

Gatad2a Cas9-CKO Strategy

Designer: Xueting Zhang

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Project Overview

Project Name

Gatad2a

Project type

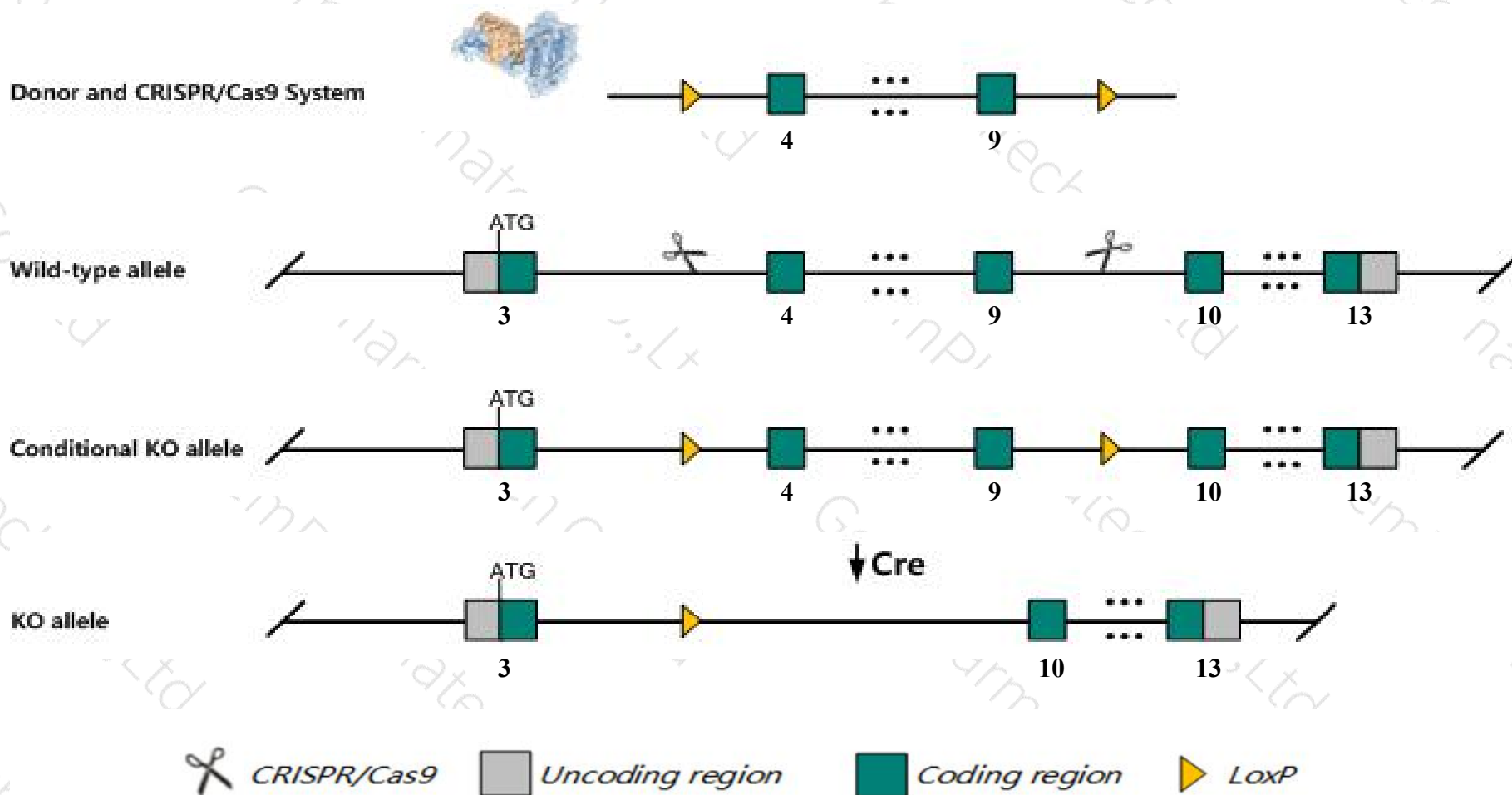
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Gata2a* gene. The schematic diagram is as follows:



- The *Gatad2a* gene has 6 transcripts. According to the structure of *Gatad2a* gene, exon4-exon9 of *Gatad2a-201* (ENSMUST00000065169.11) transcript is recommended as the knockout region. The region contains 935bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Gatad2a* 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 die around E9.5 displaying variable developmental defects, including malformed or unfused neural folds, failure of closure of anterior neuropore, missing or excessively large blood vessels in the yolk sac, abnormal embryo turning, and embryonic growth arrest.
- The *Gatad2a* 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)

Gatad2a GATA zinc finger domain containing 2A [Mus musculus (house mouse)]

Gene ID: 234366, updated on 19-Mar-2019

Summary



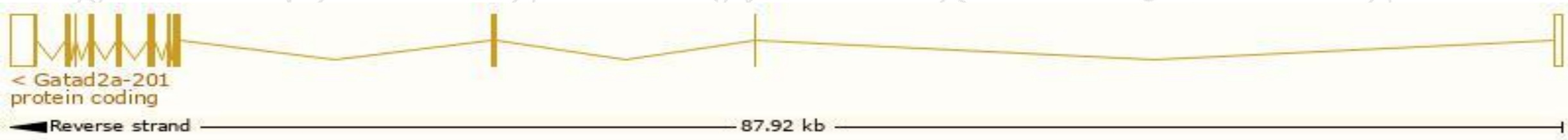
Official Symbol	Gatad2a provided by MGI
Official Full Name	GATA zinc finger domain containing 2A provided by MGI
Primary source	MGI:MGI:2384585
See related	Ensembl:ENSMUSG000000036180
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1110066C11Rik, BC031407, C80248
Expression	Ubiquitous expression in adrenal adult (RPKM 31.4), ovary adult (RPKM 26.7) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

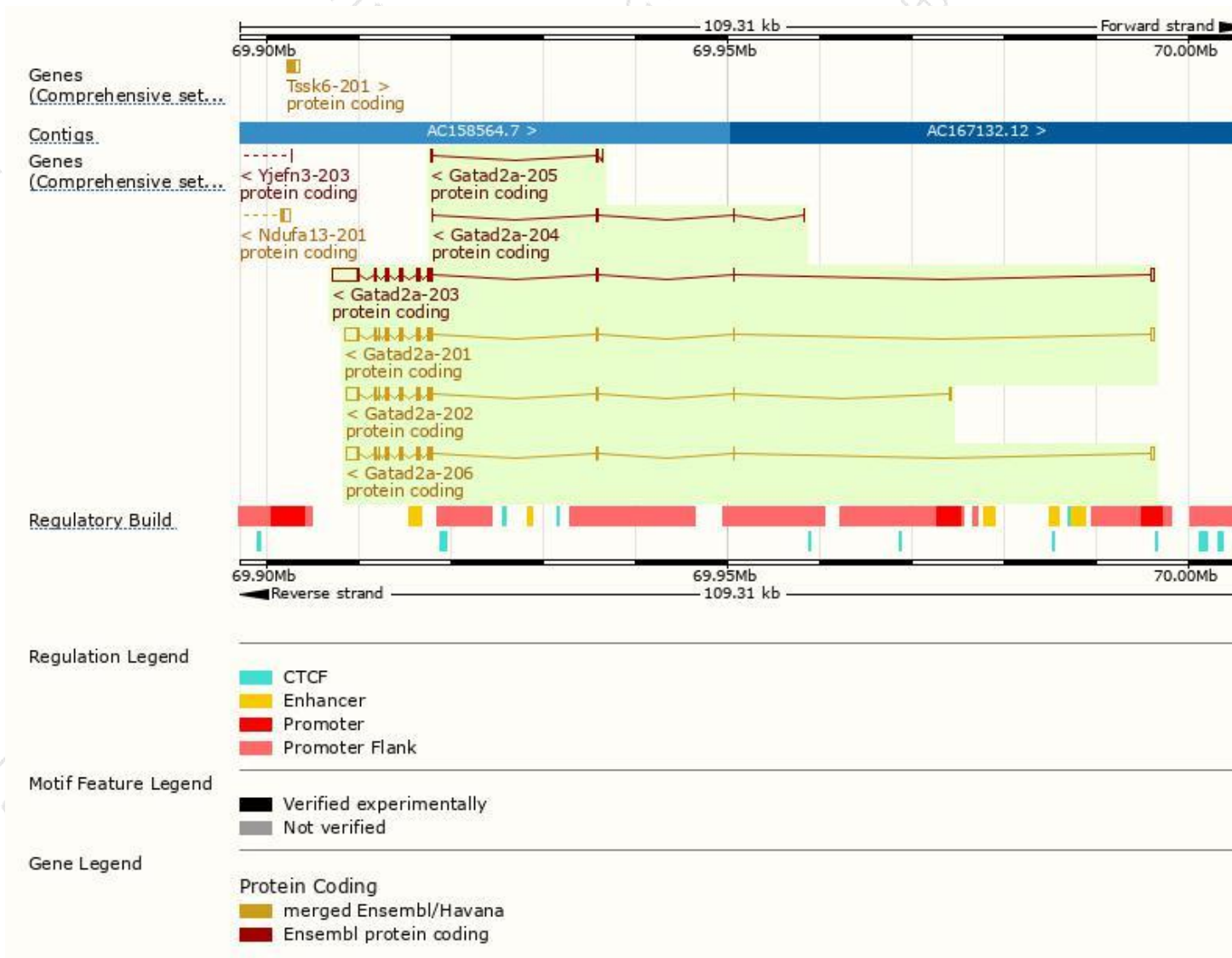
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Gatad2a-201	ENSMUST00000065169.11	3812	630aa	Protein coding	CCDS22355	E9QMN5	TSL:1 GENCODE basic APPRIS P3
Gatad2a-206	ENSMUST00000212478.1	3622	629aa	Protein coding	CCDS52567	Q8CHY6	TSL:5 GENCODE basic APPRIS ALT2
Gatad2a-202	ENSMUST00000116463.3	3363	629aa	Protein coding	CCDS52567	Q8CHY6	TSL:1 GENCODE basic APPRIS ALT2
Gatad2a-203	ENSMUST00000177851.8	5007	614aa	Protein coding	-	A0A1I7Q4G8	TSL:5 GENCODE basic APPRIS ALT2
Gatad2a-205	ENSMUST00000212277.1	551	161aa	Protein coding	-	A0A1D5RM58	CDS 3' incomplete TSL:3
Gatad2a-204	ENSMUST00000211960.1	507	99aa	Protein coding	-	A0A1D5RM07	CDS 3' incomplete TSL:3

The strategy is based on the design of *Gatad2a-201* transcript,The transcription is shown below



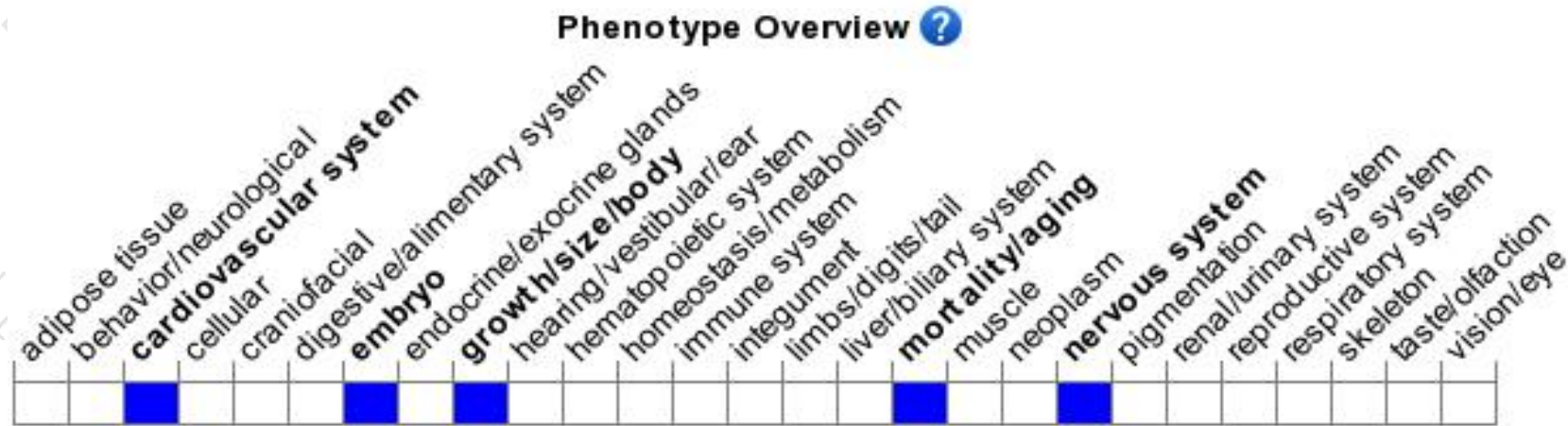
Genomic location distribution



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 die around E9.5 displaying variable developmental defects, including malformed or unfused neural folds, failure of closure of anterior neuropore, missing or excessively large blood vessels in the yolk sac, abnormal embryo turning, and embryonic growth arrest.

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

Tel: 400-9660890

