

Trip6 Cas9-CKO Strategy

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Overview

Target Gene Name

- Trip6

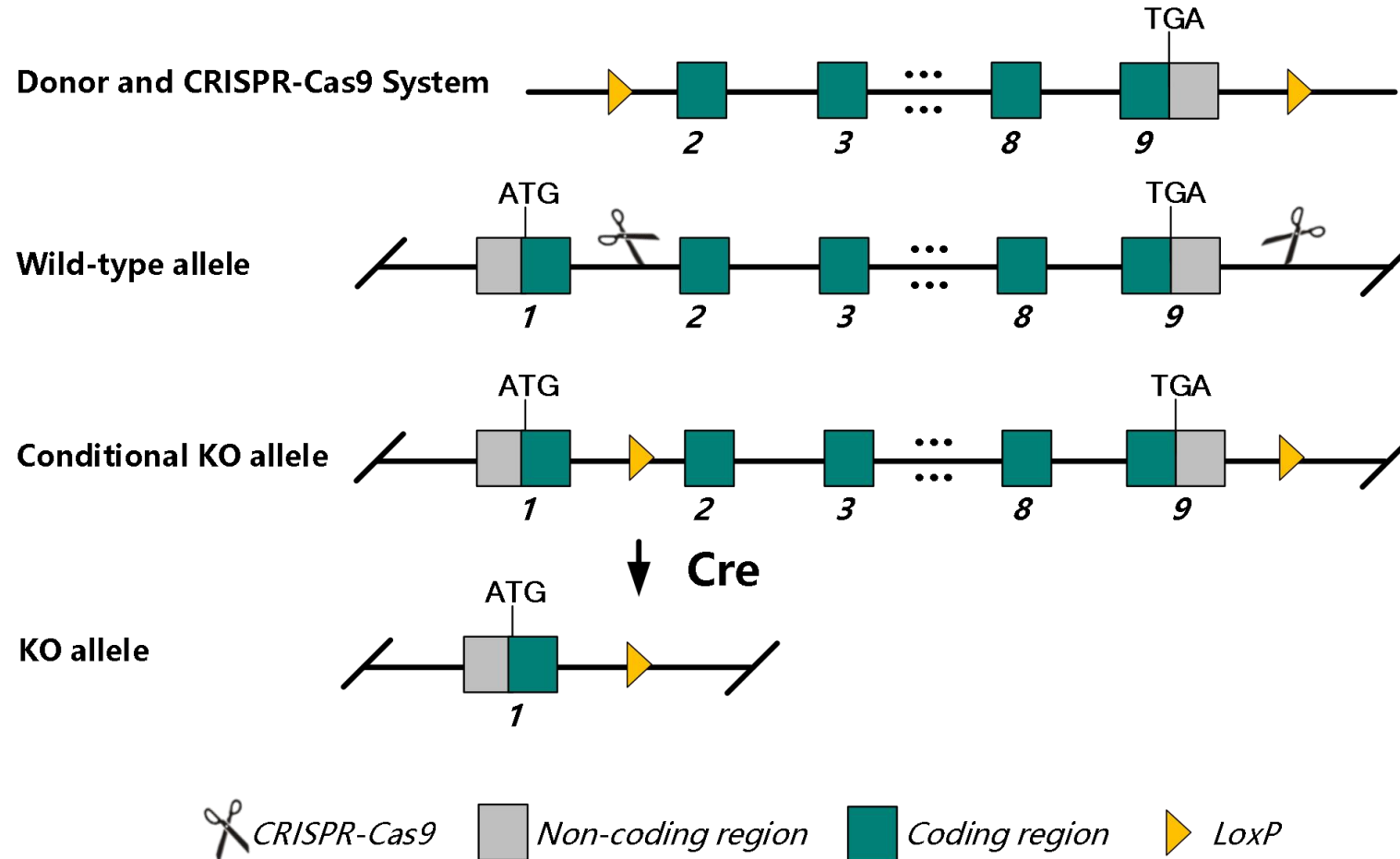
Project Type

- Cas9-CKO

Genetic Background

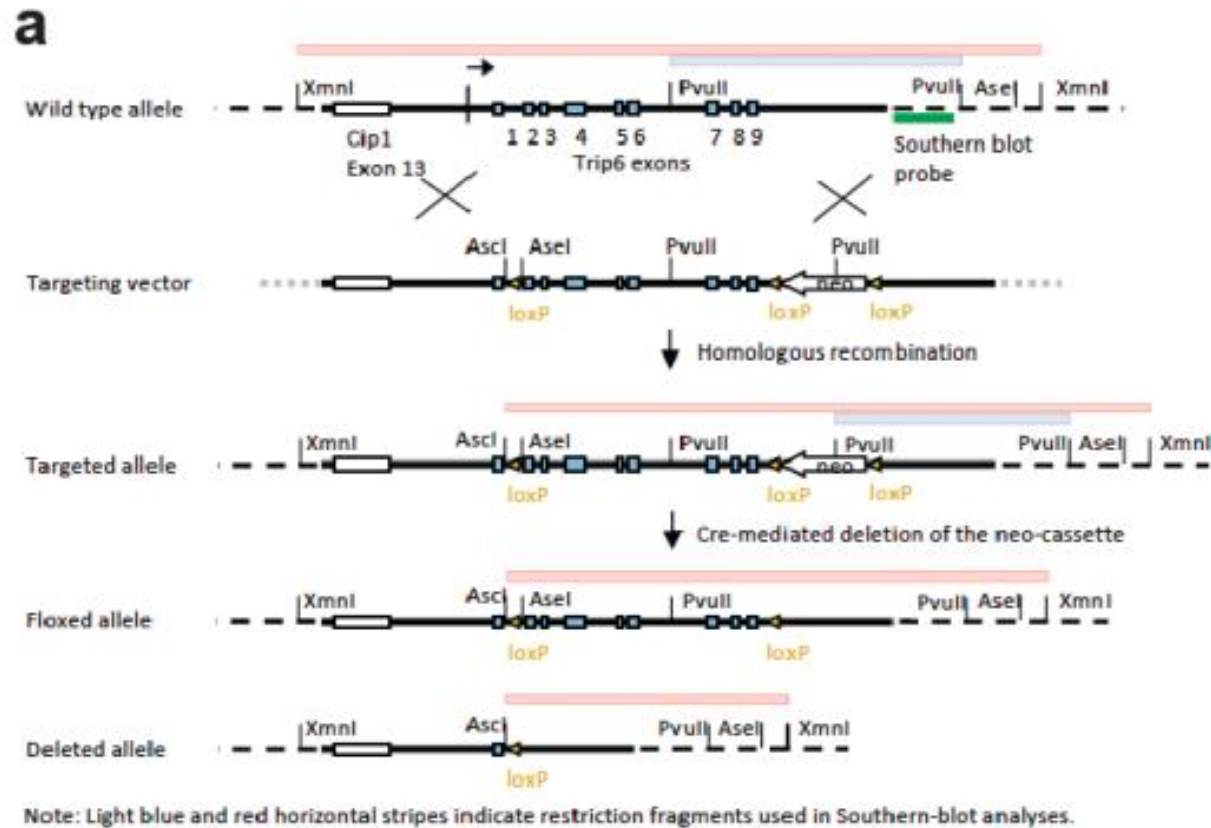
- C57BL/6JGpt

Strain Strategy



Schematic representation of CRISPR-Cas9 engineering used to edit the *Trip6* gene.

Reference^[1]



† Mutation details: A loxP site was inserted upstream of exon 2 and a loxP flanked neomycin resistance cassette was inserted downstream of exon 9. The neomycin resistance cassette was deleted via electroporation of ES cells with a cre expression plasmid leaving exons 2-9 floxed. (*J:312425*)

[1] Shukla S, et al., TRIP6 functions in brain ciliogenesis. Nat Commun. 2021 Oct 7;12(1):5887

Technical Information

- The *Trip6* gene has 4 transcripts. According to the structure of *Trip6* gene, exon2-9 of *Trip6*-201 (ENSMUST00000024119.11) transcript is recommended as the knockout region. The region contains most of coding sequences. Knocking out the region will result in disruption of protein function.
- In this project we use CRISPR-Cas9 technology to modify *Trip6* gene. The brief process is as follows: CRISPR-Cas9 system and Donor 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 on-target amplicon sequencing. A stable F1-generation mouse strain was obtained by mating positive F0-generation mice with C57BL/6JGpt mice and confirmation of the desired mutant allele was carried out by PCR and on-target amplicon sequencing.
- The flox mice will be knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

Gene Information

Trip6 thyroid hormone receptor interactor 6 [*Mus musculus* (house mouse)]

[Download Datasets](#)

Gene ID: 22051, updated on 18-May-2023

Summary

| | |
|---------------------------|---|
| Official Symbol | Trip6 provided by MGI |
| Official Full Name | thyroid hormone receptor interactor 6 provided by MGI |
| Primary source | MGI:MGI:1343458 |
| See related | Ensembl:ENSMUSG00000023348 AllianceGenome:MGI:1343458 |
| 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 |
| Summary | Predicted to enable interleukin-1 receptor binding activity and kinase binding activity. Acts upstream of or within chordate embryonic development. Predicted to be located in several cellular components, including cytoskeleton; cytosol; and nucleus. Predicted to be active in cytoplasm; focal adhesion; and stress fiber. Is expressed in several structures, including alimentary system; central nervous system; early conceptus; genitourinary system; and skin. Orthologous to human TRIP6 (thyroid hormone receptor interactor 6). [provided by Alliance of Genome Resources, Apr 2022] |
| Expression | Ubiquitous expression in limb E14.5 (RPKM 46.7), adrenal adult (RPKM 40.6) and 27 other tissues See more |
| Orthologs | human all |
| NEW | Try the new Gene table Try the new Transcript table |

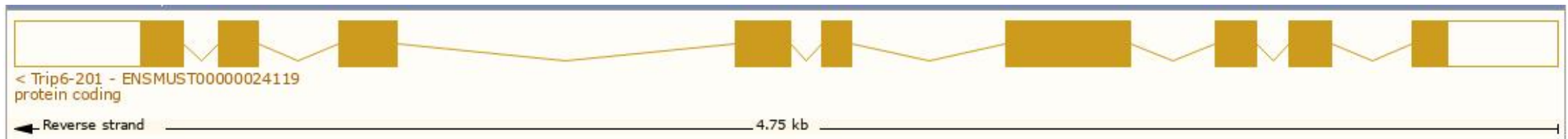
Source: <https://www.ncbi.nlm.nih.gov/>

Transcript Information

The gene has 4 transcripts, all transcripts are shown below:

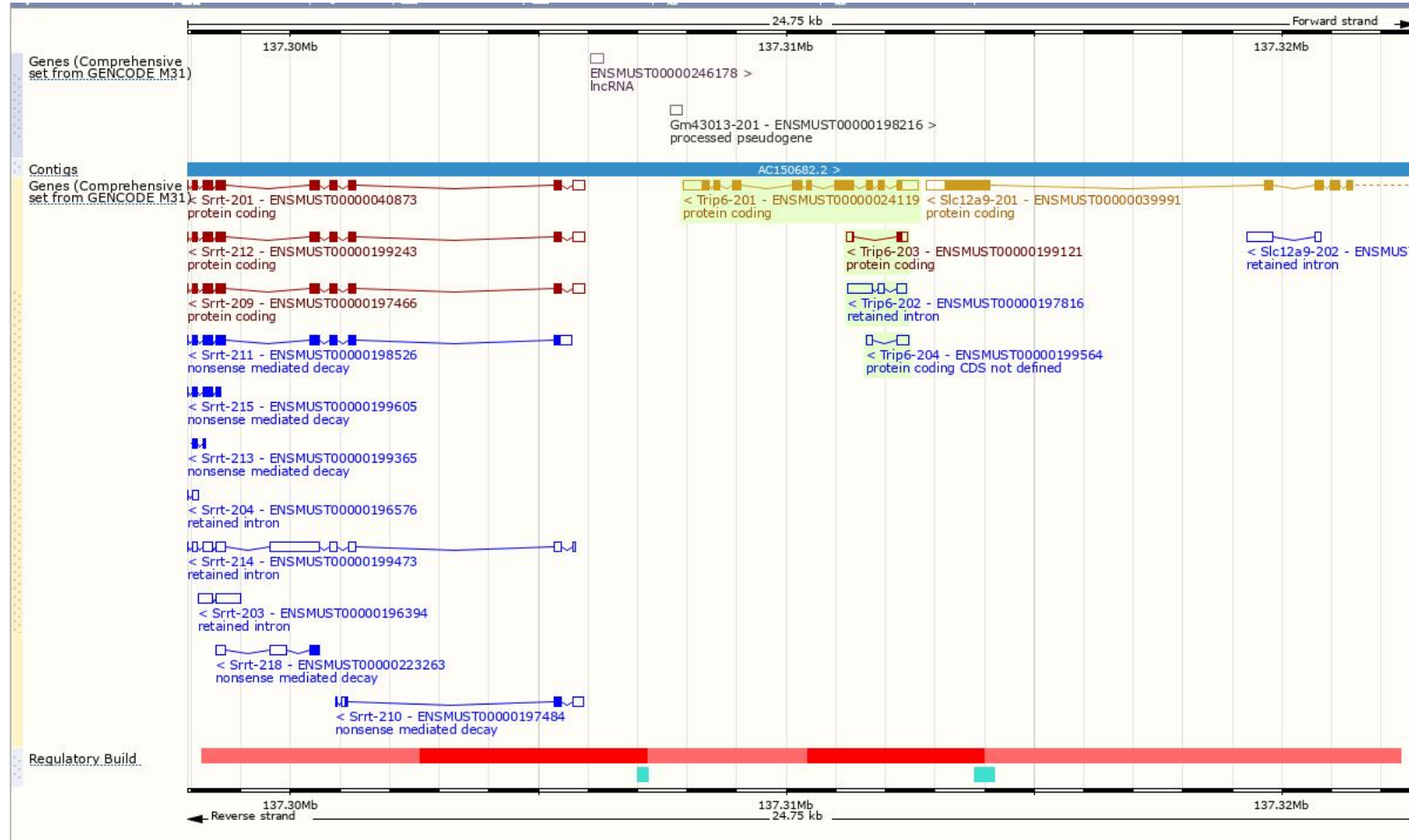
| Transcript ID | Name | bp | Protein | Biotype | CCDS | UniProt Match | Flags |
|--------------------------------------|-----------|------|-----------------------|--------------------------------|---------------------------|---|---|
| ENSMUST0000024119.11 | Trip6-201 | 2168 | 480aa | Protein coding | CCDS19765 | B2RS30 Q9Z1Y4 | Ensembl Canonical Gencode basic APPRIS P1 TSL:1 |
| ENSMUST00000199121.2 | Trip6-203 | 366 | 38aa | Protein coding | | A0A0G2JGT2 | Gencode basic TSL:3 |
| ENSMUST00000199564.2 | Trip6-204 | 364 | No protein | Protein coding CDS not defined | | - | TSL:2 |
| ENSMUST00000197816.2 | Trip6-202 | 828 | No protein | Retained intron | | - | TSL:2 |

The strategy is based on the design of *Trip6-201* transcript, the transcription is shown below:

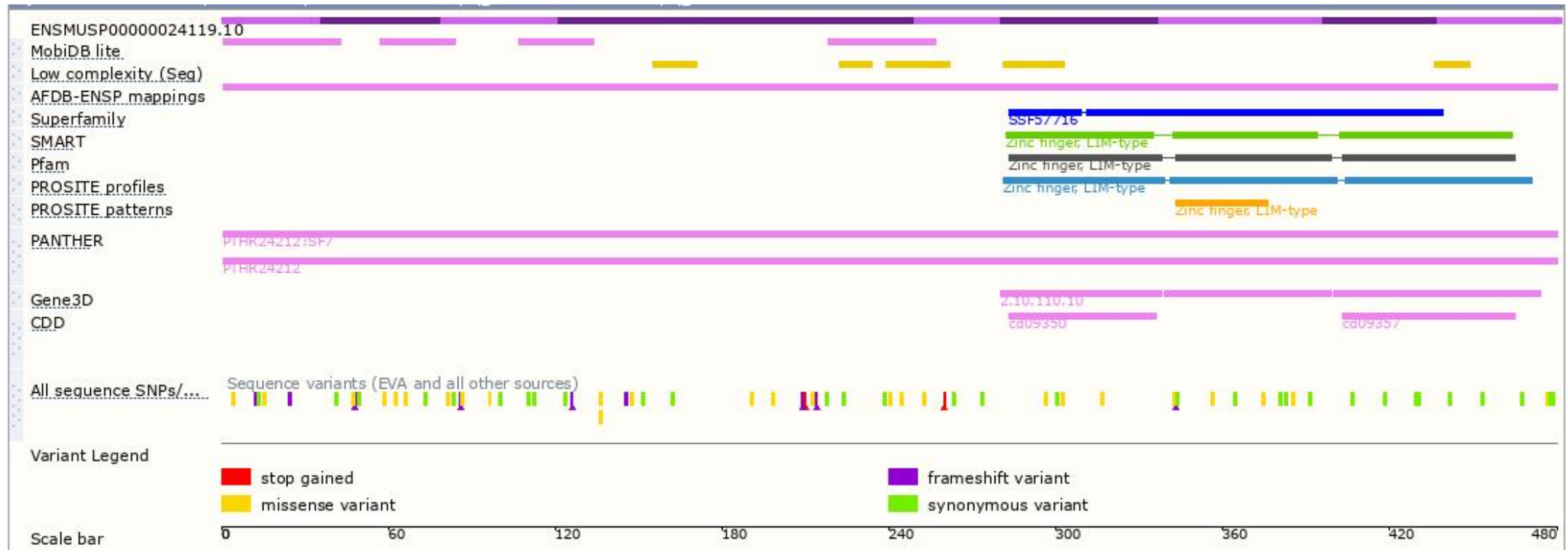


Source: <https://www.ensembl.org>

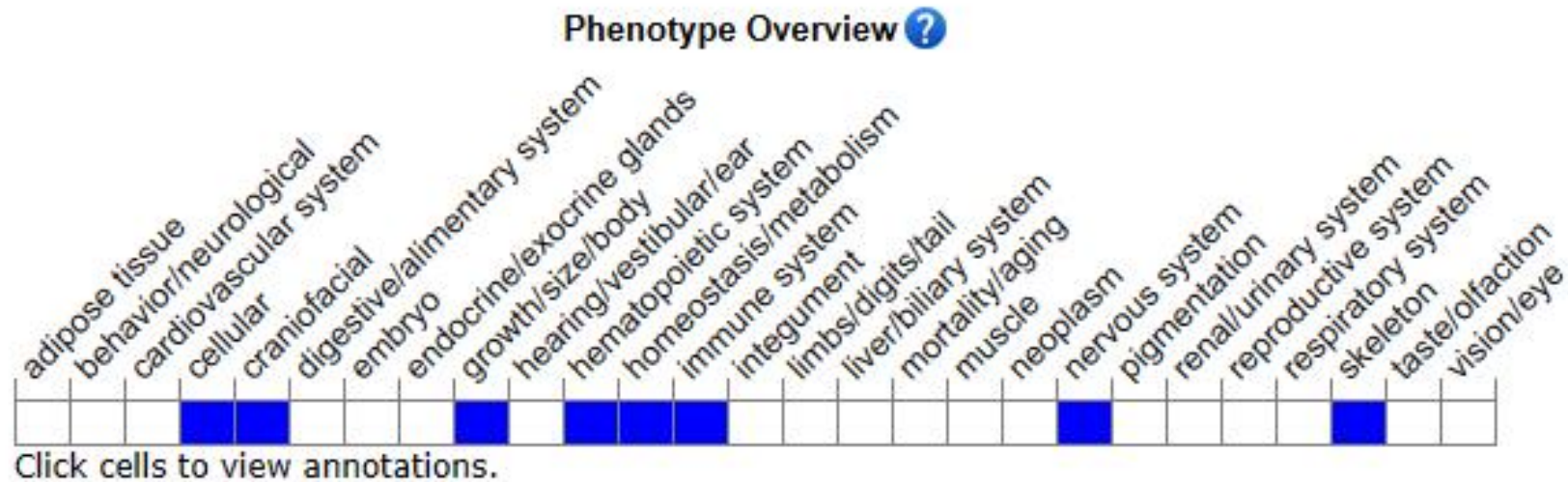
Genomic Information



Protein Information



Mouse Phenotype Information (MGI)



Mice homozygous for a null allele exhibit poorly differentiated brain ependymal and choroid plexus epithelial cells with fewer and shorter cilia and develop hydrocephalus.

- Phenotypes affected by the mutations of *Trip6* gene are marked in blue.

Important Information

- There is an unknown effect on the *Slc12a9-201* transcript and *Srrt* gene.
- The region between the two loxp sequence contains the *Gm43013-201* which will lead to an effect on the *Gm43013-201*.
- Most coding sequence of the *Trip6-203* transcript is existing, maybe a new protein will be formed.
- The length of the intron1-2 is less than 600bp. There is an unknown effect on the splicing of the *Trip6-201* transcript when the loxp sequence is inserted in the intron1-2.
- *Trip6* is located on Chr5. If the knockout mice are crossed with other mouse strains to obtain double homozygous mutant offspring, please avoid the situation that the second gene is 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.