Gnai3 Cas9-KO Strategy

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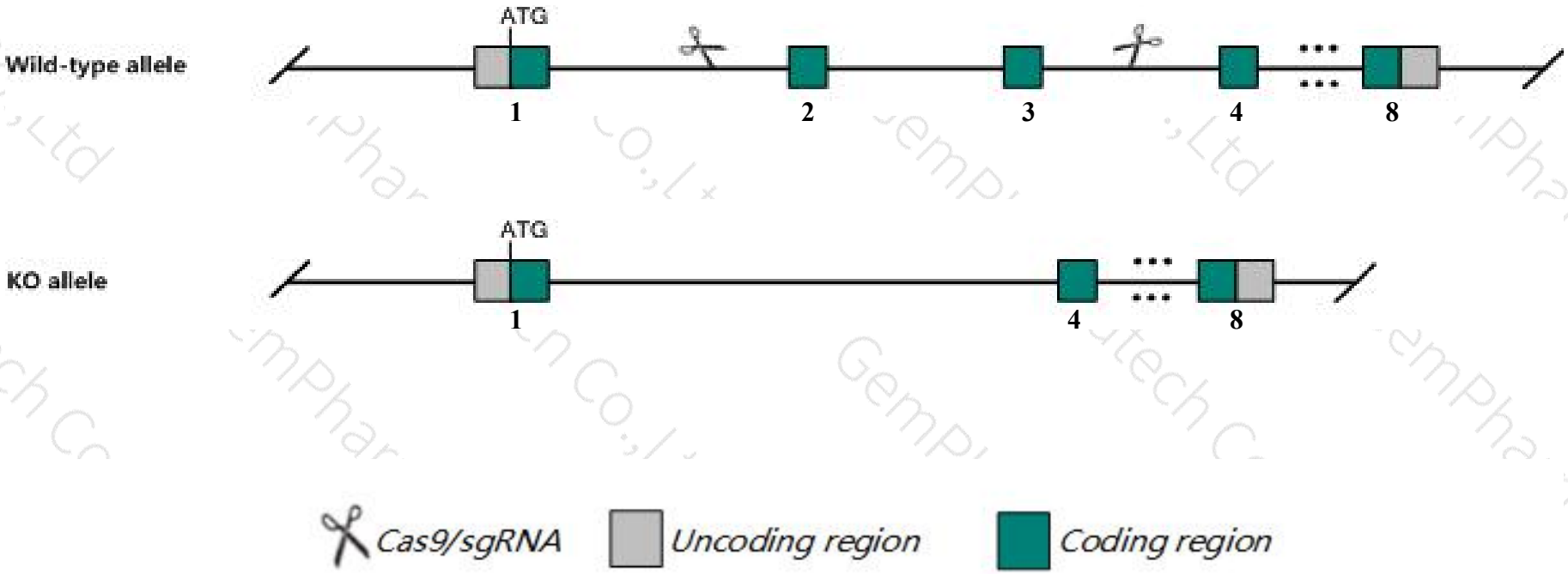
Project Overview

Project Name	***Gnai3***
Project type	**Cas9-KO**
Strain background	**C57BL/6J**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Gnai3* gene. The schematic diagram is as follows:



Technical routes

➢ The *Gnai3* gene has 1 transcript. According to the structure of *Gnai3* gene, exon2-exon3 of *Gnai3-201* (ENSMUST00000000001.4) transcript is recommended as the knockout region.The region contains 185bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Gnai3* gene. The brief process is as follows: sgRNA was transcribed in vitro.Cas9 and sgRNA were microinjected into the fertilized eggs of C57BL/6J 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/6J mice.

Notice

- According to the existing MGI data,Mice homozygous for a knock-out allele exhibit normal basal cardiac function and beta-adrenergic sensitivity. Mice homozygous for a different knock-out allele exhibit enhanced T cell migration toward CXCR3 agonists.

- The *Gnai3* gene is located on the Chr3. 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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Gnai3 guanine nucleotide binding protein (G protein), alpha inhibiting 3 [Mus musculus (house mouse)]

Gene ID: 14679, updated on 7-Apr-2019

Summary

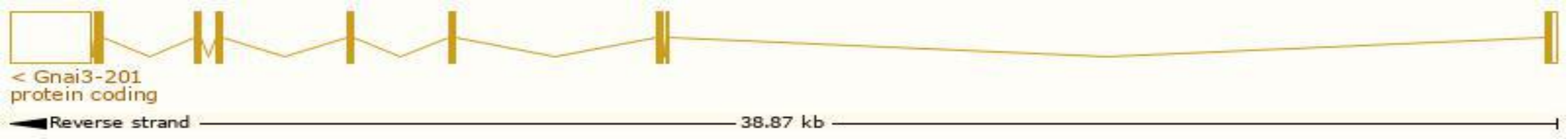
Official Symbol	Gnai3 provided by MGI
Official Full Name	guanine nucleotide binding protein (G protein), alpha inhibiting 3 provided by MGI
Primary source	MGI:MGI:95773
See related	Ensembl:ENSMUSG00000000001
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AI158965, AW537698, Galphai3, Gnai-3
Expression	Ubiquitous expression in placenta adult (RPKM 67.1), CNS E11.5 (RPKM 42.8) and 26 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

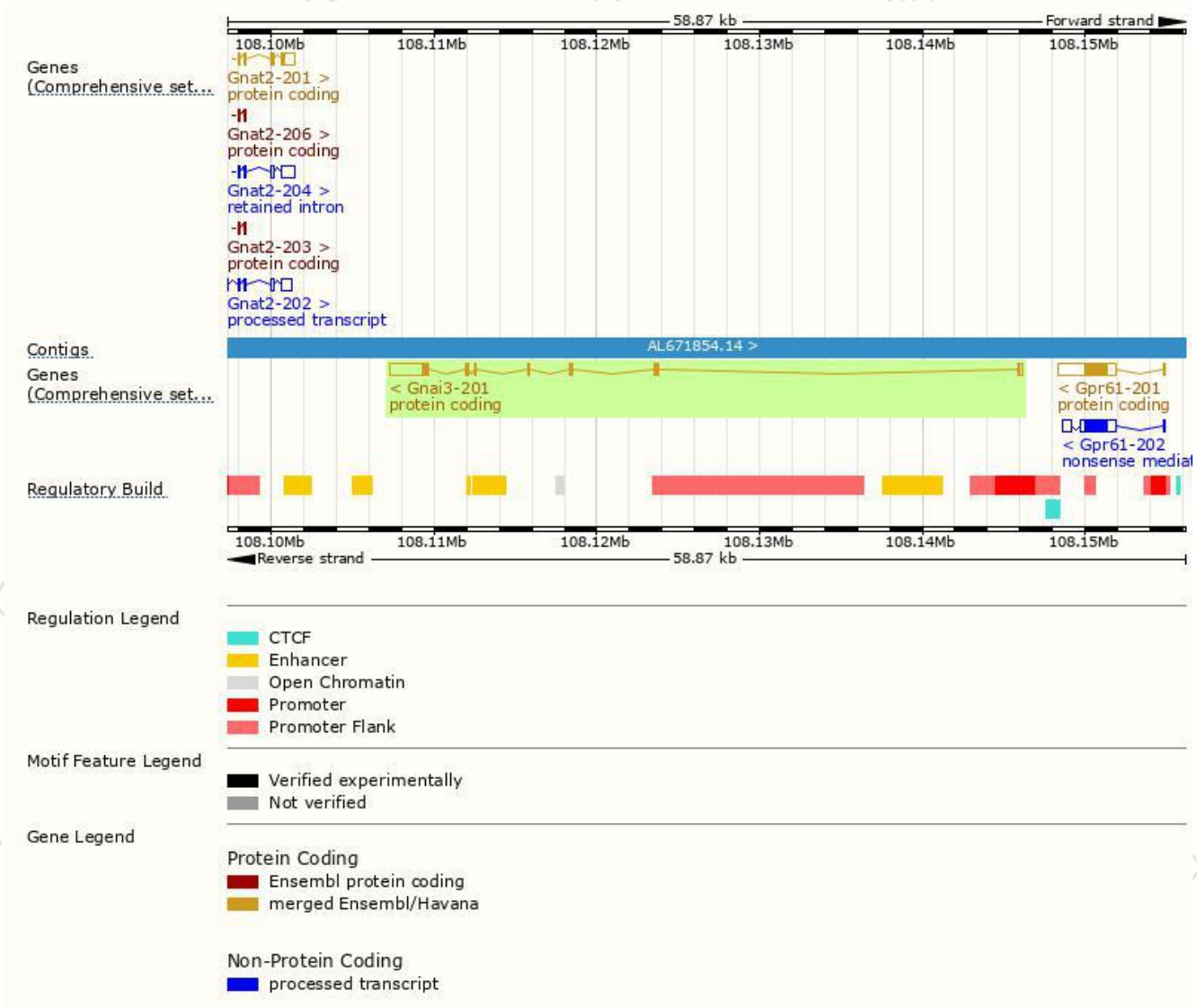
The gene has 1 transcript,and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Gnai3-201	ENSMUST00000000001.4	3262	354aa	Protein coding	CCDS17751	Q9DC51	TSL:1 GENCODE basic APPRIS P1

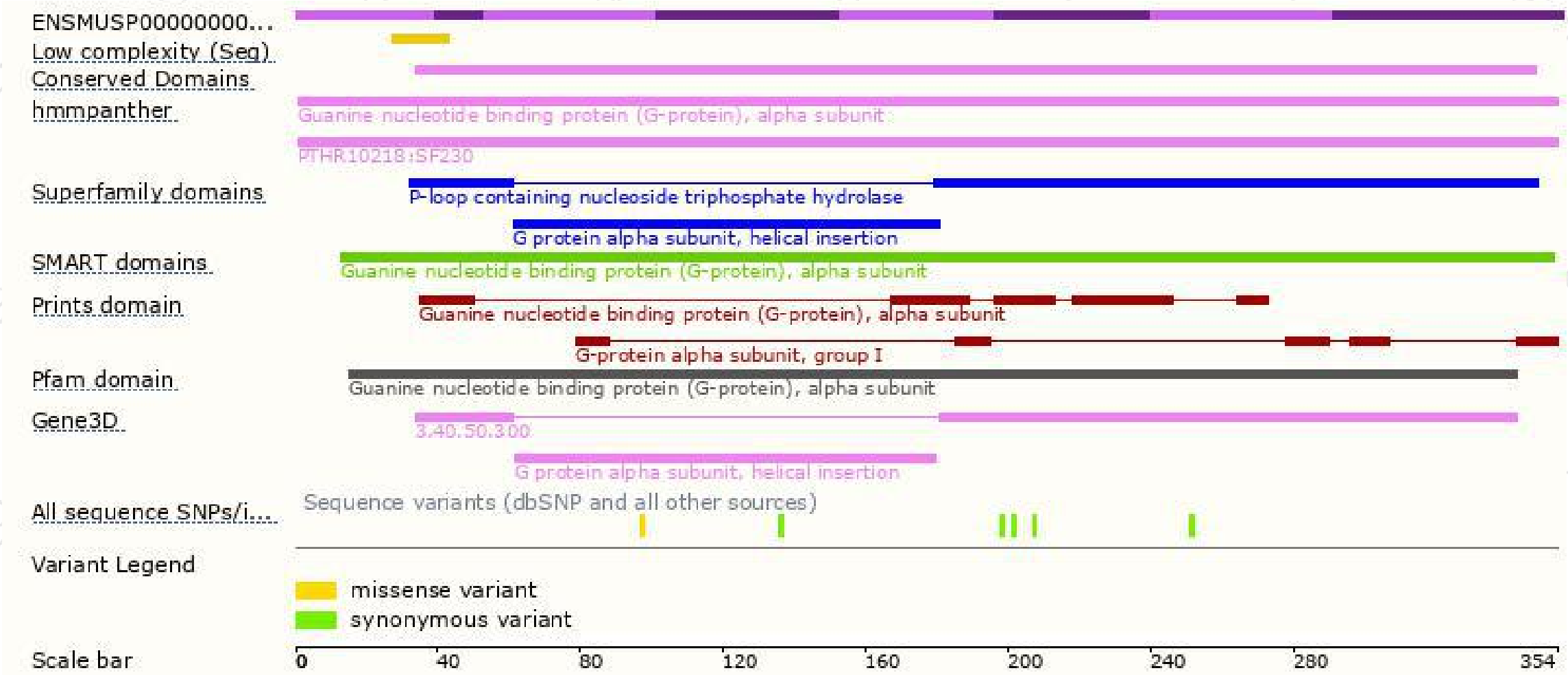
The strategy is based on the design of *Gnai3-201* transcript,The transcription is shown below



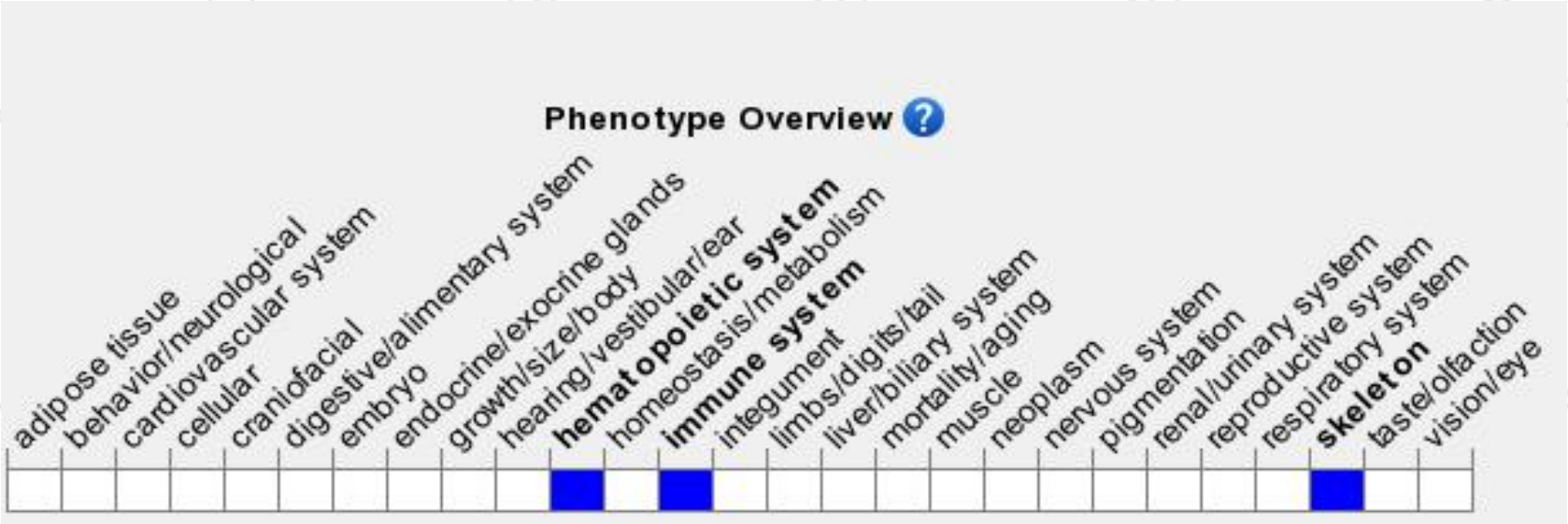
Genomic location distribution



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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