

***Robo3* Cas9-KO Strategy**

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Project Overview

Project Name

Robo3

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Robo3* gene. The schematic diagram is as follows:



- The *Robo3* gene has 6 transcripts. According to the structure of *Robo3* gene, exon4-exon17 of *Robo3-202* (ENSMUST00000115038.2) transcript is recommended as the knockout region. The region contains 2134bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Robo3* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Homozygous mutants display perinatal lethality, abnormal commissural axon growth, and fragile floor plates.
- The *Robo3* gene is located on the Chr9. 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)

Robo3 roundabout guidance receptor 3 [Mus musculus (house mouse)]

Gene ID: 19649, updated on 2-Apr-2019

Summary



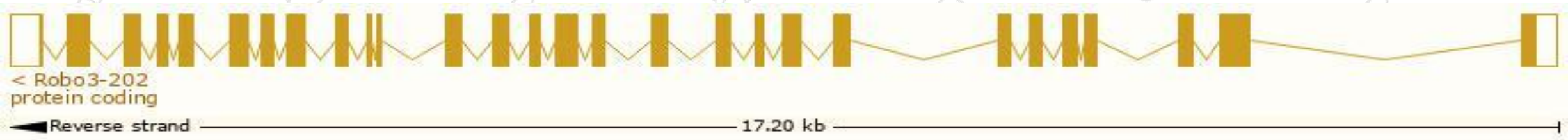
Official Symbol	Robo3 provided by MGI
Official Full Name	roundabout guidance receptor 3 provided by MGI
Primary source	MGI:MGI:1343102
See related	Ensembl:ENSMUSG000000032128
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Rbig1, Rig-1, Rig1, Robo3a, Robo3b
Expression	Biased expression in CNS E11.5 (RPKM 18.7), cortex adult (RPKM 8.7) and 5 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

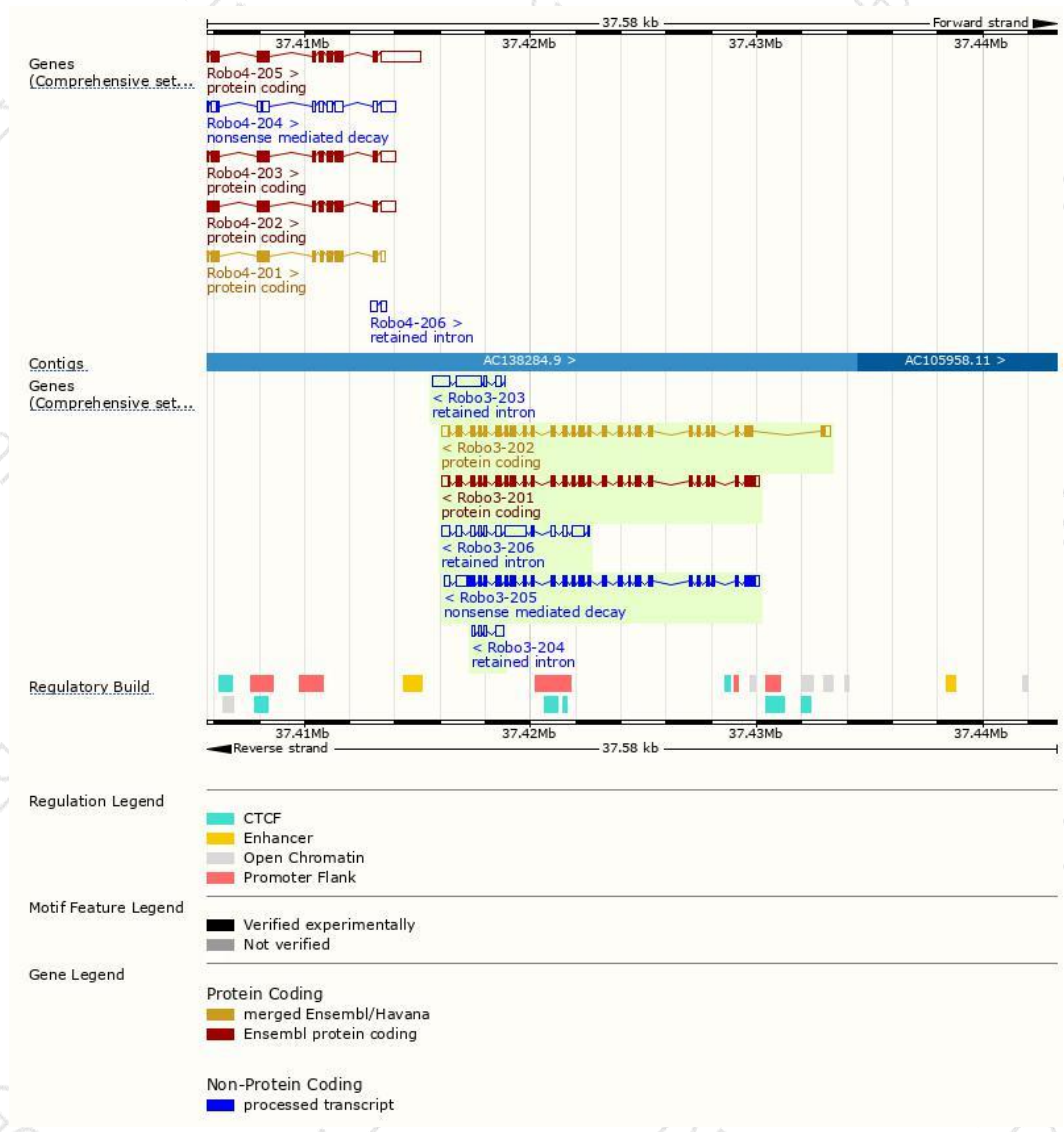
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Robo3-202	ENSMUST00000115038.2	4797	1402aa	Protein coding	CCDS52770	D3Z4M6	TSL:5 GENCODE basic APPRIS P2
Robo3-201	ENSMUST00000034643.11	4712	1380aa	Protein coding	-	E9QPQ1	TSL:5 GENCODE basic APPRIS ALT2
Robo3-205	ENSMUST00000170512.7	5000	1345aa	Nonsense mediated decay	-	A0A1L1SU85	TSL:1
Robo3-206	ENSMUST00000171467.7	3222	No protein	Retained intron	-	-	TSL:1
Robo3-203	ENSMUST00000167089.7	2226	No protein	Retained intron	-	-	TSL:2
Robo3-204	ENSMUST00000167216.1	668	No protein	Retained intron	-	-	TSL:5

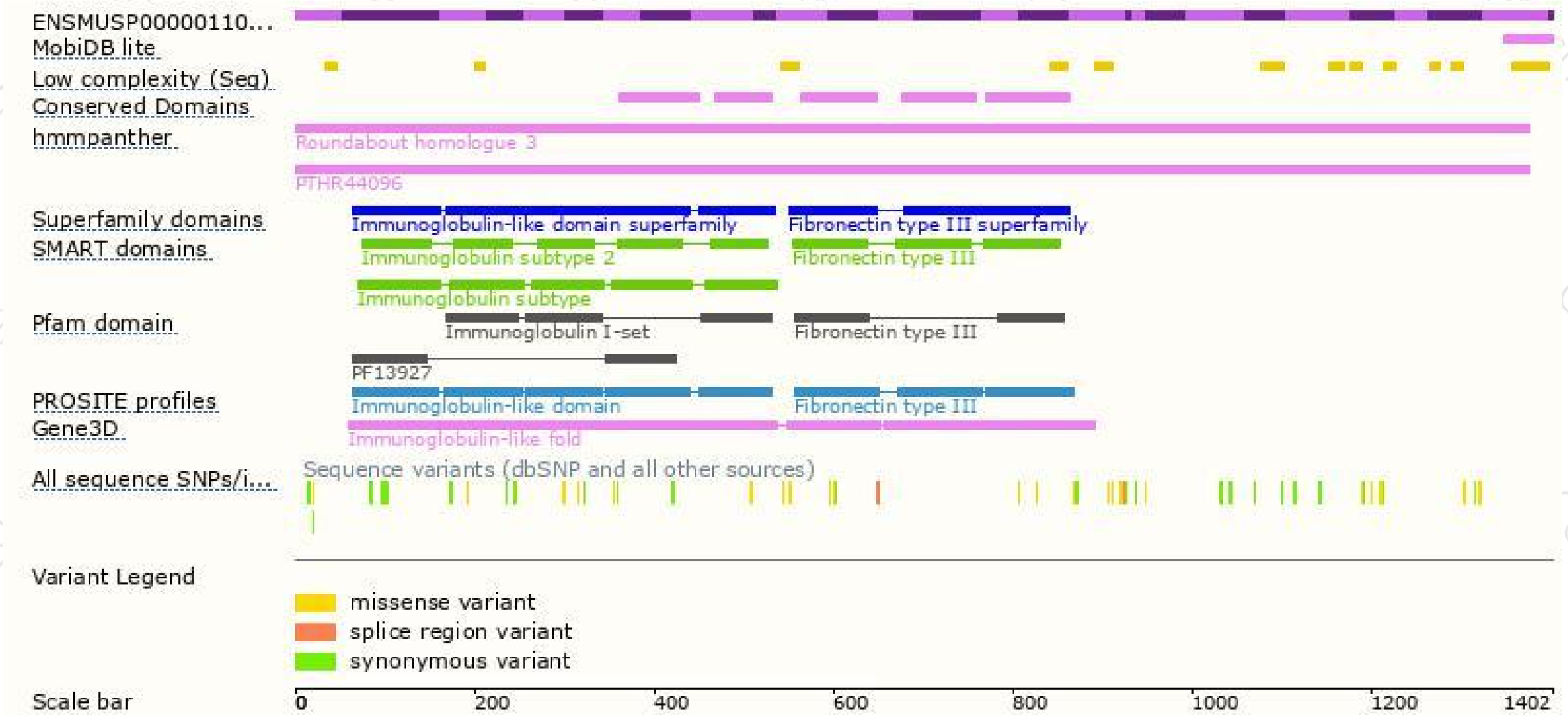
The strategy is based on the design of *Robo3-202* transcript,The transcription is shown below



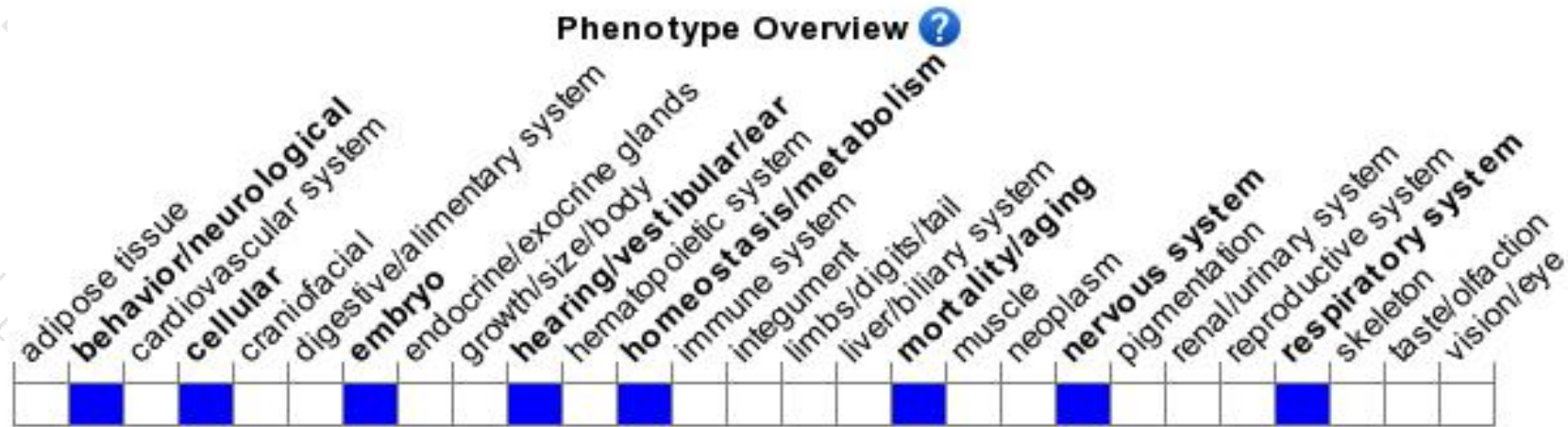
Genomic location distribution



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 mutants display perinatal lethality, abnormal commissural axon growth, and fragile floor plates.

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

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