

Galnt3 Cas9-CKO Strategy

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Reviewer:

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Design Date:

2019-10-21

Project Overview

Project Name

Galnt3

Project type

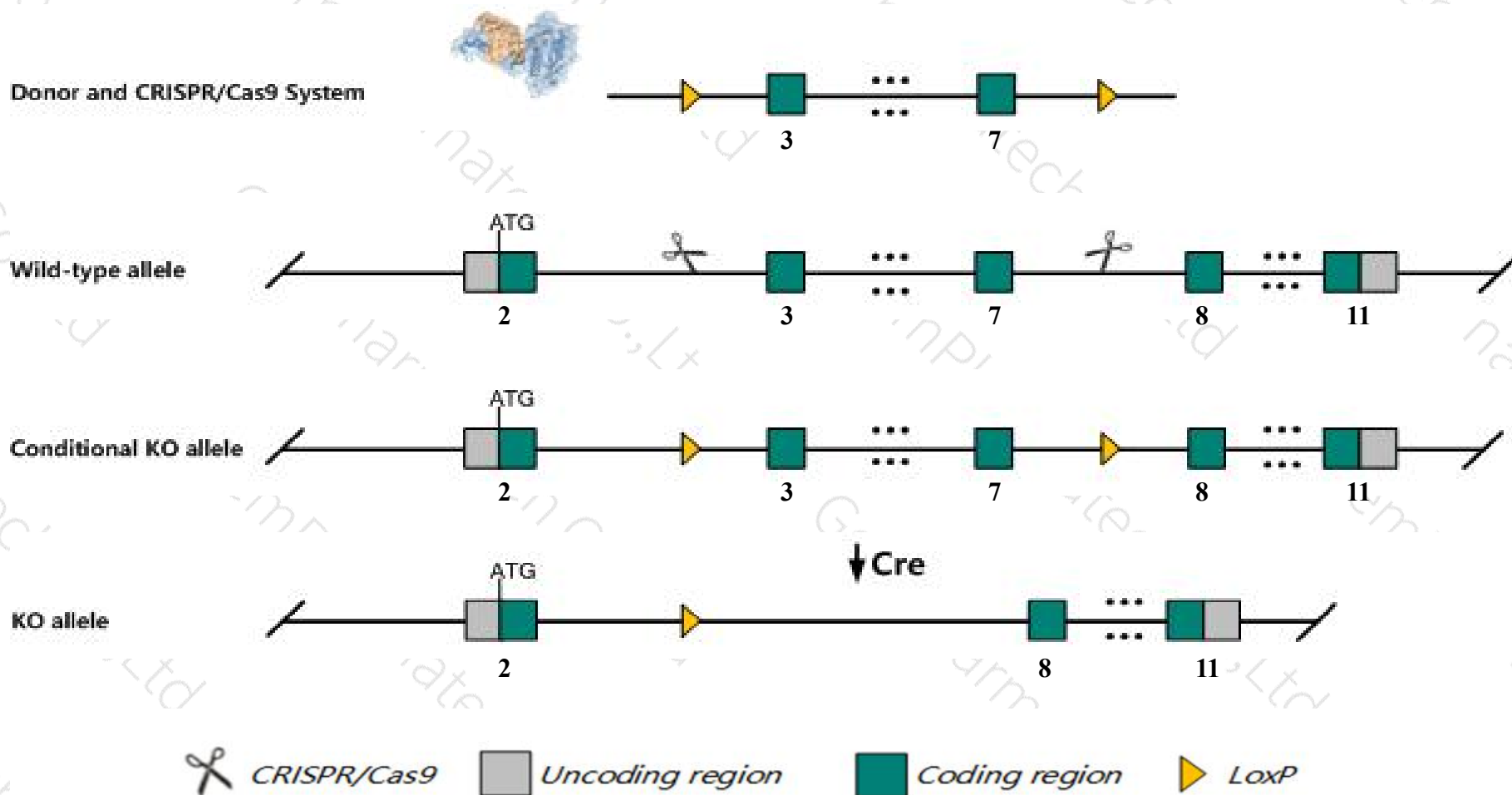
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Galnt3* gene. The schematic diagram is as follows:



- The *Galnt3* gene has 4 transcripts. According to the structure of *Galnt3* gene, exon3-exon7 of *Galnt3*-201 (ENSMUST00000028378.3) transcript is recommended as the knockout region. The region contains 877bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Galnt3* 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 exhibit decreased circulating alkaline phosphatase, hypercalcemia, hyperphosphatemia, decreased circulating parathyroid hormone, and male specific postnatal growth retardation, infertility, and increase in bone density.
- The *Galnt3* gene is located on the Chr2. 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)

Galnt3 polypeptide N-acetylgalactosaminyltransferase 3 [Mus musculus (house mouse)]

Gene ID: 14425, updated on 31-Jan-2019

Summary



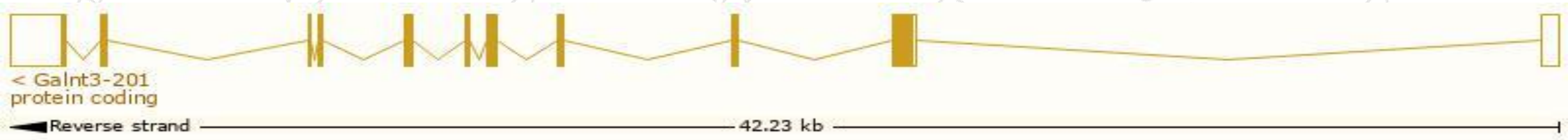
Official Symbol	Galnt3 provided by MGI
Official Full Name	polypeptide N-acetylgalactosaminyltransferase 3 provided by MGI
Primary source	MGI:MGI:894695
See related	Ensembl:ENSMUSG000000026994
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Expression	Biased expression in testis adult (RPKM 15.8), colon adult (RPKM 5.6) and 10 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

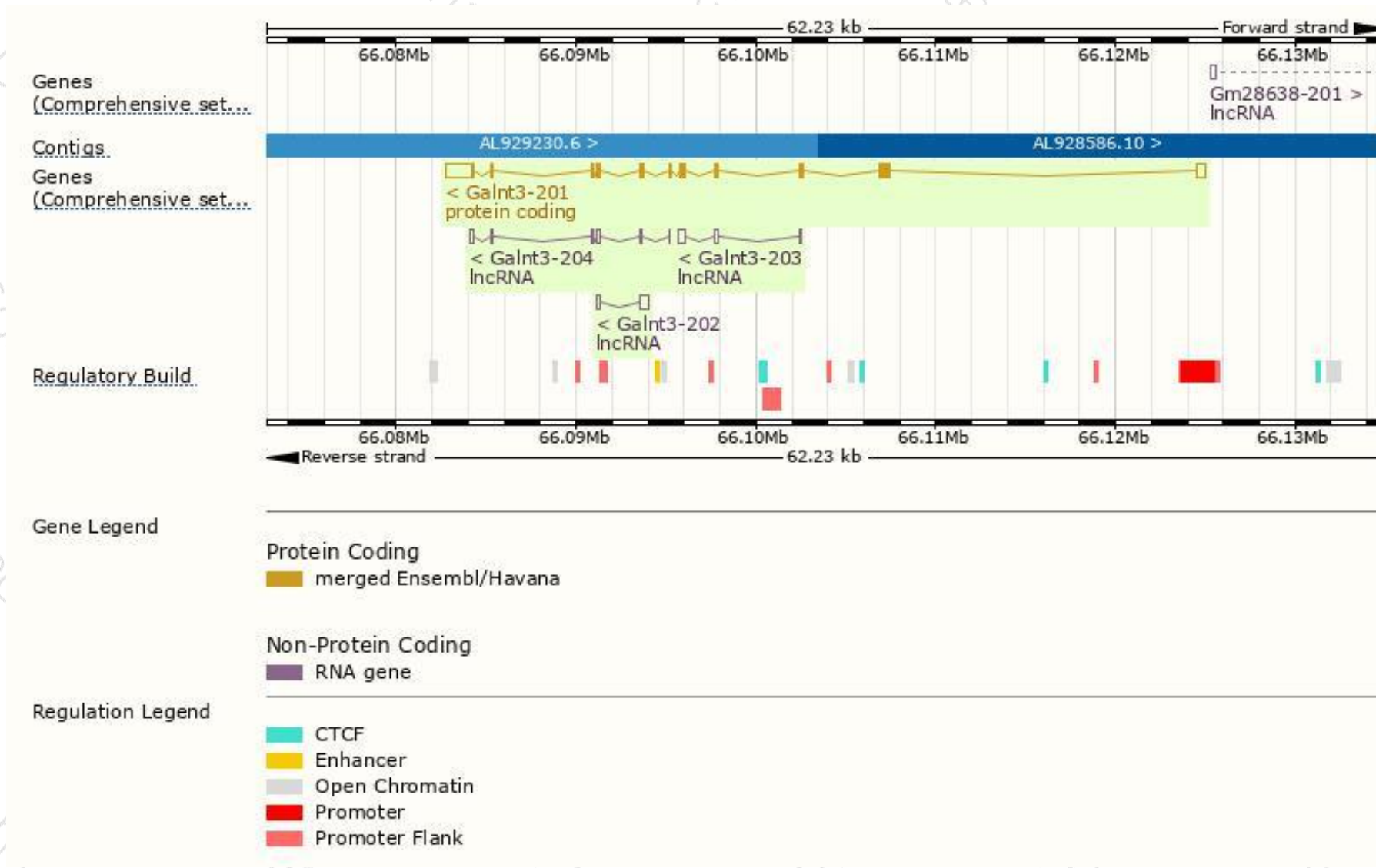
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Galnt3-201	ENSMUST00000028378.3	3885	633aa	Protein coding	CCDS16075	P70419	TSL:1 GENCODE basic APPRIS P1
Galnt3-204	ENSMUST00000155453.7	754	No protein	lncRNA	-	-	TSL:3
Galnt3-202	ENSMUST00000150793.1	673	No protein	lncRNA	-	-	TSL:3
Galnt3-203	ENSMUST00000153563.1	573	No protein	lncRNA	-	-	TSL:3

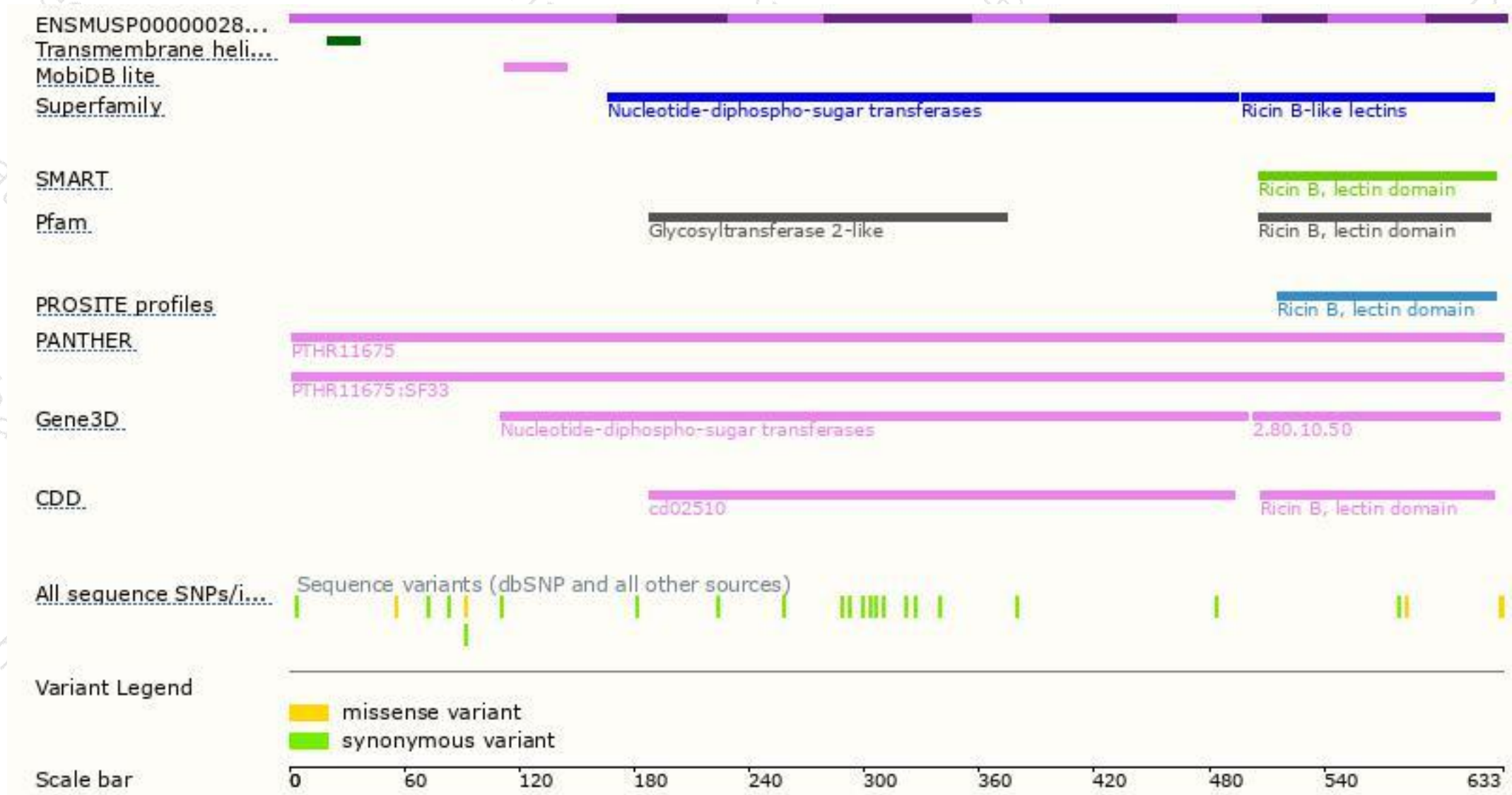
The strategy is based on the design of *Galnt3-201* transcript,The transcription is shown below



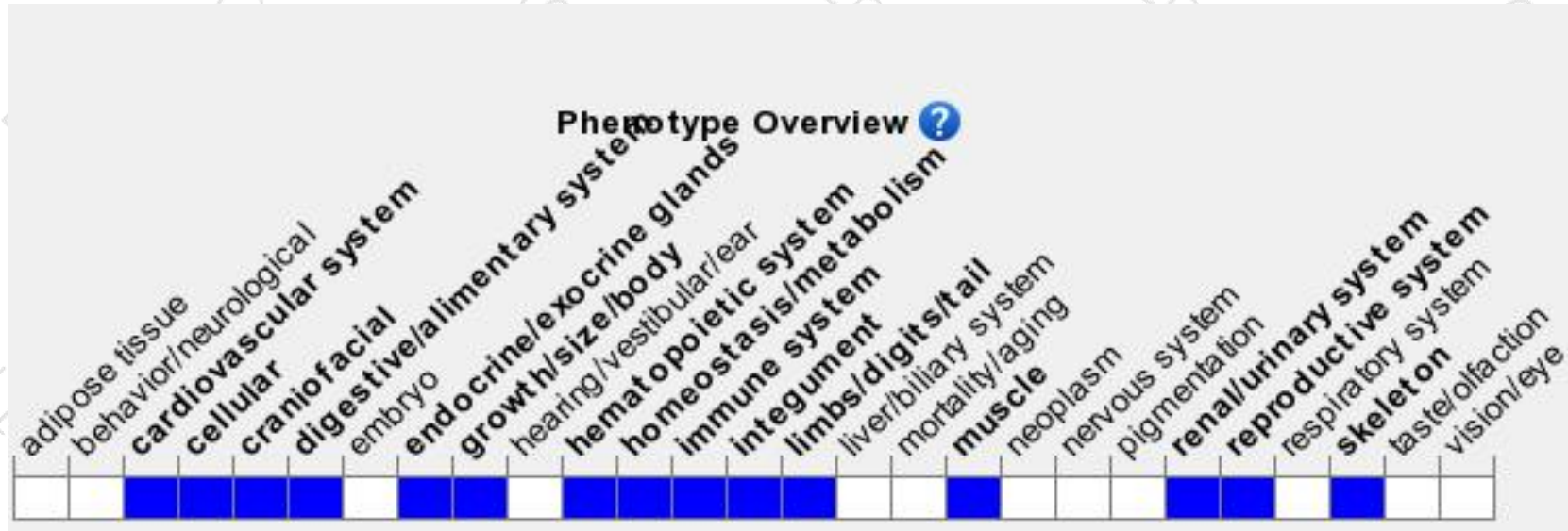
Genomic location distribution



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 exhibit decreased circulating alkaline phosphatase, hypercalcemia, hyperphosphatemia, decreased circulating parathyroid hormone, and male specific postnatal growth retardation, infertility, and increase in bone density.

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

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