Gpc1 Cas9-KO Strategy

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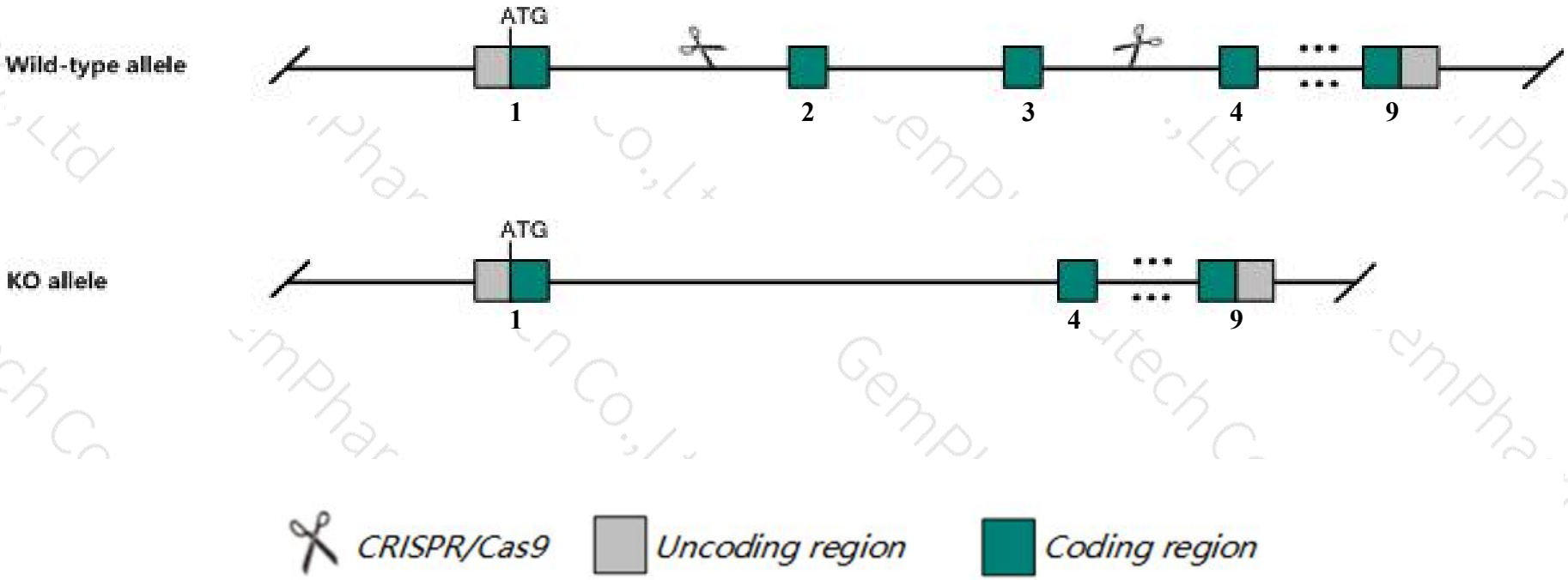
Project Overview

Project Name	***Gpc1***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Gpc1* gene. The schematic diagram is as follows:



Technical routes

➢ The *Gpc1* gene has 5 transcripts. According to the structure of *Gpc1* gene, exon2-exon3 of *Gpc1-201* (ENSMUST00000045970.7) transcript is recommended as the knockout region.The region contains 548bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Gpc1* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

- According to the existing MGI data,Homozygous mutant mice exhibit a reduced brain size with mild cerebellar patterning defects, but are otherwise viable and fertile.
- Transcript *Gpc1*-202&204 may not be affected.
- The knockout region is near to the N-terminal of *Gm29480* gene,this strategy may influence the regulatory function of the N-terminal of *Gm29480* gene.
- The *Gpc1* gene is located on the Chr1. 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）

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Gpc1 glypican 1 [*Mus musculus* (house mouse)]

Gene ID: 14733, updated on 24-Sep-2019

Summary

Official Symbol	Gpc1 provided by MGI
Official Full Name	glypican 1 provided by MGI
Primary source	MGI:MGI:1194891
See related	Ensembl:ENSMUSG00000034220
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	AI462976
Expression	Broad expression in heart adult (RPKM 71.0), ovary adult (RPKM 35.4) and 20 other tissues See more
Orthologs	human all

Genomic context

Location: 1; 1 D

See Gpc1 in Genome Data Viewer

Exon count: 11

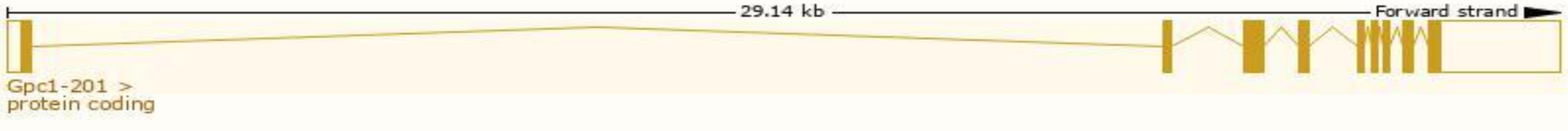
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	1	NC_000067.6 (92831645..92860211)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	1	NC_000067.5 (94728263..94756773)

Transcript information（Ensembl）

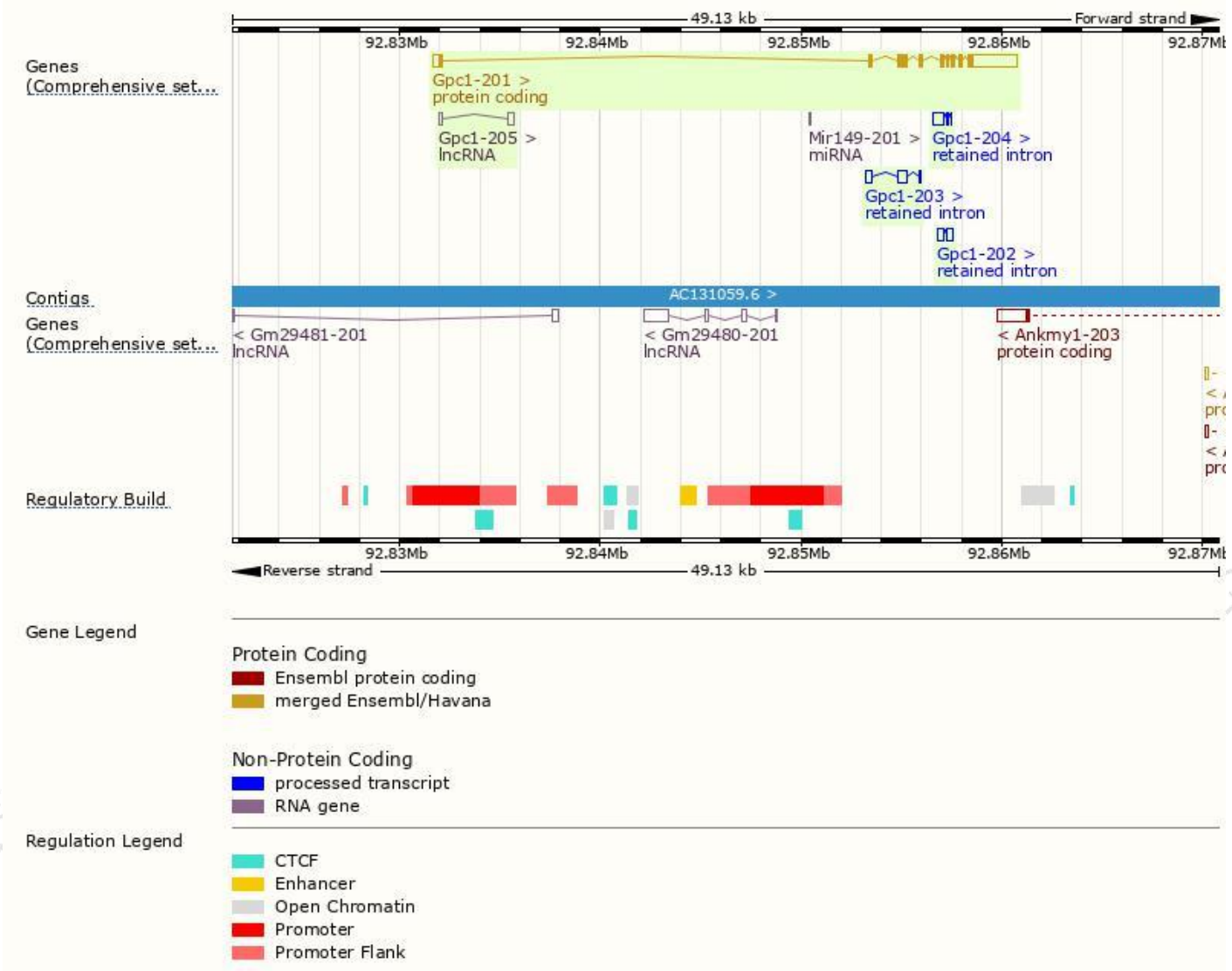
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Gpc1-201	ENSMUST00000045970.7	4176	557aa	Protein coding	CCDS15177	Q3U379 Q9QZF2	TSL:1 GENCODE basic APPRIS P1
Gpc1-203	ENSMUST00000190586.1	759	No protein	Retained intron	-	-	TSL:2
Gpc1-204	ENSMUST00000190677.1	727	No protein	Retained intron	-	-	TSL:3
Gpc1-202	ENSMUST00000190215.1	698	No protein	Retained intron	-	-	TSL:3
Gpc1-205	ENSMUST00000191373.1	434	No protein	lncRNA	-	-	TSL:3

The strategy is based on the design of *Gpc1-201* transcript,The transcription is shown below

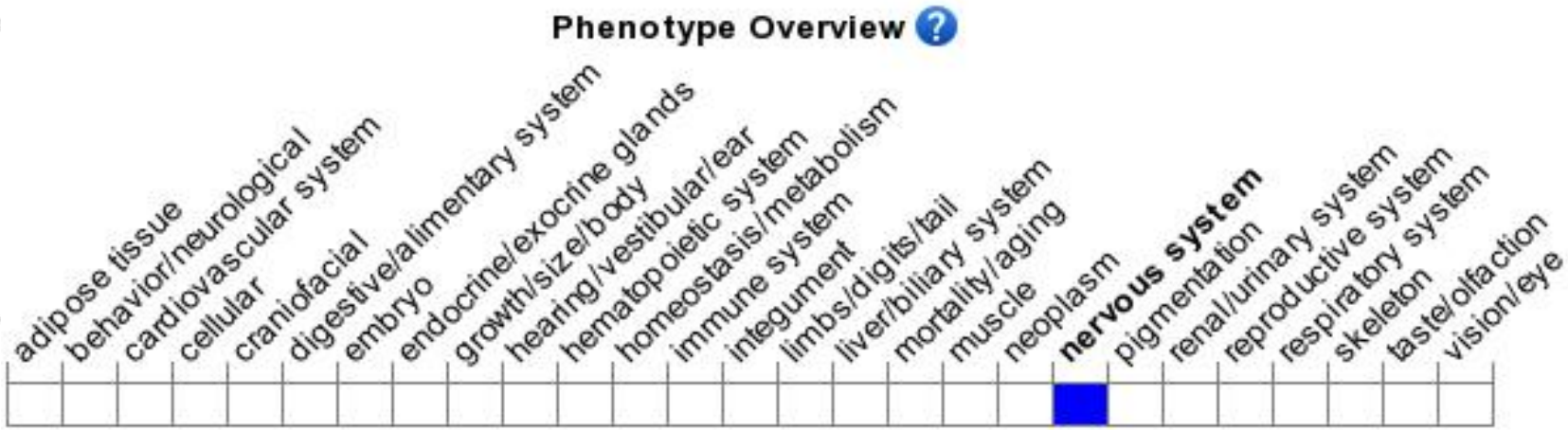


Genomic location distribution



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/).

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

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