Gpr55 Cas9-KO Strategy

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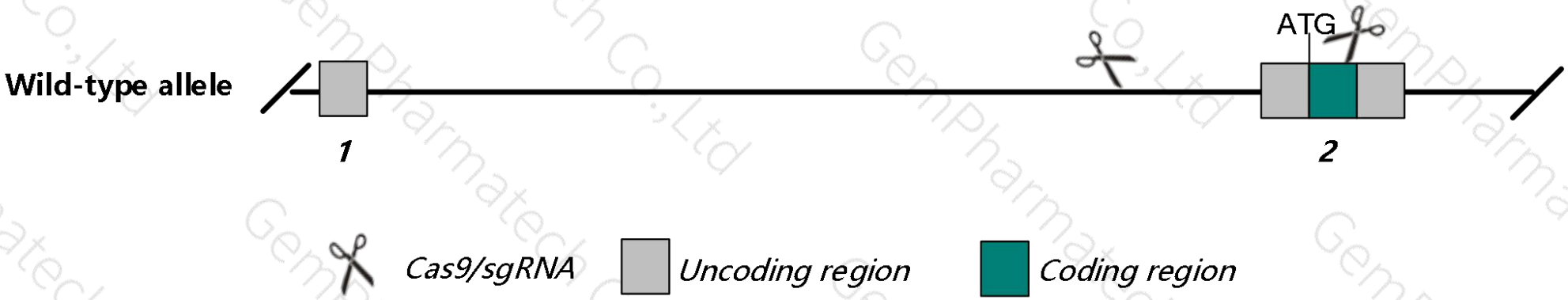
Design Date:2019-10-11

Project Overview

Project Name	***Gpr55***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Gpr55* gene. The schematic diagram is as follows:



Technical routes

➢ The *Gpr55* gene has 1 transcript. According to the structure of *Gpr55* gene, exon2 of *Gpr55-201* (ENSMUST00000086975.5) transcript is recommended as the knockout region.The region contains most 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 *Gpr55* gene. The brief process is as follows: gRNA was transcribed in vitro.Cas9 and gRNA 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.

Notice

- According to the existing MGI data,Mice homozygous for a knock-out allele exhibit increased bone volume due to impaired osteoclast function in male mice. Female mice exhibit a milder phenotype.
- The knockout region is near to the N-terminal of *Gm28884* gene and C-terminal of *4933407L21Rik* gene,this strategy may influence the regulatory function of the N-terminal of *Gm28884* gene and C-terminal of *4933407L21Rik* gene.
- The *Gpr55* gene is located on the Chr1. 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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Gpr55 G protein-coupled receptor 55 [*Mus musculus* (house mouse)]

Gene ID: 227326, updated on 8-Oct-2019

Summary

Official Symbol	Gpr55 provided by MGI
Official Full Name	G protein-coupled receptor 55 provided by MGI
Primary source	MGI:MGI:2685064
See related	Ensembl:ENSMUSG00000049608
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	CTFL; Gm218; Lpir1
Expression	Broad expression in testis adult (RPKM 1.4), small intestine adult (RPKM 1.0) and 15 other tissues See more
Orthologs	human all

Genomic context

Location: 1; 1 C5

See Gpr55 in Genome Data Viewer

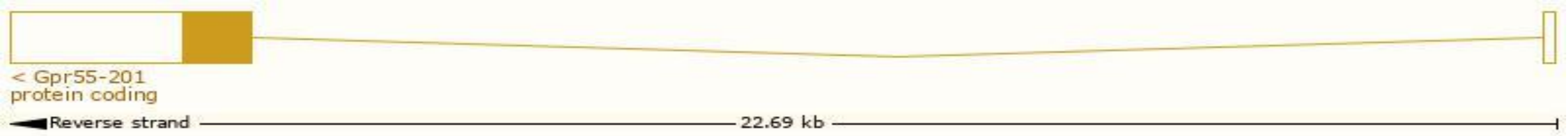
Exon count: 9

Transcript information（Ensembl）

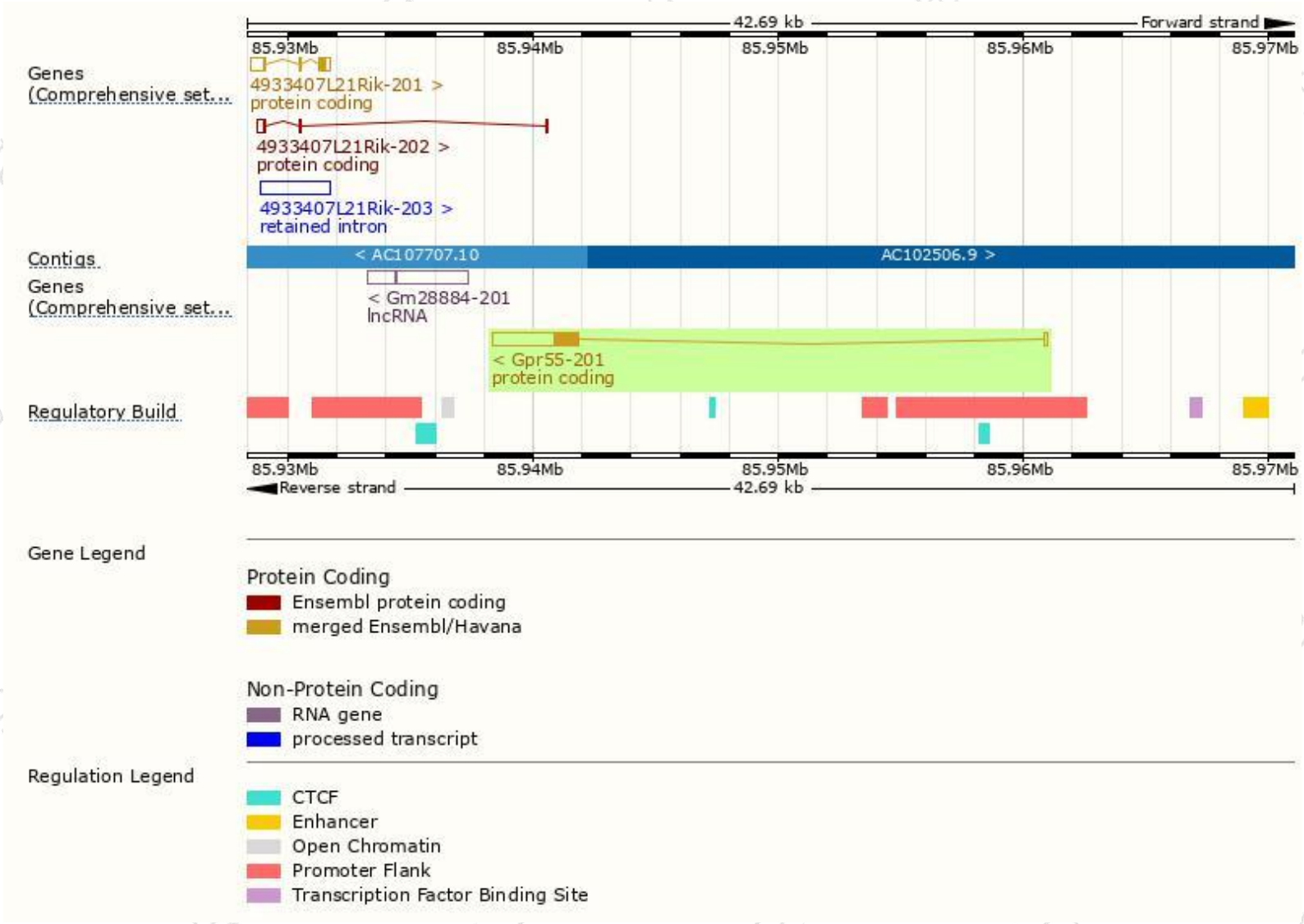
The gene has 1 transcript,and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Gpr55-201	ENSMUST00000086975.5	3721	327aa	Protein coding	CCDS15115	Q3UJF0	TSL:1 GENCODE basic APPRIS P1

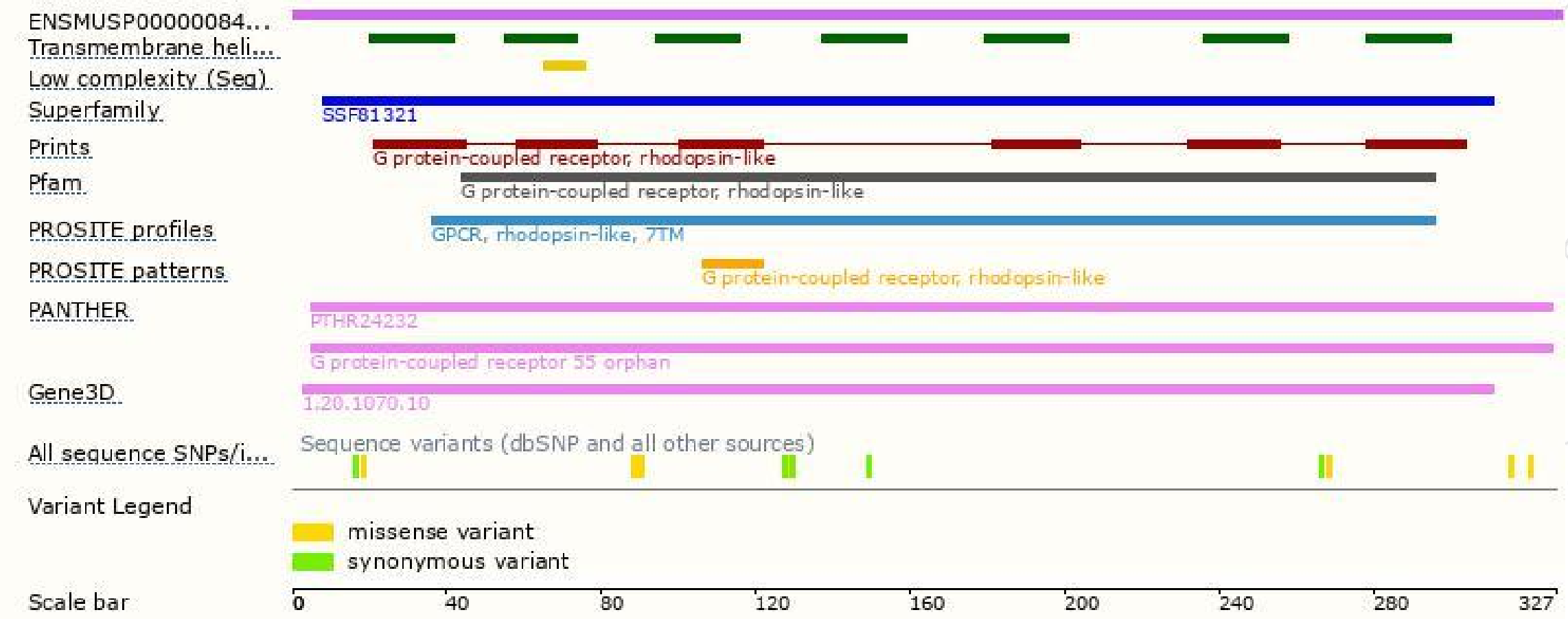
The strategy is based on the design of *Gpr55-201* transcript,The transcription is shown below



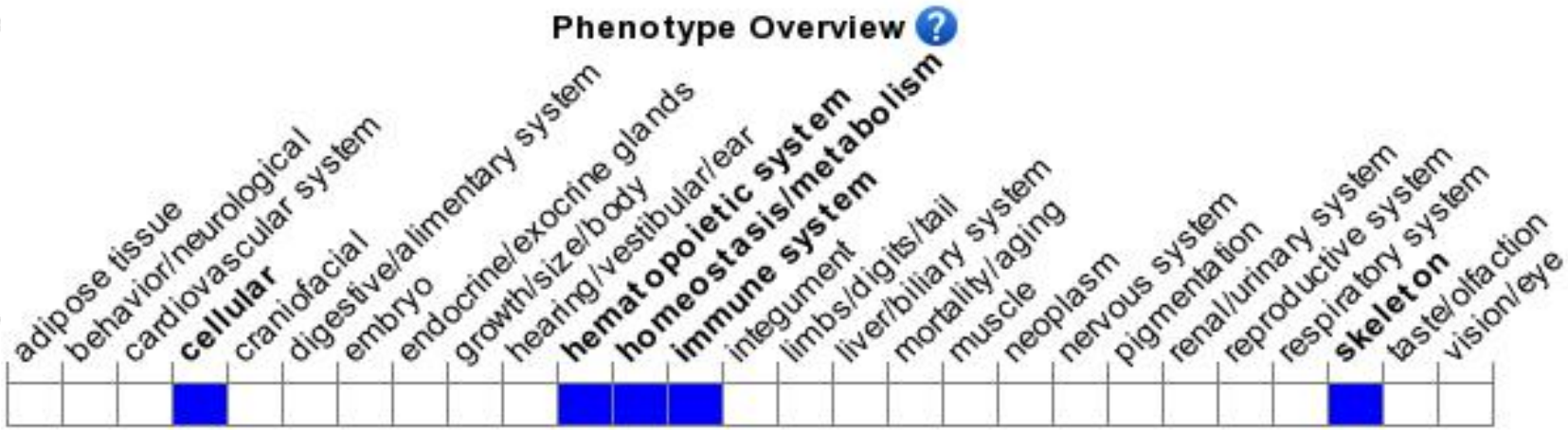
Genomic location distribution



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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