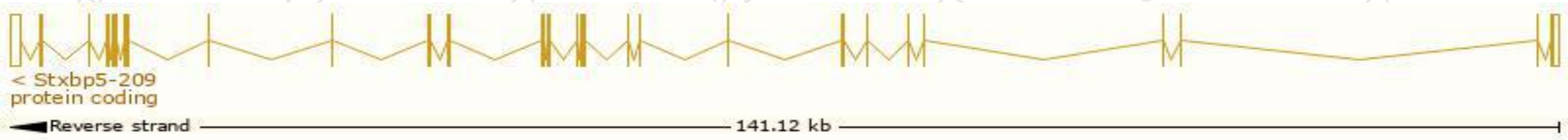
Official Symbol	Stxbp5 provided by MGI
Official Full Name	syntaxin binding protein 5 (tomosyn) provided by MGI
Primary source	MGI:MGI:1926058
See related	Ensembl:ENSMUSG00000019790
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	0710001E20Rik, 4930565N16Rik, AW742610, LGL3, mKIAA1006
Expression	Ubiquitous expression in frontal lobe adult (RPKM 5.5), cortex adult (RPKM 4.3) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

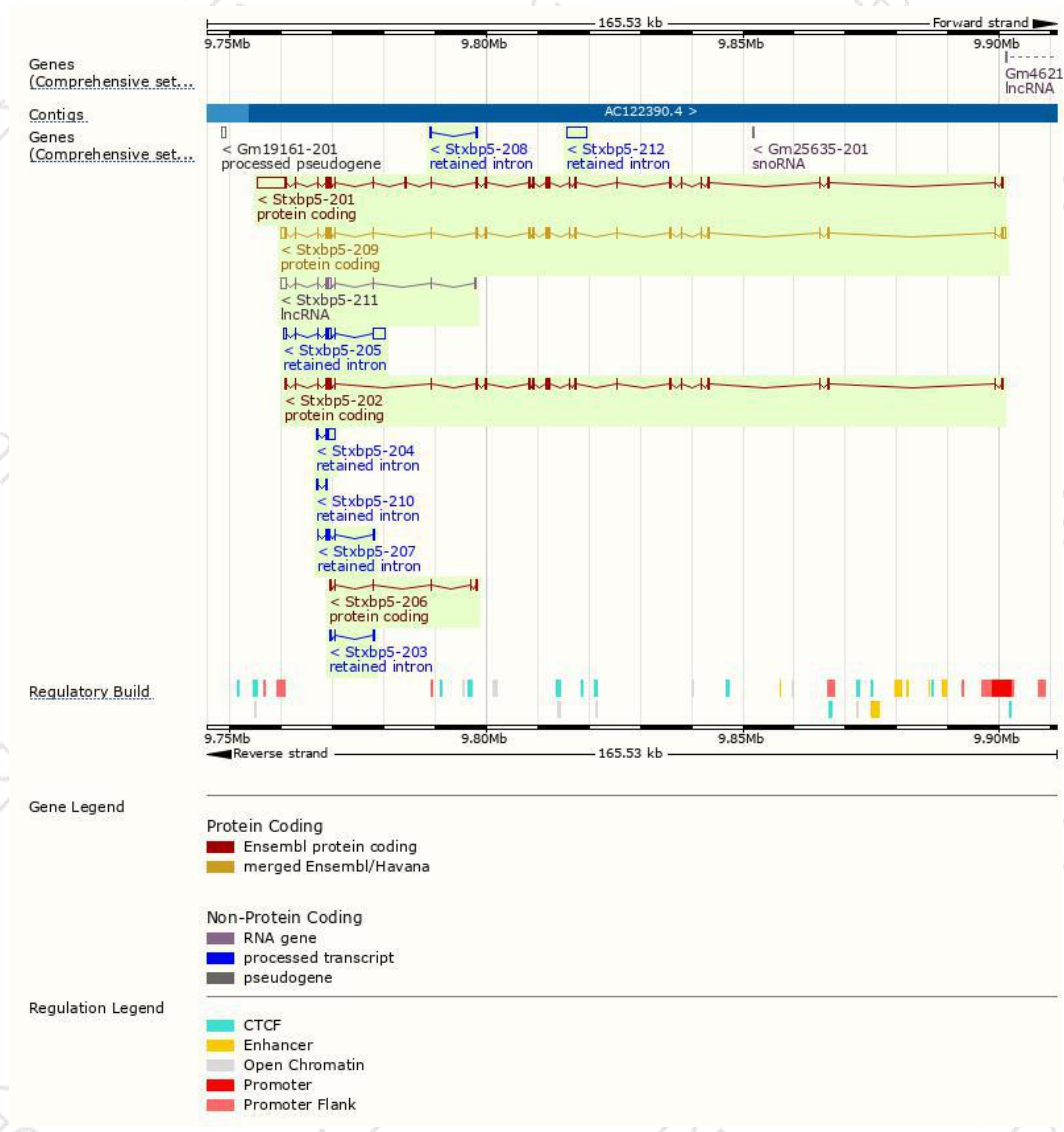
The gene has 12 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Stxbp5-209	ENSMUST00000141722.7	4702	1116aa	Protein coding	CCDS35837	D3Z079	TSL:5 GENCODE basic APPRIS P2
Stxbp5-201	ENSMUST00000038213.13	8825	1152aa	Protein coding	-	Q8K400	TSL:5 GENCODE basic APPRIS ALT 1
Stxbp5-202	ENSMUST00000125200.7	3300	1099aa	Protein coding	-	D3Z2Q2	TSL:5 GENCODE basic
Stxbp5-206	ENSMUST00000136324.1	791	263aa	Protein coding	-	F6WXQ4	5' and 3' truncations in transcript evidence prevent annotation of the start and the end of the CDS. CDS 5' and 3' incomplete TSL:3
Stxbp5-212	ENSMUST00000219200.1	3870	No protein	Retained intron	-	-	TSL:NA
Stxbp5-205	ENSMUST00000136259.7	3791	No protein	Retained intron	-	-	TSL:1
Stxbp5-204	ENSMUST00000131828.7	1518	No protein	Retained intron	-	-	TSL:1
Stxbp5-207	ENSMUST00000139199.7	950	No protein	Retained intron	-	-	TSL:3
Stxbp5-203	ENSMUST00000128487.1	637	No protein	Retained intron	-	-	TSL:3
Stxbp5-208	ENSMUST00000139779.1	440	No protein	Retained intron	-	-	TSL:3
Stxbp5-210	ENSMUST00000148009.1	287	No protein	Retained intron	-	-	TSL:5
Stxbp5-211	ENSMUST00000151435.7	2364	No protein	lncRNA	-	-	TSL:1

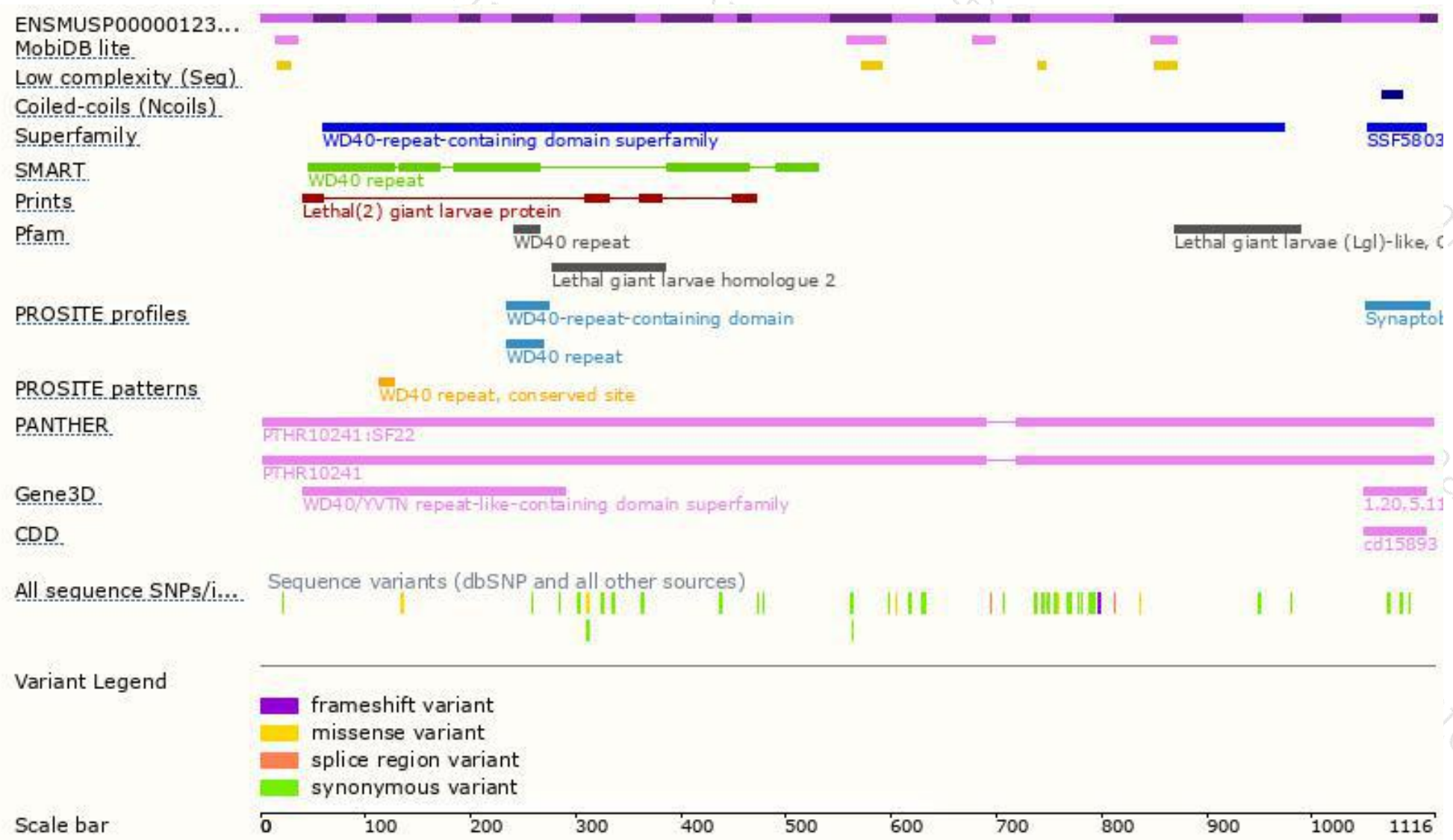
The strategy is based on the design of *Stxbp5-209* transcript,The transcription is shown below



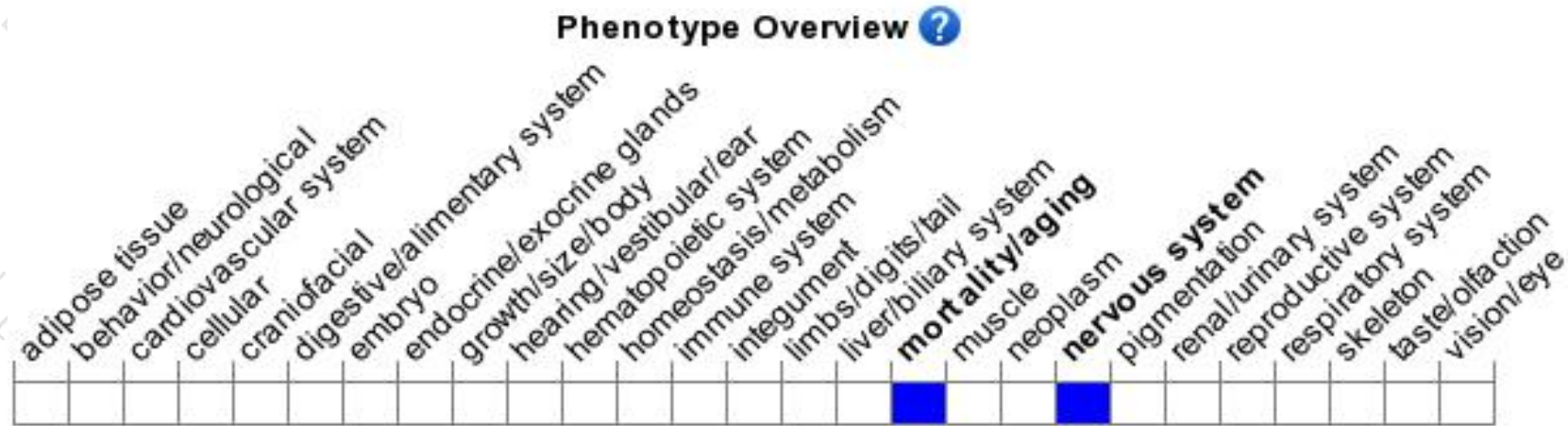
Genomic location distribution



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 null allele exhibit some background sensitive prenatal lethality and increased synaptic transmission.

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

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