

Rpgrip1l Cas9-CKO Strategy

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Reviewer:

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Project Overview

Project Name

Rpgrip1l

Project type

Cas9-CKO

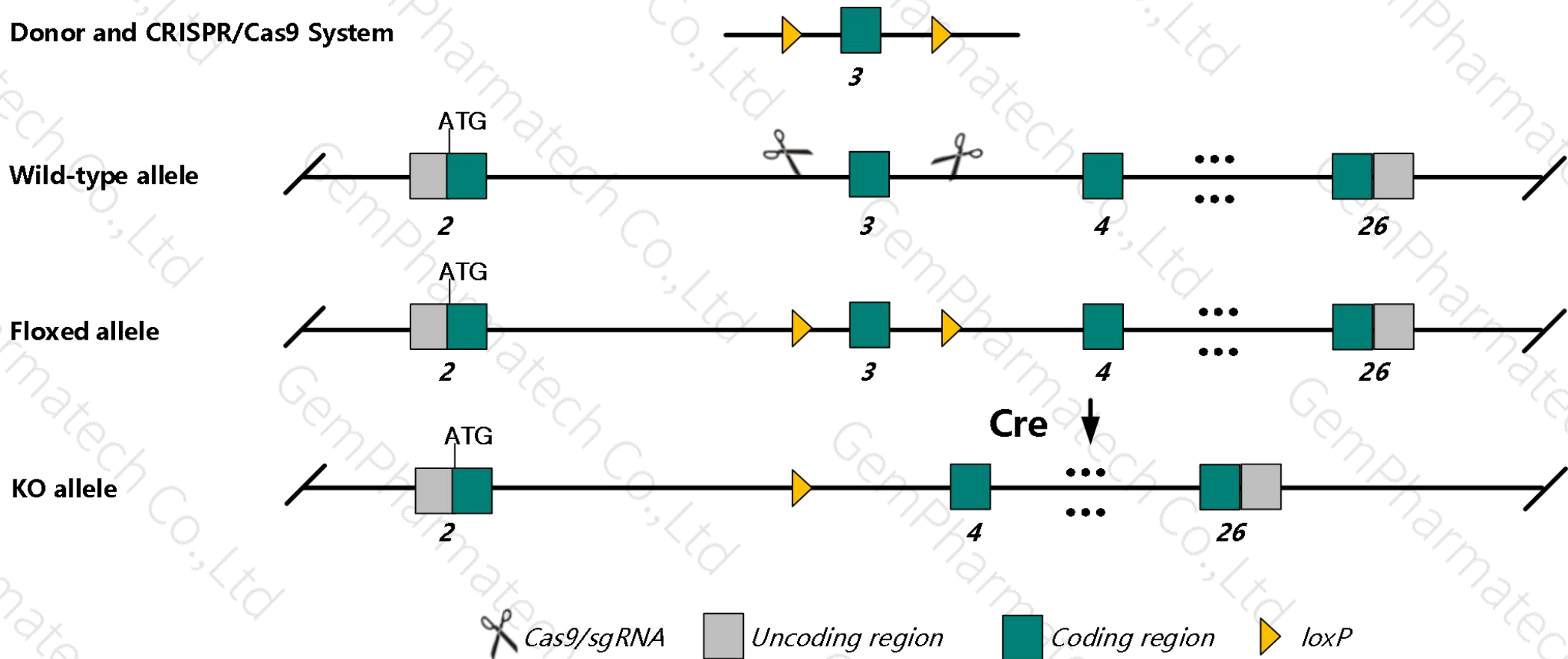
Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Rpgrip11* gene. The schematic diagram is as follows:

Donor and CRISPR/Cas9 System



- The *Rpgrip11* gene has 8 transcripts. According to the structure of *Rpgrip11* gene, exon3 of *Rpgrip11-201* (ENSMUST00000047783.13) transcript is recommended as the knockout region. The region contains 145bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Rpgrip11* 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 sequencing. A stable F1 generation mouse model was obtained by mating positive F0 generation mice with C57BL/6JGpt mice.
- 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.

- According to the existing MGI data, Mice homozygous for a knock-out allele do not survive after birth and show exencephaly, polydactyly, laterality defects, abnormal floor plate induction and neural tube patterning, cleft lip, micro- and anophthalmia, and variable cerebral, renal, and hepatic defects due to primary cilium dysfunction.
- Transcript 206 CDS 5' and 3' incomplete the influences is unknown; Transcript 202 CDS 3' incomplete the influences is unknown; Transcript 205 CDS 5' incomplete the influences is unknown.
- The *Rpgrip11* gene is located on the Chr8. 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Rpgrip1l Rpgrip1-like [*Mus musculus* (house mouse)]

Gene ID: 244585, updated on 13-Mar-2020

Summary

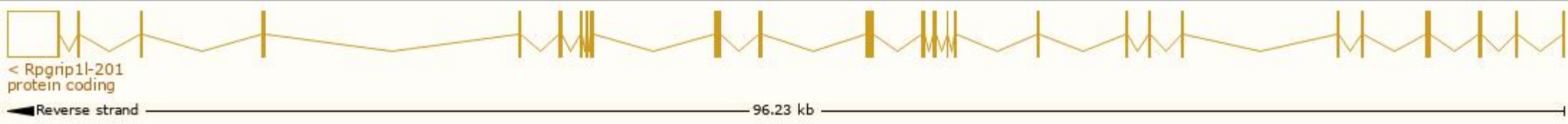
Official Symbol	Rpgrip1l provided by MGI
Official Full Name	Rpgrip1-like provided by MGI
Primary source	MGI:MGI:1920563
See related	Ensembl:ENSMUSG000000033282
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Ftm; Nphp8; 4931437C01; 1700047E16Rik
Expression	Broad expression in testis adult (RPKM 2.8), CNS E18 (RPKM 2.2) and 22 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

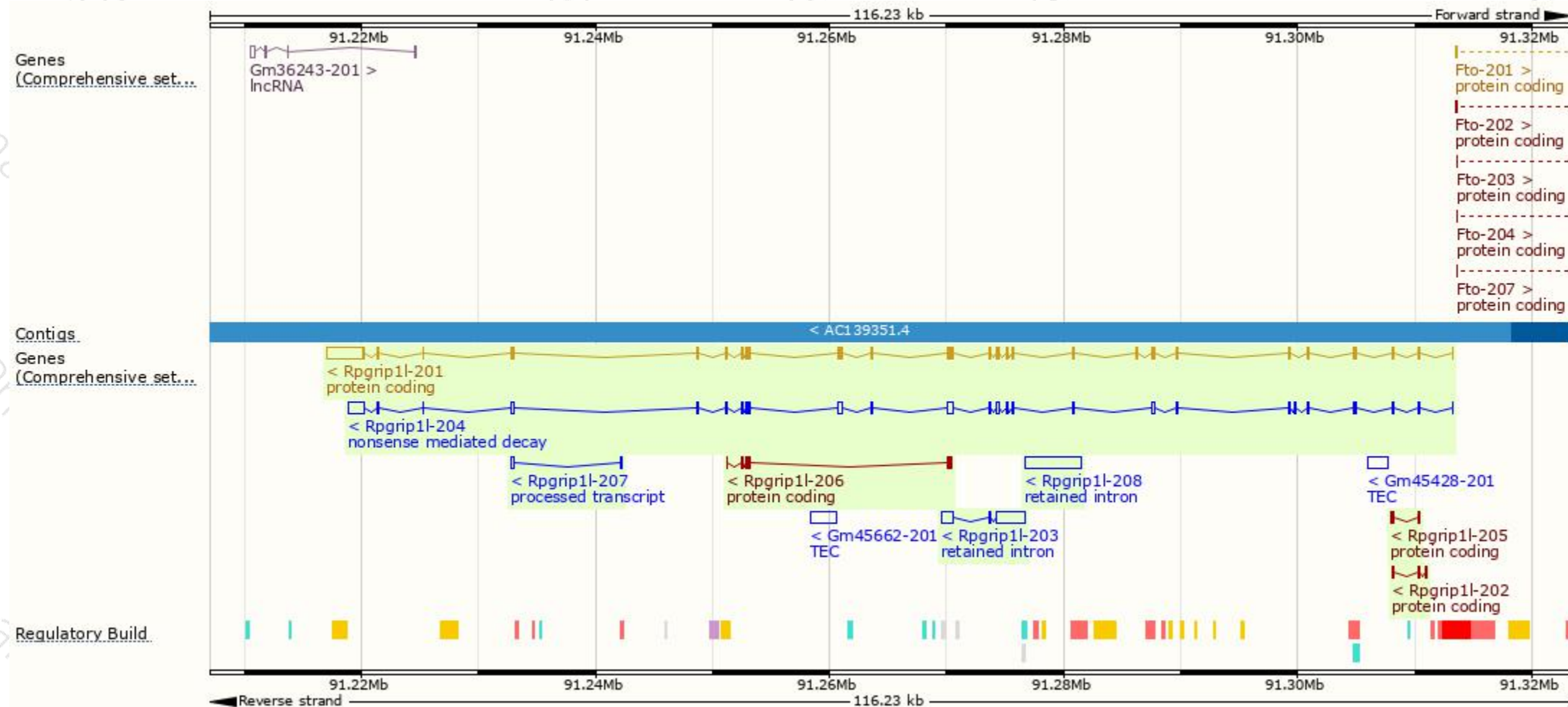
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Rpgrip1l-201	ENSMUST00000047783.13	7009	1264aa	Protein coding	CCDS22520	Q8CG73	TSL:1 Gencode basic APPRIS P1
Rpgrip1l-206	ENSMUST00000209616.1	759	253aa	Protein coding	-	A0A1B0GQY2	CDS 5' and 3' incomplete TSL:3
Rpgrip1l-202	ENSMUST00000132757.1	404	78aa	Protein coding	-	D3Z0V3	CDS 3' incomplete TSL:1
Rpgrip1l-205	ENSMUST00000209564.1	278	77aa	Protein coding	-	A0A1B0GS23	CDS 5' incomplete TSL:2
Rpgrip1l-204	ENSMUST00000139113.7	5046	211aa	Nonsense mediated decay	-	D6RIK9	TSL:1
Rpgrip1l-207	ENSMUST00000210538.1	330	No protein	Processed transcript	-	-	TSL:3
Rpgrip1l-208	ENSMUST00000211185.1	4805	No protein	Retained intron	-	-	TSL:NA
Rpgrip1l-203	ENSMUST00000136198.1	3511	No protein	Retained intron	-	-	TSL:1

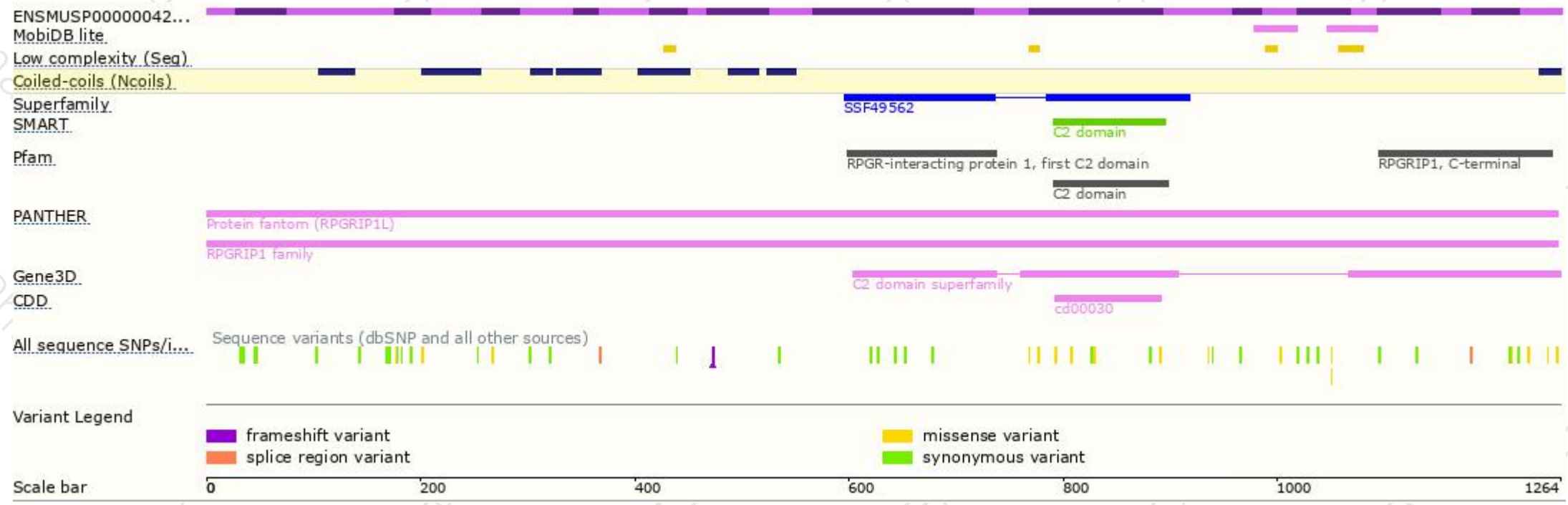
The strategy is based on the design of *Rpgrip1l-201* transcript,The transcription is shown below



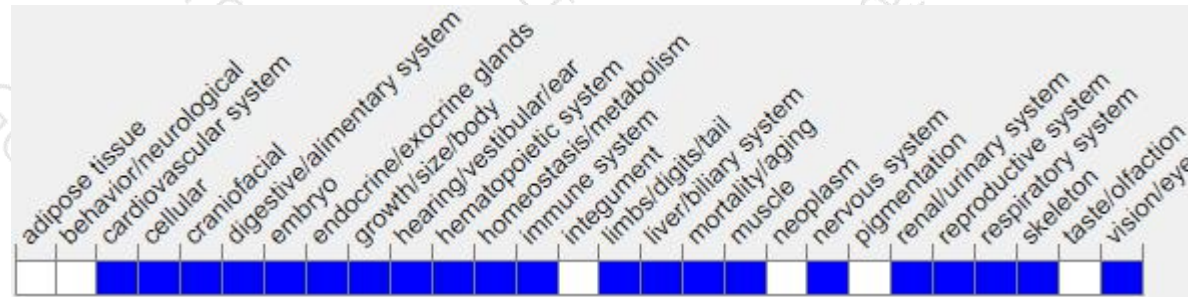
Genomic location distribution



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, Mice homozygous for a knock-out allele do not survive after birth and show exencephaly, polydactyly, laterality defects, abnormal floor plate induction and neural tube patterning, cleft lip, micro- and anophthalmia, and variable cerebral, renal, and hepatic defects due to primary cilium dysfunction.

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

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