

Dglucy Cas9-CKO Strategy

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Project Overview

Project Name

Dglucy

Project type

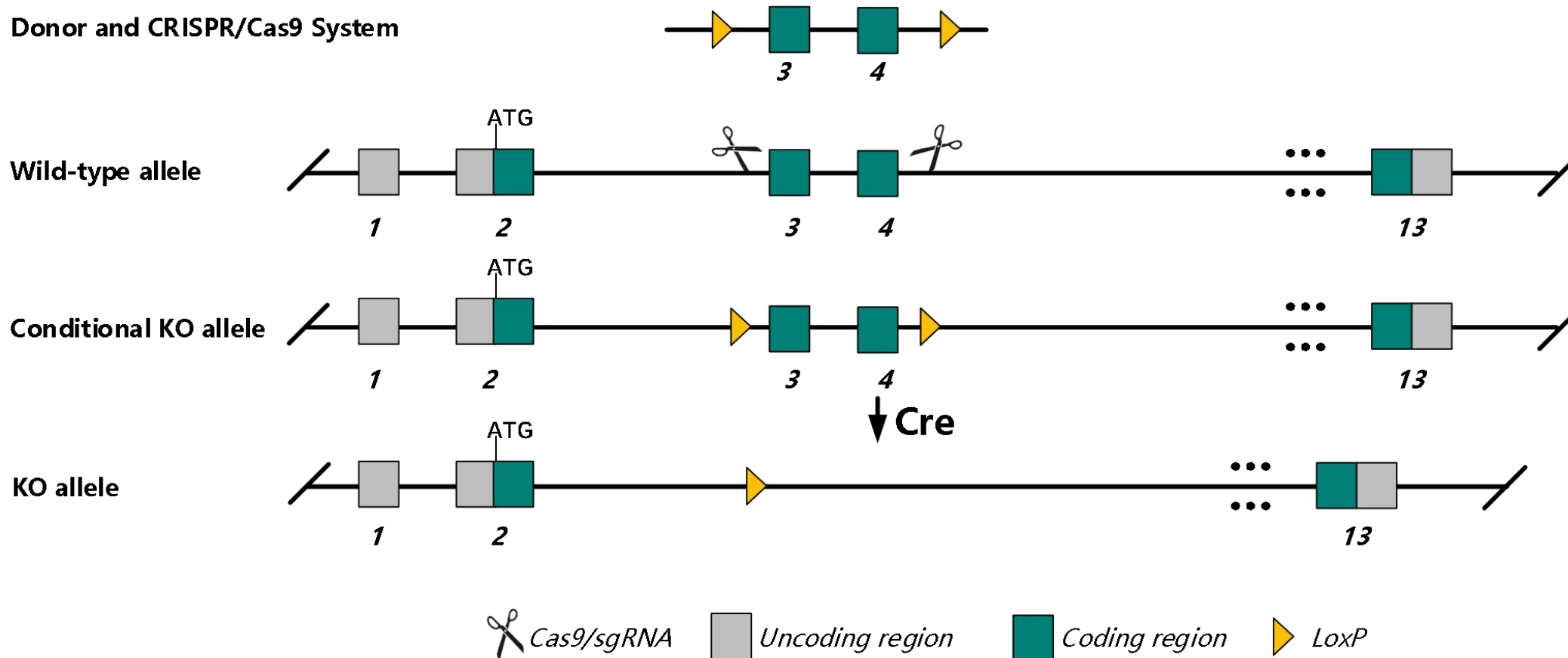
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



Technical routes

- The *Dglucy* gene has 9 transcripts. According to the structure of *Dglucy* gene, exon3-exon4 of *Dglucy*-201 (ENSMUST00000069782.10) transcript is recommended as the knockout region. The region contains 350bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Dglucy* 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.

Notice

- According to the existing MGI data, Mice homozygous for a knock-out allele exhibit elevated D-glutamate levels in the heart.
- The *Dglucy* gene is located on the Chr12. 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)

Dglucy D-glutamate cyclase [*Mus musculus* (house mouse)]

Gene ID: 217830, updated on 13-Mar-2020

Summary

Official Symbol Dglucy provided by [MGI](#)

Official Full Name D-glutamate cyclase provided by [MGI](#)

Primary source [MGI:MGI:2444813](#)

See related [Ensembl:ENSMUSG000000021185](#)

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 9030617O03Rik

Expression Broad expression in kidney adult (RPKM 29.1), heart adult (RPKM 15.1) and 18 other tissues [See more](#)

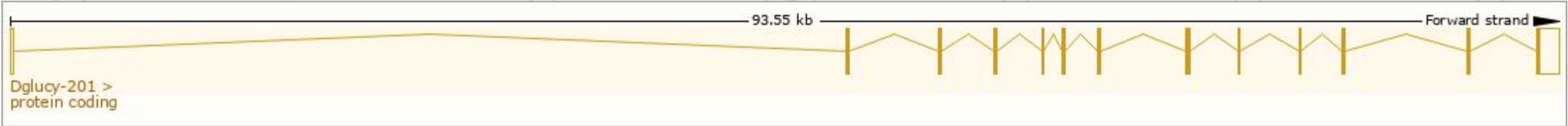
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

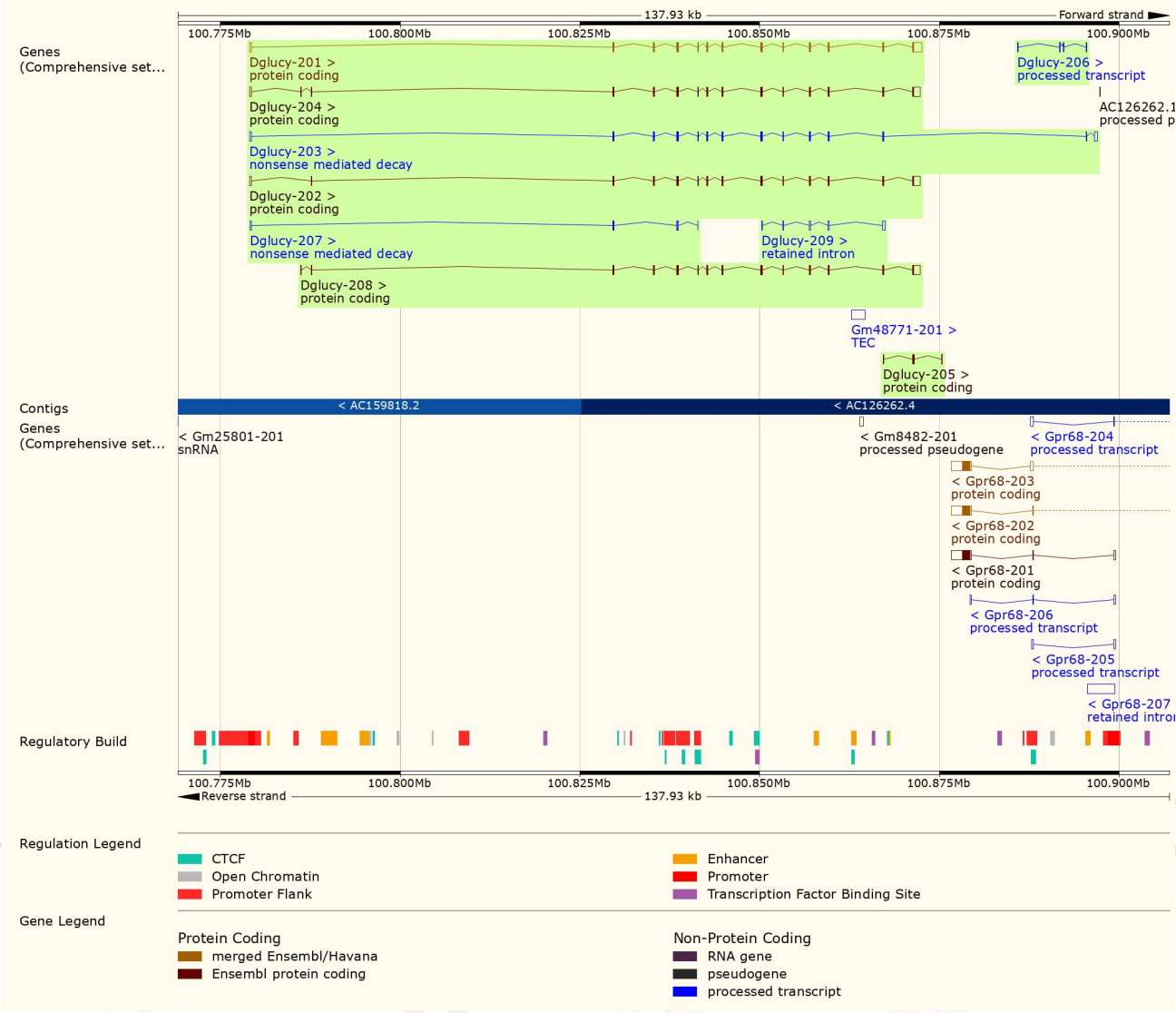
The gene has 9 transcripts,all transcripts are shown below:

Name ▲	Transcript ID ▲	bp ▲	Protein ▲	Biotype ▲	CCDS ▲	UniProt ▲	Flags ▲
Dglucy-201	ENSMUST00000069782.10	3295	617aa	Protein coding	CCDS26108	Q8BH86	TSL:1 GENCODE basic APPRIS P2
Dglucy-202	ENSMUST00000110069.7	3058	617aa	Protein coding	CCDS26108	Q8BH86	TSL:1 GENCODE basic APPRIS P2
Dglucy-203	ENSMUST00000110070.7	2424	570aa	Nonsense mediated decay	-	Q8BH86	TSL:1
Dglucy-204	ENSMUST00000110073.7	3184	647aa	Protein coding	-	E9QMK9	TSL:5 GENCODE basic APPRIS ALT2
Dglucy-205	ENSMUST00000124957.1	423	72aa	Protein coding	-	F7CUW7	CDS 5' incomplete TSL:3
Dglucy-206	ENSMUST00000133970.1	383	No protein	Processed transcript	-	-	TSL:5
Dglucy-207	ENSMUST00000154603.7	514	50aa	Nonsense mediated decay	-	D6RI81	TSL:5
Dglucy-208	ENSMUST00000167322.1	2941	617aa	Protein coding	CCDS26108	Q8BH86	TSL:1 GENCODE basic APPRIS P2
Dglucy-209	ENSMUST00000222484.1	724	No protein	Retained intron	-	-	TSL:2

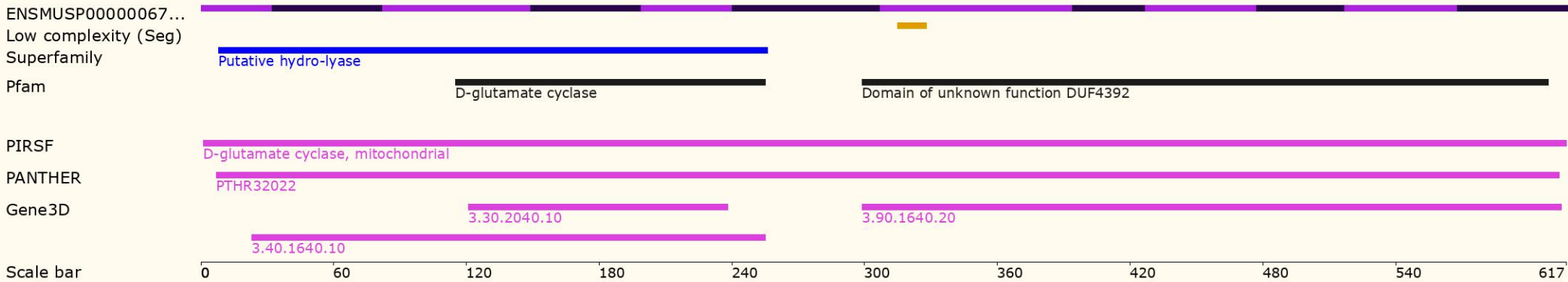
The strategy is based on the design of *Dglucy-201* transcript,The transcription is shown below



Genomic location distribution

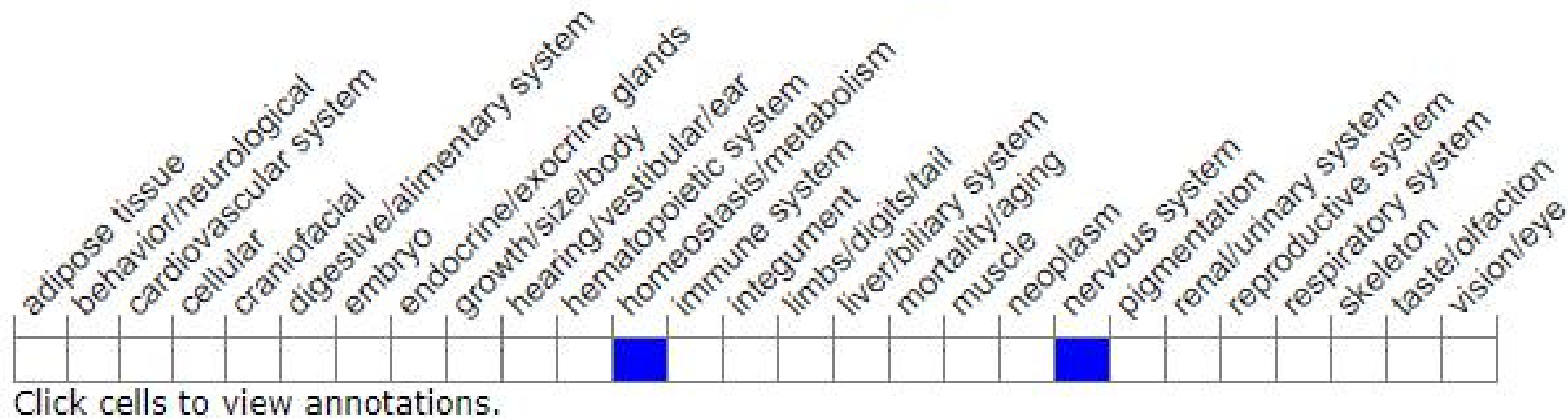


Protein domain



Mouse phenotype description(MGI)

Phenotype Overview ?



Phenotypes affected by the gene are marked in blue. Data quoted from MGI database(<http://www.informatics.jax.org/>).

Mice homozygous for a knock-out allele exhibit elevated D-glutamate levels in the heart.

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

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