Gpr39 Cas9-KO Strategy

Designer: Huan Wang

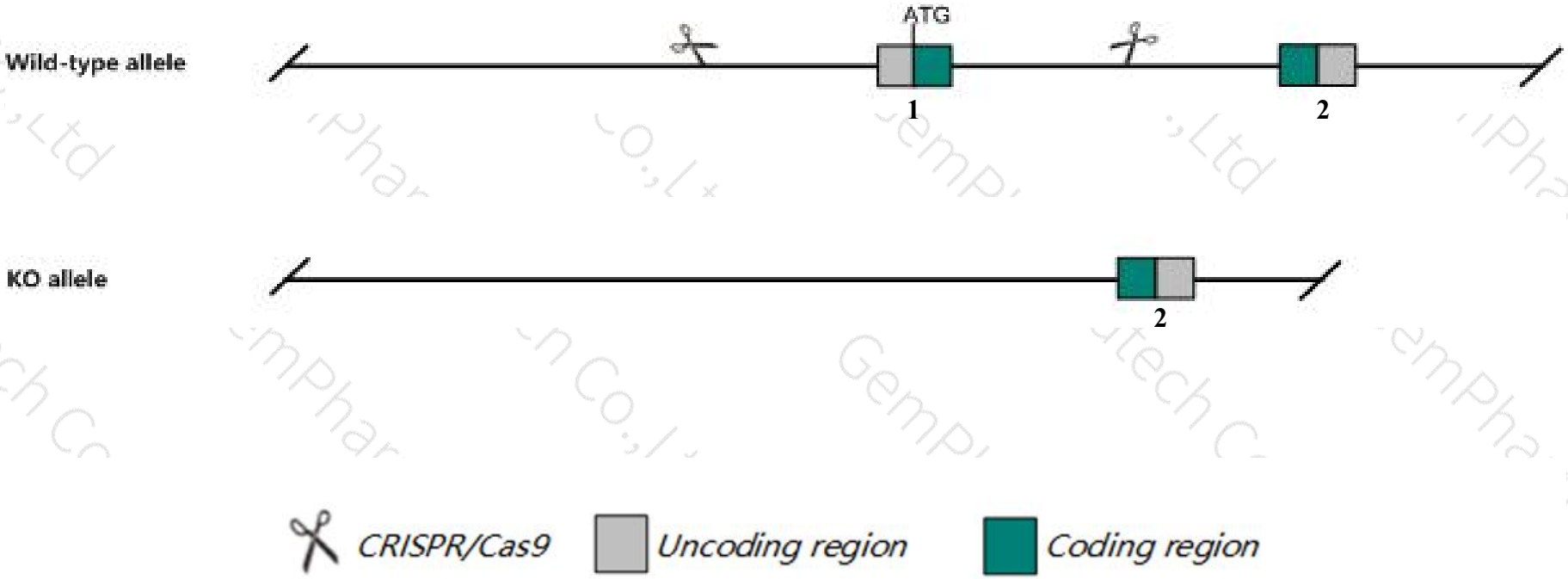
Design Date: 2019-7-22

Project Overview

Project Name	***Gpr39***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Gpr39* gene. The schematic diagram is as follows:



Technical routes

➢ The *Gpr39* gene has 2 transcripts. According to the structure of *Gpr39* gene, exon1 of *Gpr39-201* (ENSMUST00000027581.6) transcript is recommended as the knockout region.The region contains start codon ATG. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Gpr39* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

➢ According to the existing MGI data,Mice homozygous for a null mutation display abnormal glucose homeostasis when fed a high sugar diet. Mice homozygous for a different null allele have accelerated gastric emptying, decreased fasting-induced hyperphagia, and increasedbody weight after oneyear of age.

➢ The *Gpr39* 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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Gpr39 G protein-coupled receptor 39 [Mus musculus (house mouse)]

Gene ID: 71111, updated on 31-Jan-2019

Summary

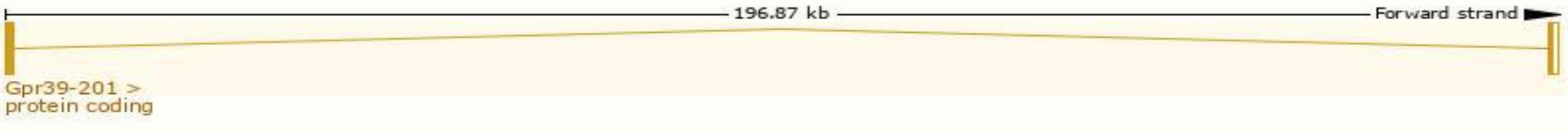
Official Symbol	Gpr39 provided by MGI
Official Full Name	G protein-coupled receptor 39 provided by MGI
Primary source	MGI:MGI:1918361
See related	Ensembl:ENSMUSG00000026343
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	4933415E13Rik
Expression	Broad expression in bladder adult (RPKM 12.4), small intestine adult (RPKM 11.8) and 24 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

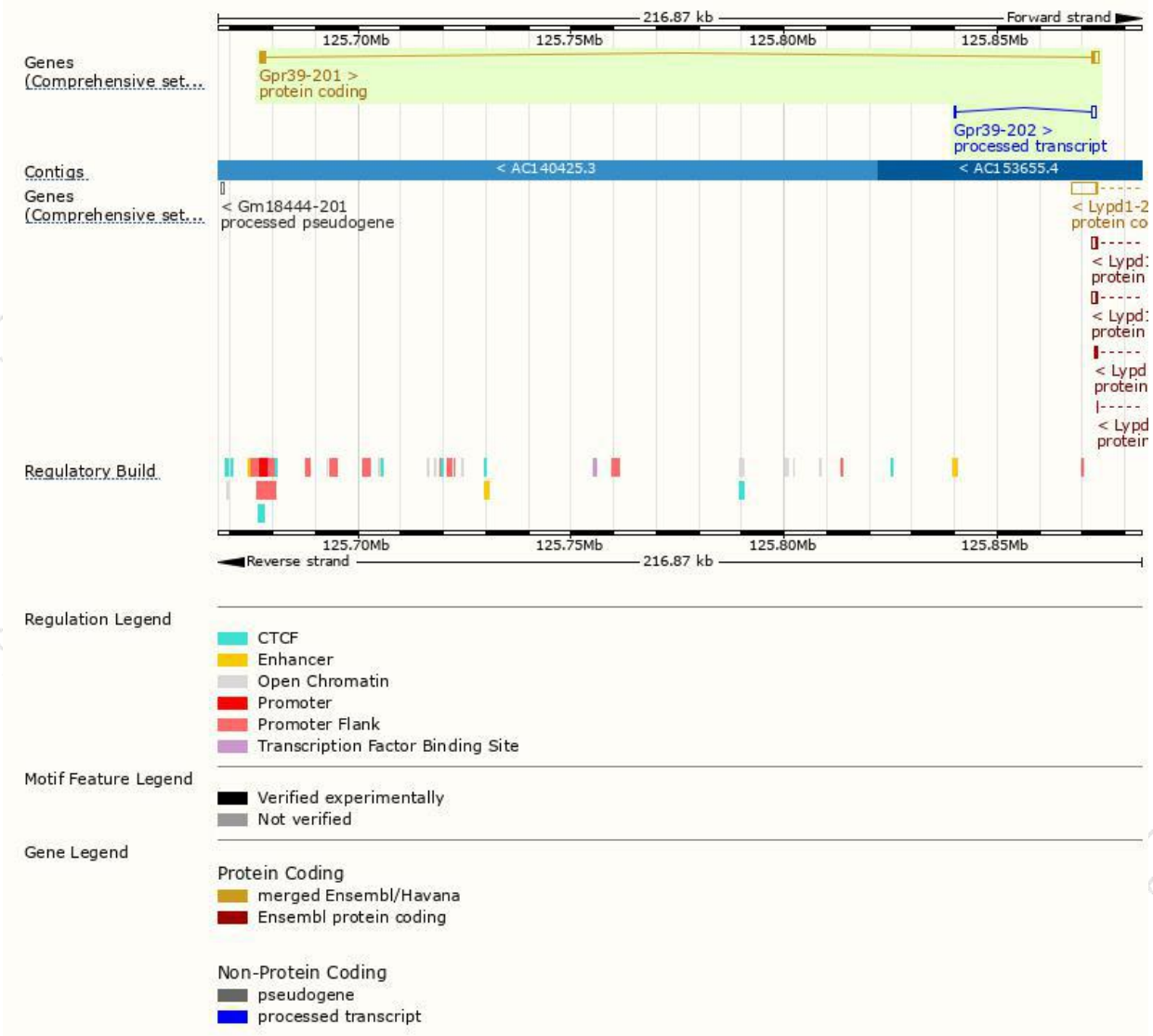
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Gpr39-201	ENSMUST00000027581.6	2691	456aa	Protein coding	CCDS48344	A0A0B4J1E4	TSL:1 GENCODE basic APPRIS P1
Gpr39-202	ENSMUST00000159359.1	1128	No protein	Processed transcript	-	-	TSL:1

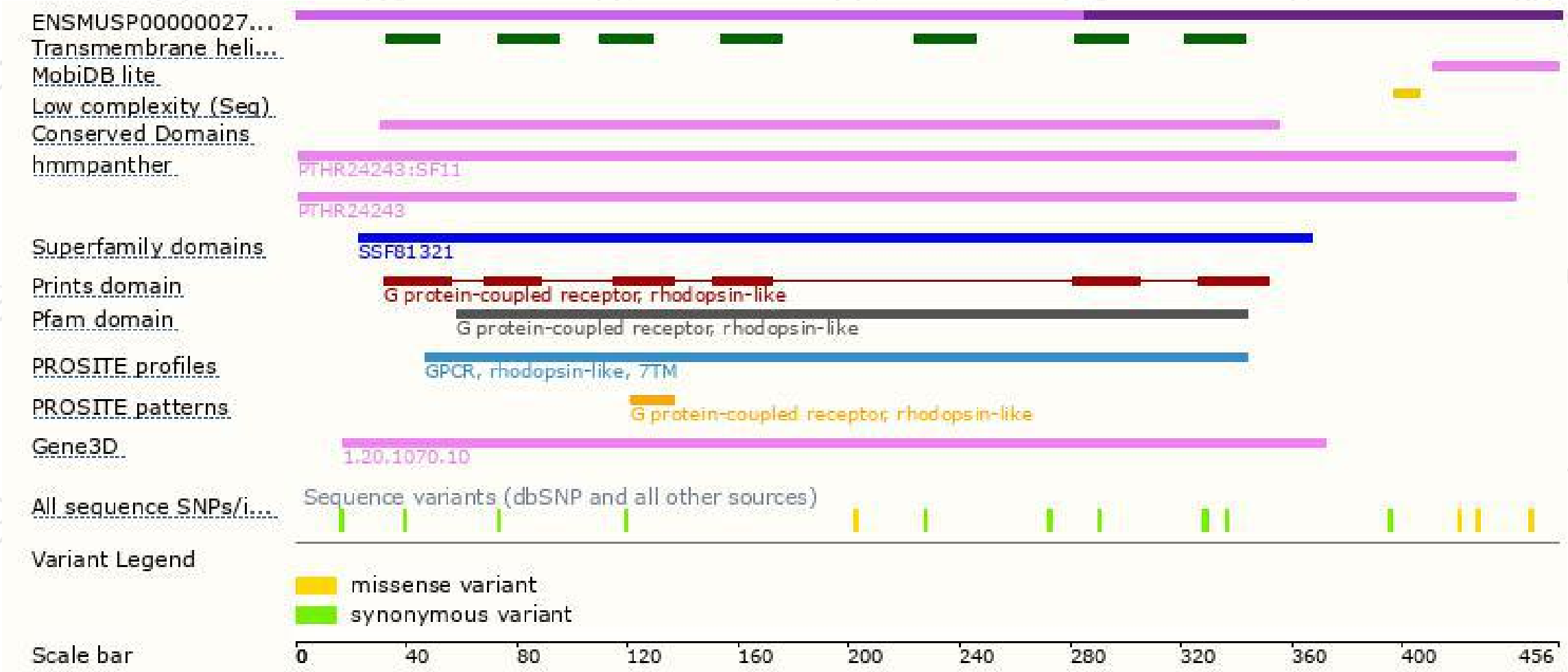
The strategy is based on the design of *Gpr39-201* transcript,The transcription is shown below



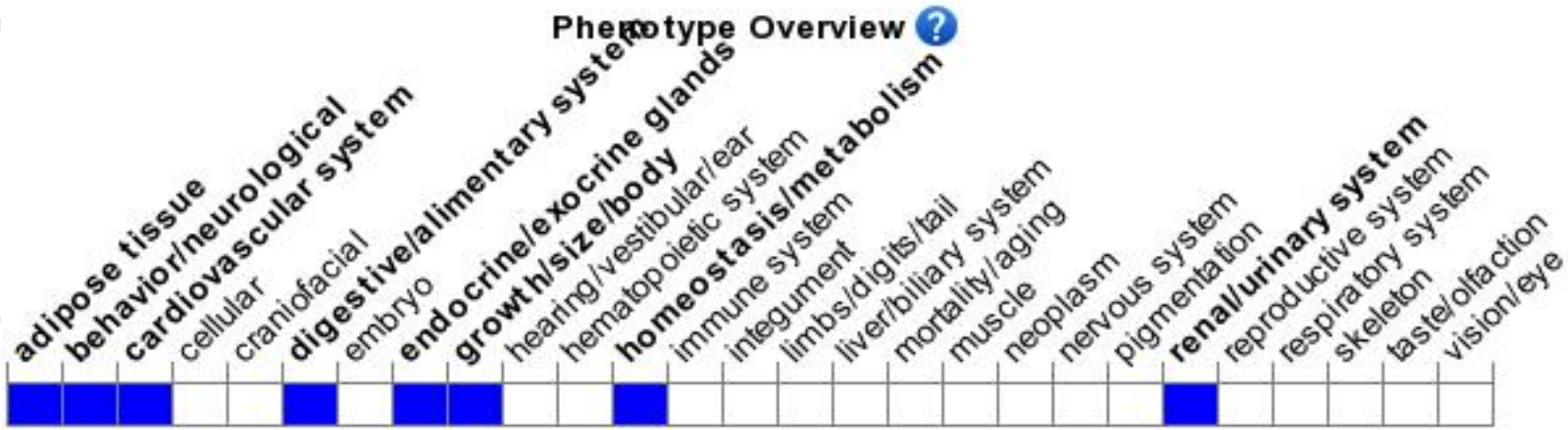
Genomic location distribution



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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