

Gnai1 Cas9-KO Strategy

Designer:

Huimin Su

Reviewer:

Ruirui Zhang

Design Date:

2019/10/11

Project Overview

Project Name

Gnail

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

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



- The *Gnail* gene has 1 transcript. According to the structure of *Gnail* gene, exon2-exon3 of *Gnail-201* (ENSMUST00000074694.6) 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 *Gnail* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for disruptions in this gene exhibit long term memory defects.
- The *Gnail* gene is located on the Chr5. 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)

Gnai1 guanine nucleotide binding protein (G protein), alpha inhibiting 1 [*Mus musculus* (house mouse)]

Gene ID: 14677, updated on 12-Aug-2019

Summary

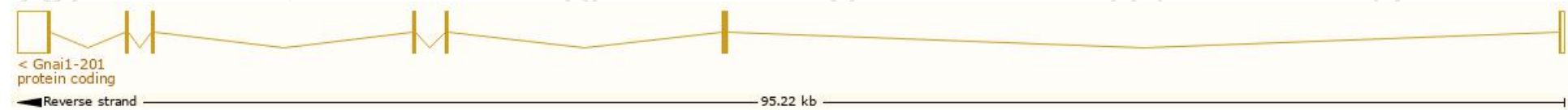
Official Symbol	Gnai1 provided by MGI
Official Full Name	guanine nucleotide binding protein (G protein), alpha inhibiting 1 provided by MGI
Primary source	MGI:MGI:95771
See related	Ensembl:ENSMUSG00000057614
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Gnai-1; AU046200; Gialpha1
Expression	Broad expression in frontal lobe adult (RPKM 36.7), cerebellum adult (RPKM 28.5) and 17 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

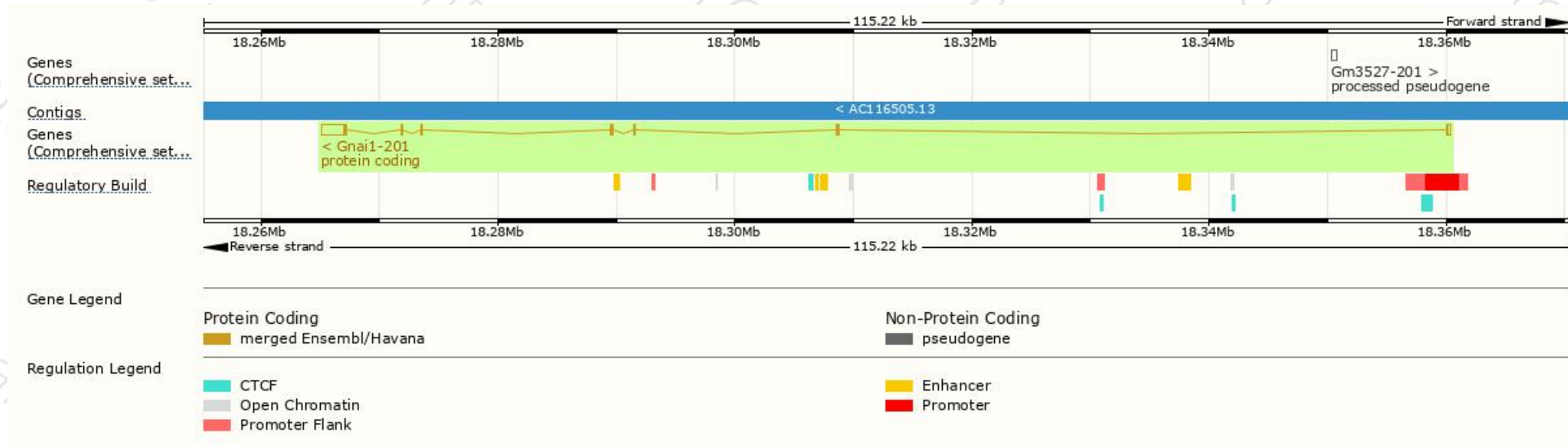
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Gnai1-201	ENSMUST00000074694.6	3135	354aa	Protein coding	CCDS39018	B2RSH2	TSL:1 Gencode basic APPRIS P1

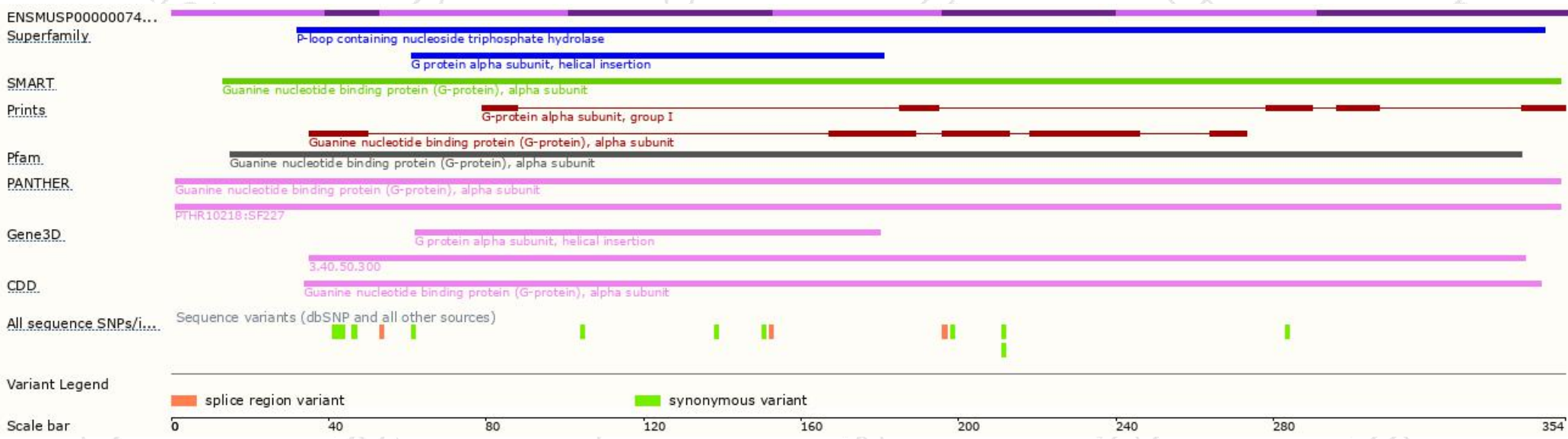
The strategy is based on the design of *Gnai1-201* transcript, The transcription is shown below



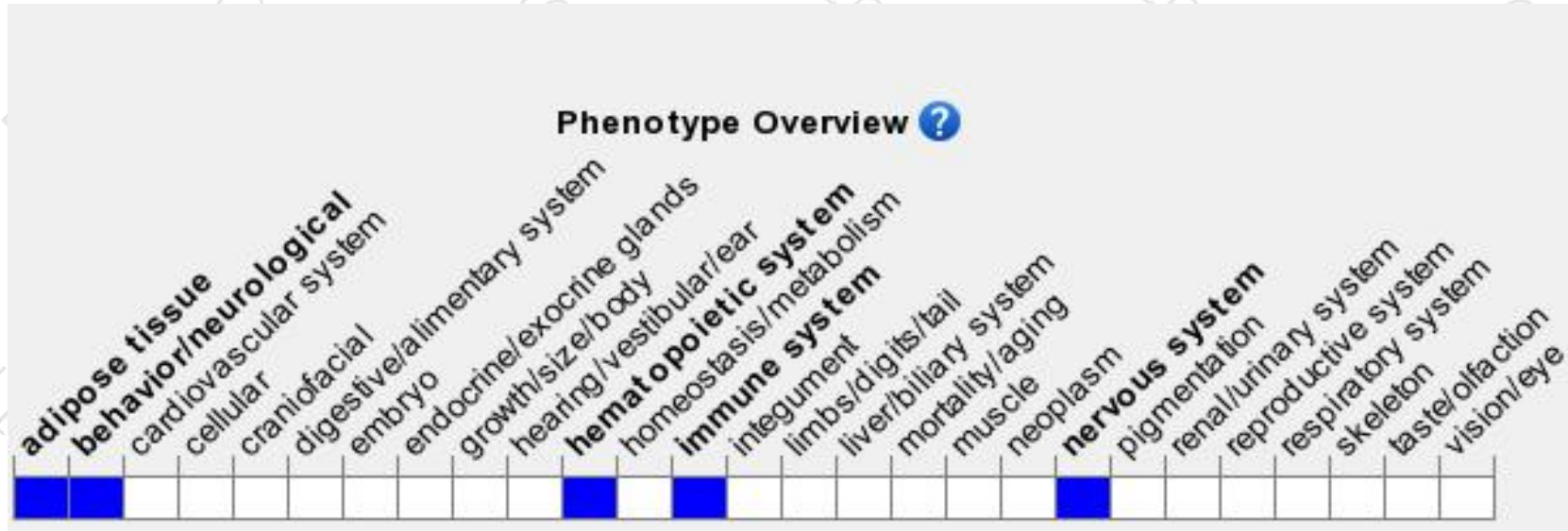
Genomic location distribution



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 disruptions in this gene exhibit long term memory defects.

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

Tel: 400-9660890

