Gipc1 Cas9-CKO Strategy

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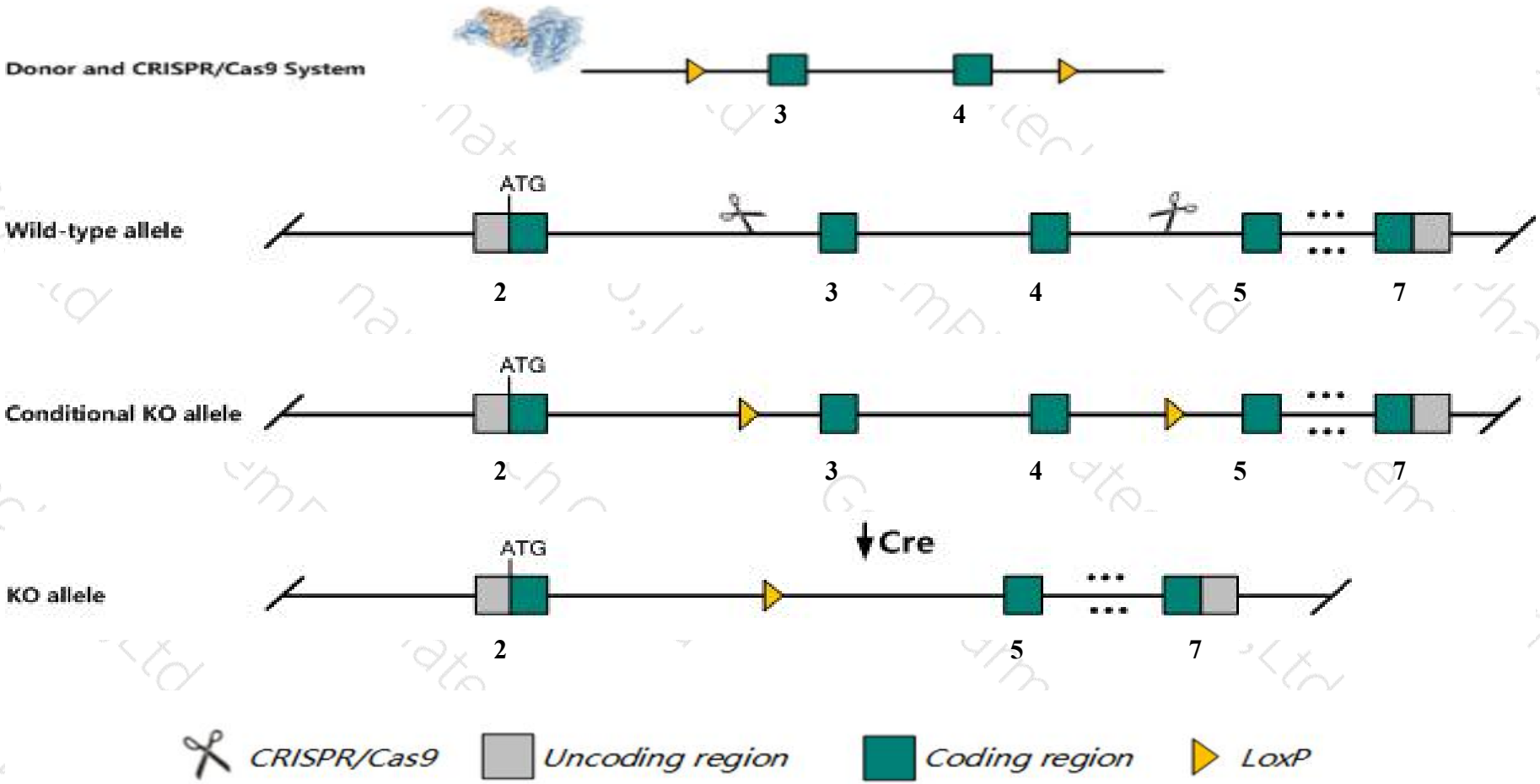
Project Overview

Project Name	***Gipc1***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Gipc1* gene. The schematic diagram is as follows:



Technical routes

- The *Gipc1* gene has 3 transcripts. According to the structure of *Gipc1* gene, exon3-exon4 of *Gipc1-201* (ENSMUST00000019577.9) transcript is recommended as the knockout region.The region contains 367bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Gipc1* gene. The brief process is as follows:gRNA was transcribed in vitro, donor was constructed.Cas9, gRNA 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.

Notice

➢ According to the existing MGI data,Mice homozygous for a gene trapped allele display reduced body and heart weight, selective arteriogenesis and arterial endothelial cell defects, and impaired cardiac performance and wound healing. Mice homozygous for a knock-out allele exhibit low molecular weight proteinuria.

➢CDS 3' of transcripts 203 is incomplete , it maybe unaffected.

➢ The *Gipc1* 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 gene transcription and translation processes, all risks cannot be predicted under existing information.

Gene information （NCBI）

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Gipc1 GIPC PDZ domain containing family, member 1 [Mus musculus (house mouse)]

Gene ID: 67903, updated on 8-Feb-2019

Summary

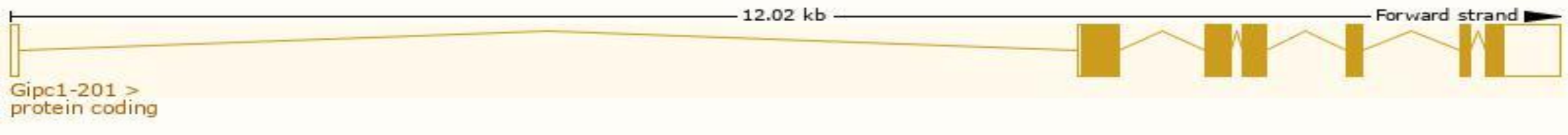
Official Symbol	Gipc1 provided by MGI
Official Full Name	GIPC PDZ domain containing family, member 1 provided by MGI
Primary source	MGI:MGI:1926252
See related	Ensembl:ENSMUSG00000019433
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	GIPC, Glut1CIP, Rgs19ip1, Semcap1, TIP-2, TaxIP2
Expression	Ubiquitous expression in stomach adult (RPKM 41.0), colon adult (RPKM 40.6) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

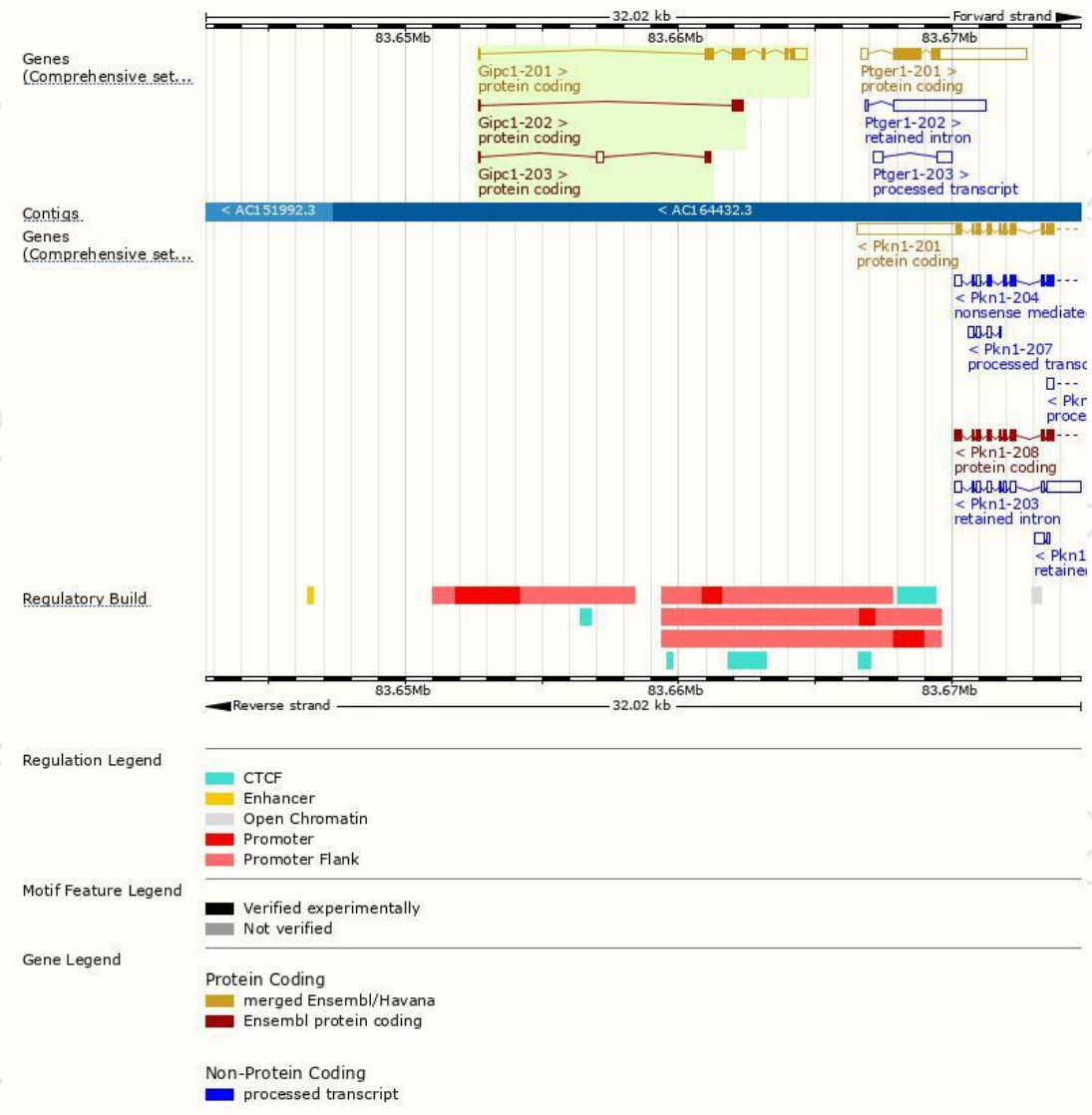
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Gipc1-201	ENSMUST00000019577.9	1522	333aa	Protein coding	CCDS22457	Q9Z0G0	TSL:1 GENCODE basic APPRIS P1
Gipc1-203	ENSMUST00000212463.1	476	65aa	Protein coding	-	A0A1D5RML2	CDS 3' incomplete TSL:5
Gipc1-202	ENSMUST00000211985.1	370	105aa	Protein coding	-	A0A1D5RMN2	CDS 3' incomplete TSL:3

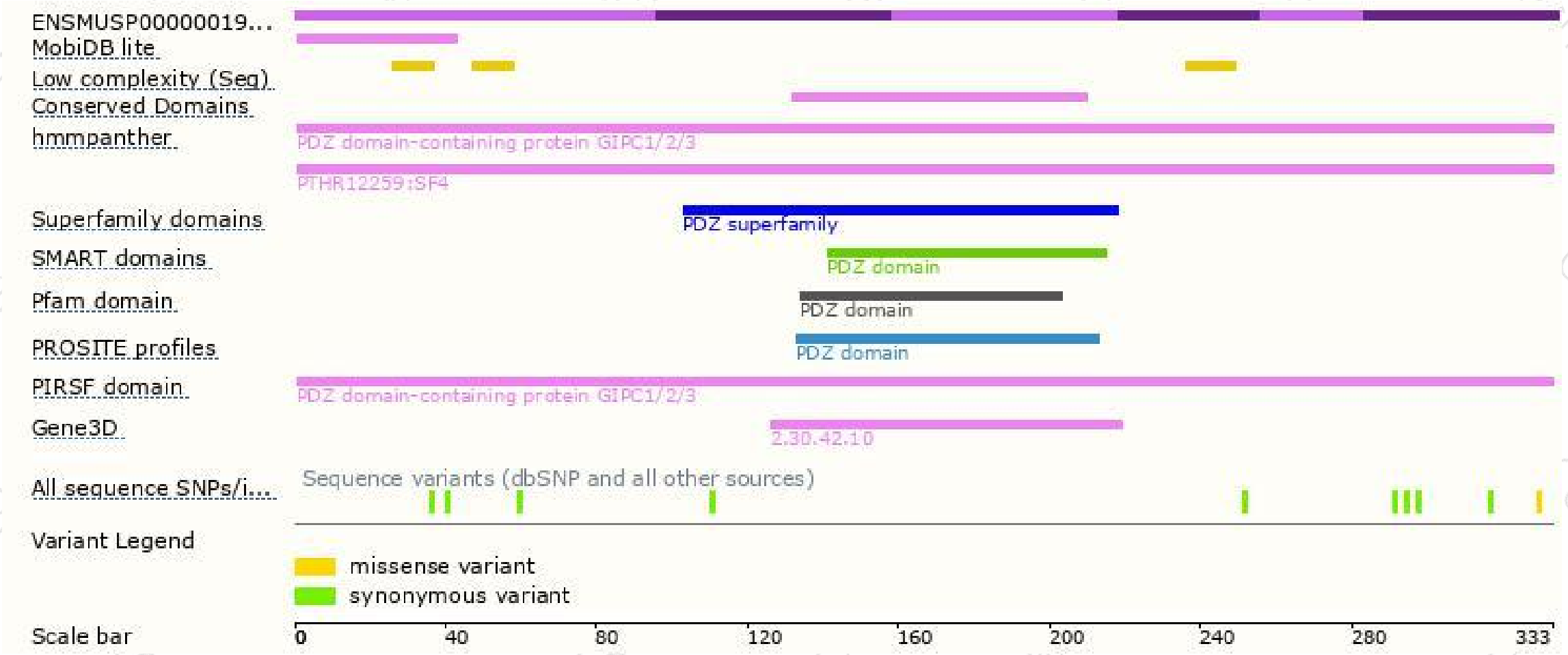
The strategy is based on the design of *Gipc1-201* transcript,The transcription is shown below



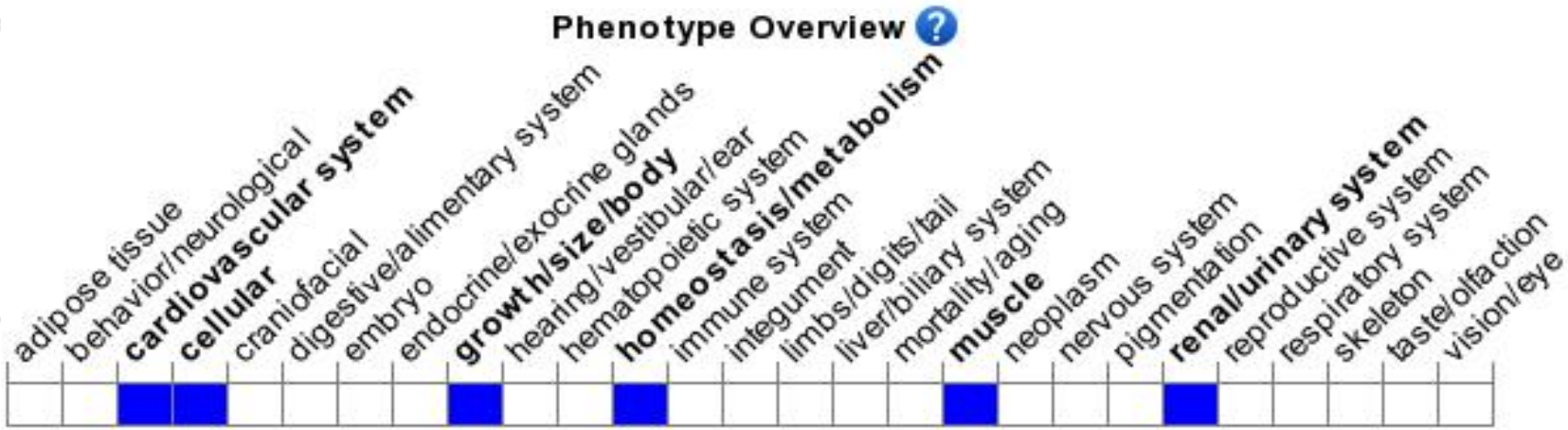
Genomic location distribution



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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