

***Gcnt1* Cas9-CKO Strategy**

Designer:

Yang Zeng

Reviewer:

Xiaojing Li

Design Date:

2019-11-29

Project Overview

Project Name

Gcnt1

Project type

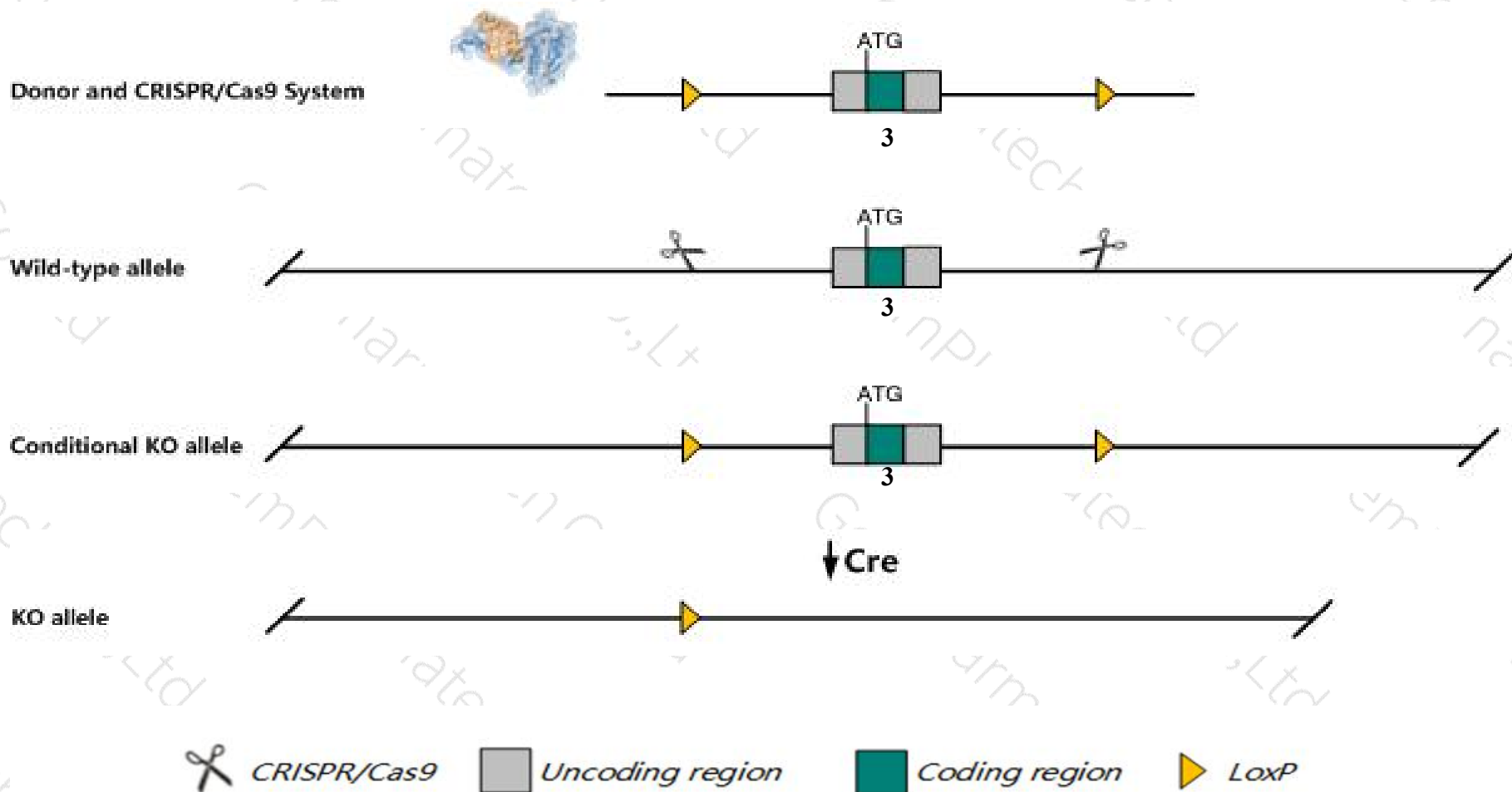
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Gcnt1* gene. The schematic diagram is as follows:



- The *Gcnt1* gene has 5 transcripts. According to the structure of *Gcnt1* gene, exon3 of *Gcnt1*-203 (ENSMUST00000174236.7) transcript is recommended as the knockout region. The region contains all of the coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Gcnt1* 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 disruptions in this allele display a grossly normal phenotype and are fertile. There are abnormalities in white blood cell counts and in inflammatory response however.
- The *Gcnt1* gene is located on the Chr19. 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)

Gcnt1 glucosaminyl (N-acetyl) transferase 1, core 2 [*Mus musculus* (house mouse)]

Gene ID: 14537, updated on 27-Aug-2019

Summary

Official Symbol Gcnt1 provided by [MGI](#)

Official Full Name glucosaminyl (N-acetyl) transferase 1, core 2 provided by [MGI](#)

Primary source [MGI:MGI:95676](#)

See related [Ensembl:ENSMUSG000000038843](#)

Gene type protein coding

RefSeq status VALIDATED

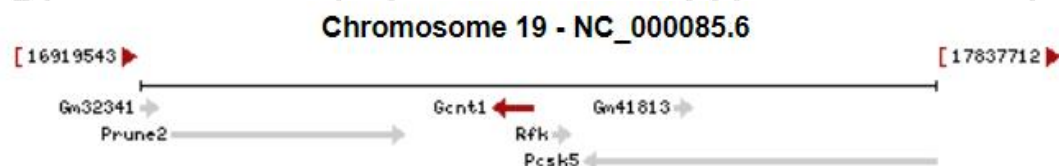
Organism [Mus musculus](#)

Lineage Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus

Also known as IGnT; C2GNT; B130048E03; C2 GlcNAcT; 5630400D21Rik

Expression Biased expression in kidney adult (RPKM 36.0), liver E14 (RPKM 9.3) and 9 other tissues [See more](#)

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

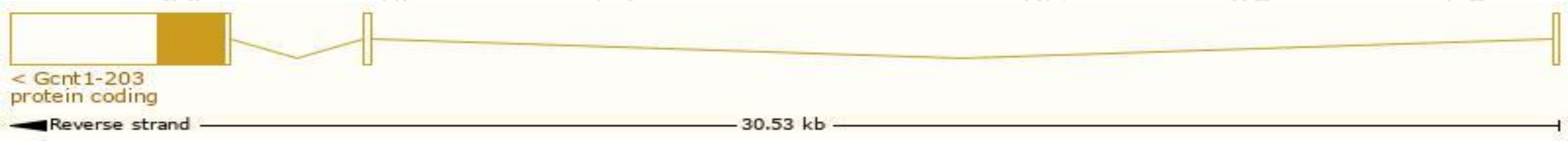


Transcript information (Ensembl)

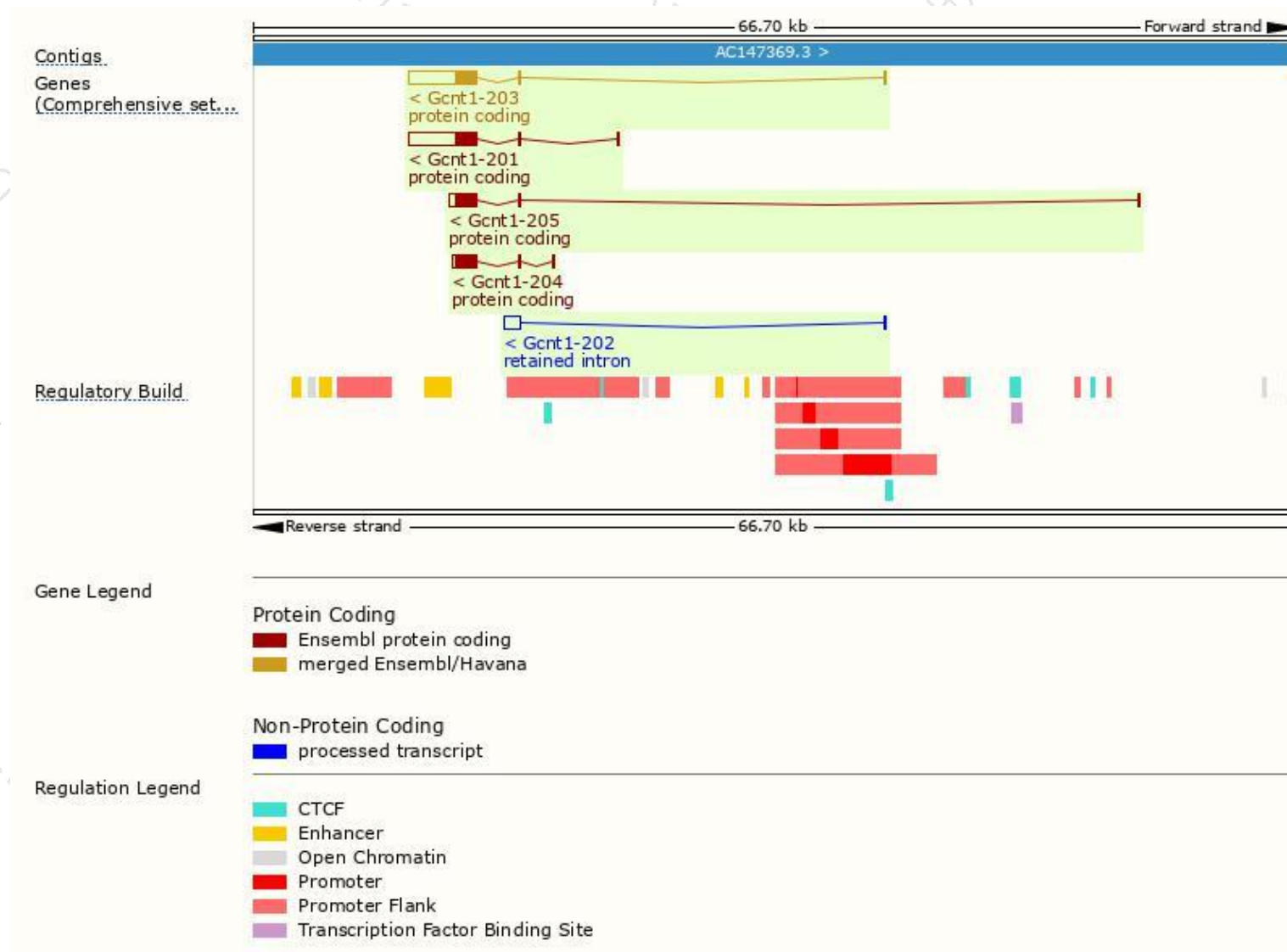
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Gcnt1-203	ENSMUST00000174236.7	4606	428aa	Protein coding	CCDS29687	Q09324	TSL:1 GENCODE basic APPRIS P1
Gcnt1-201	ENSMUST00000169897.1	4594	428aa	Protein coding	CCDS29687	Q09324	TSL:3 GENCODE basic APPRIS P1
Gcnt1-205	ENSMUST00000236139.1	2046	428aa	Protein coding	CCDS29687	-	GENCODE basic APPRIS P1
Gcnt1-204	ENSMUST00000235184.1	1837	428aa	Protein coding	CCDS29687	-	GENCODE basic APPRIS P1
Gcnt1-202	ENSMUST00000174137.1	1122	No protein	Retained intron	-	-	TSL:1

The strategy is based on the design of *Gcnt1-203* transcript,The transcription is shown below



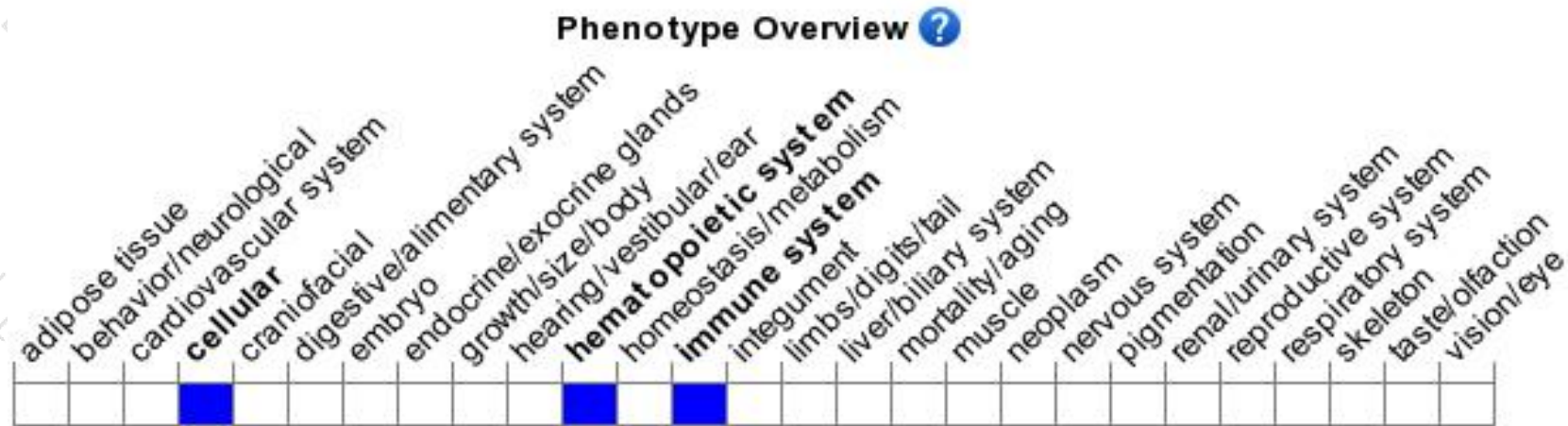
Genomic location distribution



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 disruptions in this allele display a grossly normal phenotype and are fertile. There are abnormalities in white blood cell counts and in inflammatory response however.

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

Tel: 400-9660890

