Gga1 Cas9-KO Strategy

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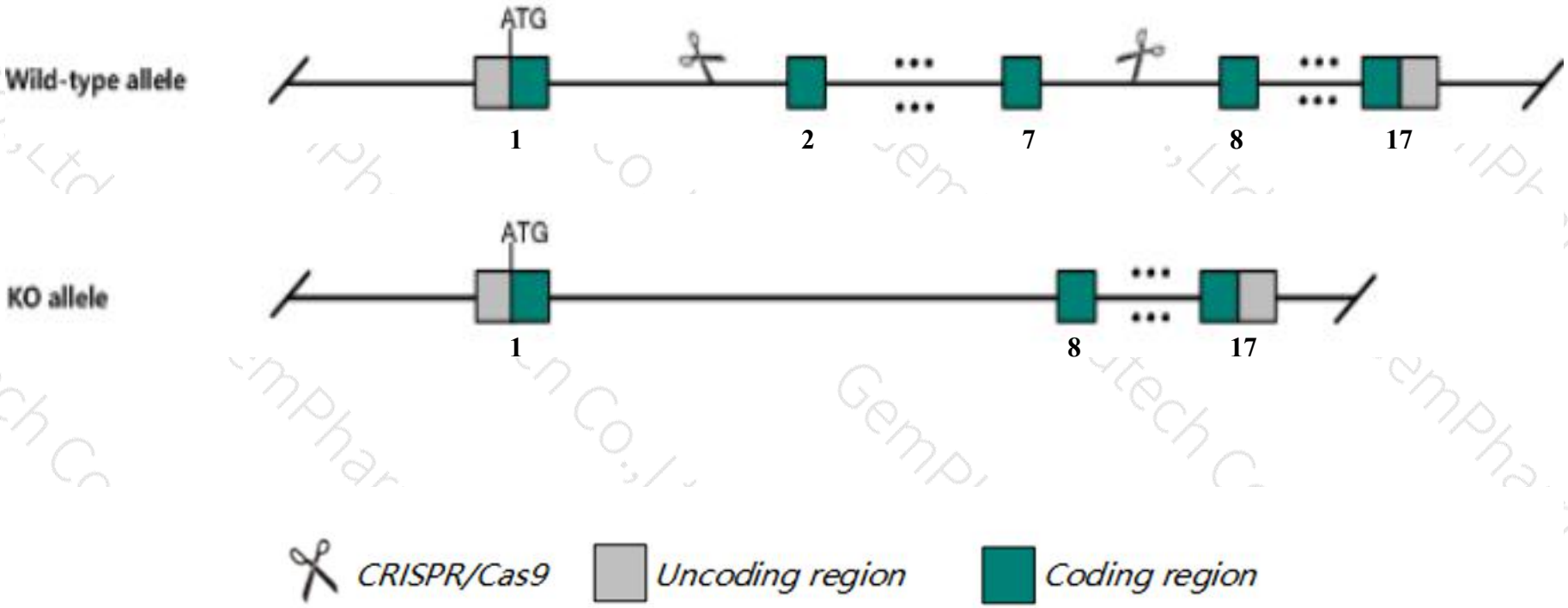
Design Date: 2020-6-18

Project Overview

Project Name	***Gga1***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Gga1* gene. The schematic diagram is as follows:



Technical routes

➢ The *Gga1* gene has 5 transcripts. According to the structure of *Gga1* gene, exon2-exon7 of *Gga1-201* (ENSMUST00000041587.7) transcript is recommended as the knockout region.The region contains 566bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Gga1* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

- According to the existing MGI data,mice homozygous for a gene-trapped allele display decreased birth weight, slow postnatal weight gain, hypoglycemia, increased plasma levels of acid hydrolases, and partial neonatal lethality.
- The *Gga1* gene is located on the Chr15. 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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Gga1 golgi associated, gamma adaptin ear containing, ARF binding protein 1 [Mus musculus (house mouse)]

Gene ID: 106039, updated on 13-Mar-2020

Summary

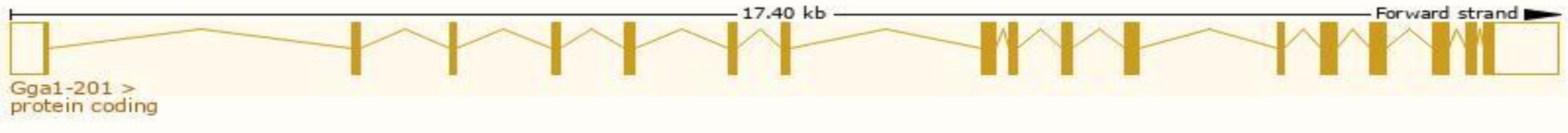
Official Symbol	Gga1 provided by MGI
Official Full Name	golgi associated, gamma adaptin ear containing, ARF binding protein 1 provided by MGI
Primary source	MGI:MGI:2146207
See related	Ensembl:ENSMUSG00000033128
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	4930406E12Rik, AU016030, AW209092
Expression	Ubiquitous expression in adrenal adult (RPKM 56.3), duodenum adult (RPKM 51.4) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

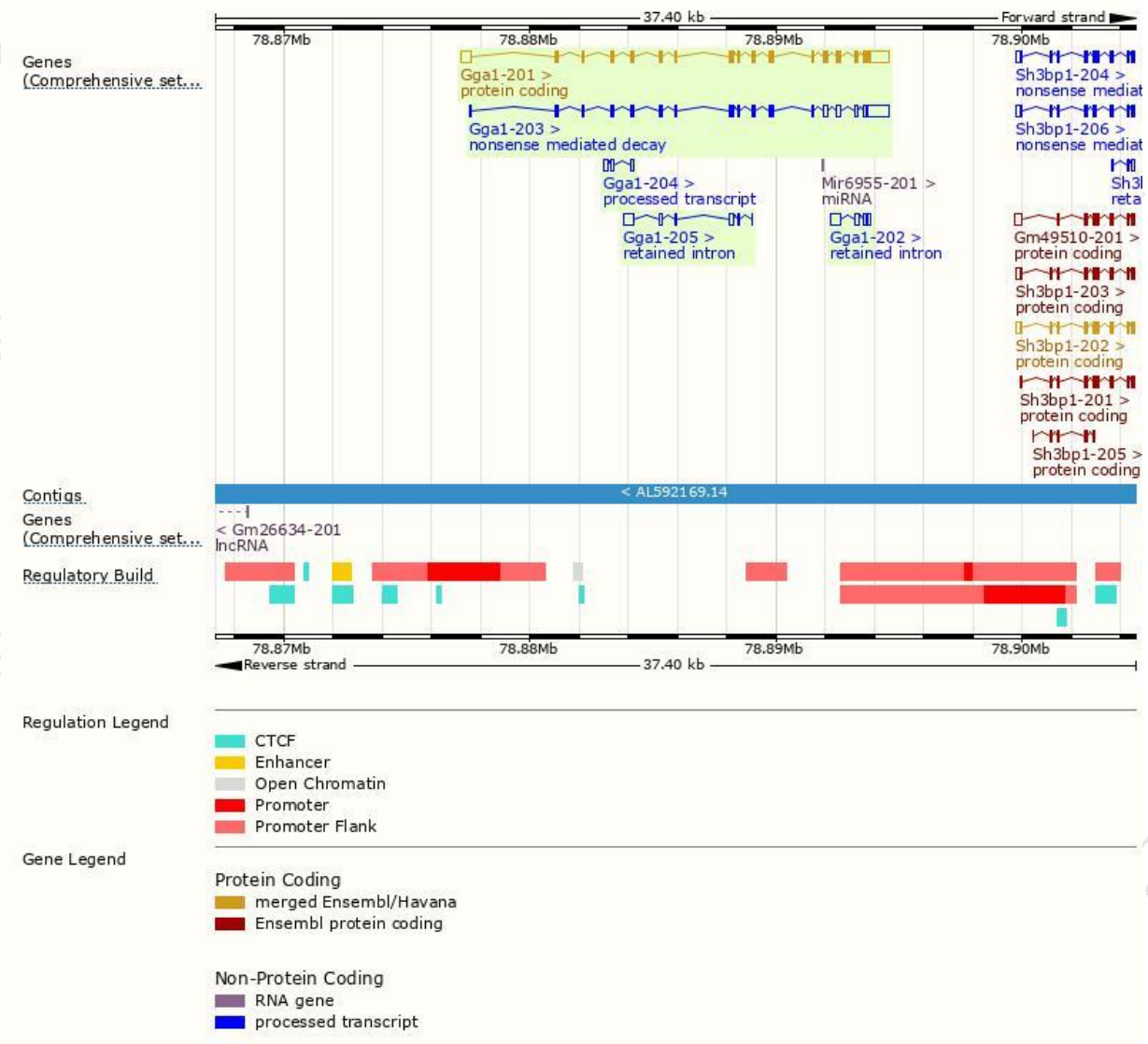
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Gga1-201	ENSMUST00000041587.7	3034	635aa	Protein coding	CCDS27625	Q8R0H9	TSL:1 GENCODE basic APPRIS P1
Gga1-203	ENSMUST00000230192.1	2665	363aa	Nonsense mediated decay	-	A0A2R8VI72	
Gga1-204	ENSMUST00000230243.1	393	No protein	Processed transcript	-	-	
Gga1-205	ENSMUST00000230772.1	860	No protein	Retained intron	-	-	
Gga1-202	ENSMUST00000229353.1	842	No protein	Retained intron	-	-	

The strategy is based on the design of *Gga1-201* transcript,the transcription is shown below:

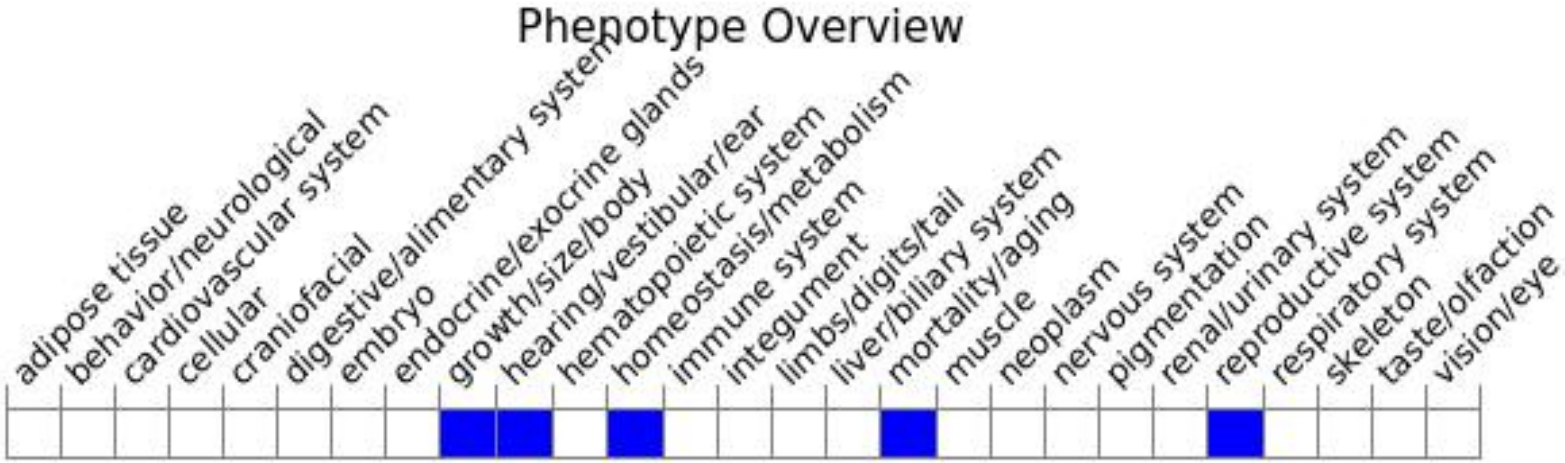


Genomic location distribution



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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