Gpr139 Cas9-CKO Strategy

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Project Overview

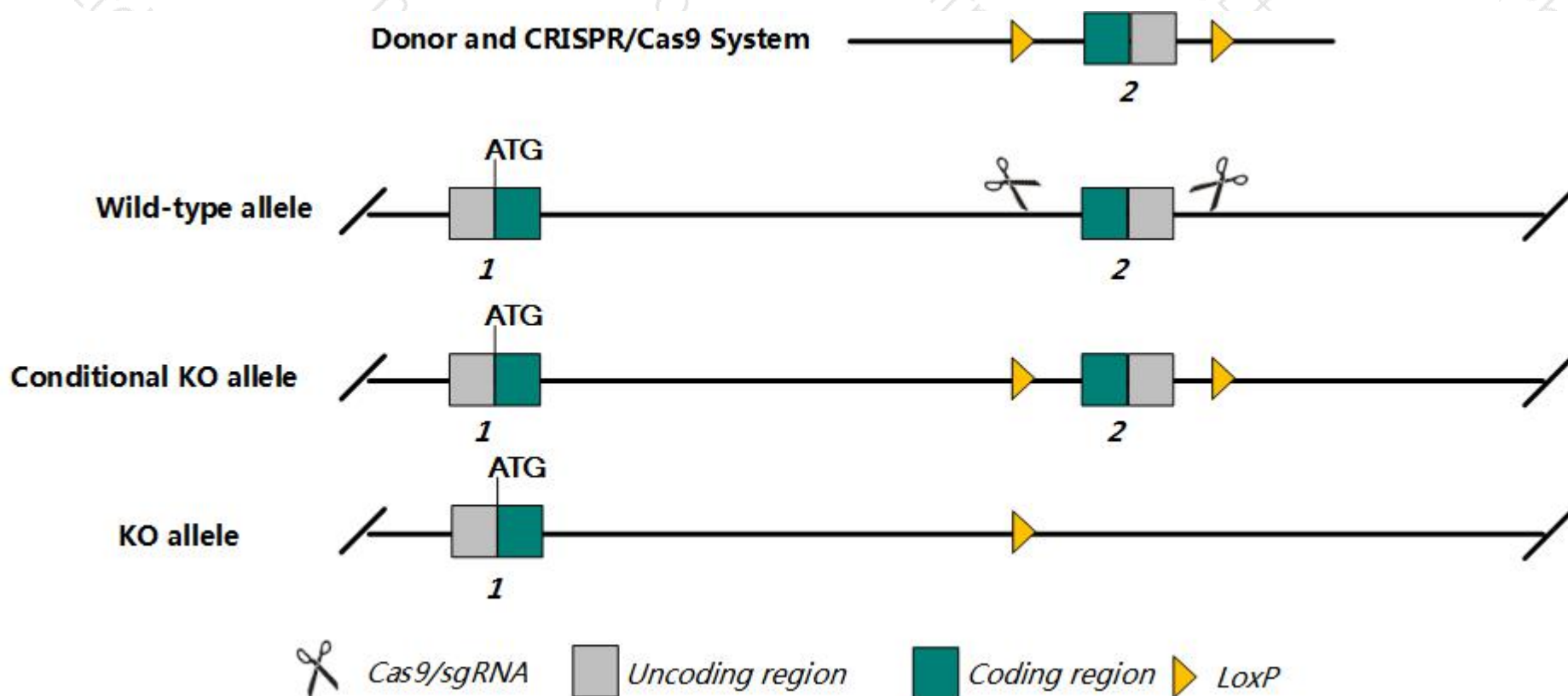|	
Project Name	***Gpr139***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Gpr139* gene. The schematic diagram is as follows:

Technical routes

➤ The *Gpr139* gene has 1 transcript. According to the structure of *Gpr139* gene, exon2 of *Gpr139-201* (ENSMUST00000084650.5) 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 *Gpr139* gene. The brief process is as follows:sgRNA was transcribed in vitro, donor vector was constructed.Cas9, sgRNA 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 was 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.

Notice

➢ The *Gpr139* gene is located on the Chr7. 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）

Gpr139   G protein-coupled receptor 139 [*Mus musculus* (house mouse)]

Gene ID: 209776, updated on 13-Feb-2019

⬆ Summary

Official Symbol	Gpr139 provided by MGI
Official Full Name	G protein-coupled receptor 139 provided by MGI
Primary source	MGI:MGI:2685341
See related	Ensembl:ENSMUSG00000066197
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	PGR3; GPRg1; Gm495
Expression	Biased expression in whole brain E14.5 (RPKM 4.1), CNS E18 (RPKM 3.7) and 5 other tissues See more
Orthologs	human all

⬆ Genomic context

Location: 7; 7 F2

See Gpr139 in Genome Data Viewer

Exon count: 2

| Annotation release	Status	Assembly	Chr	Location
106	current	GRCm38.p4 (GCF_000001635.24)	7	NC_000073.6 (119144323..119184374, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	7	NC_000073.5 (126287837..126327888, complement)

Transcript information（Ensembl）

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

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Gpr139-201	ENSMUST00000084650.5	4843	345aa	Protein coding	CCDS21778	A0A142CHG4 Q80UC8	TSL:1 GENCODE basic APPRIS P1

The strategy is based on the design of *Gpr139-201* transcript,The transcription is shown below

< Gpr139-201
protein coding

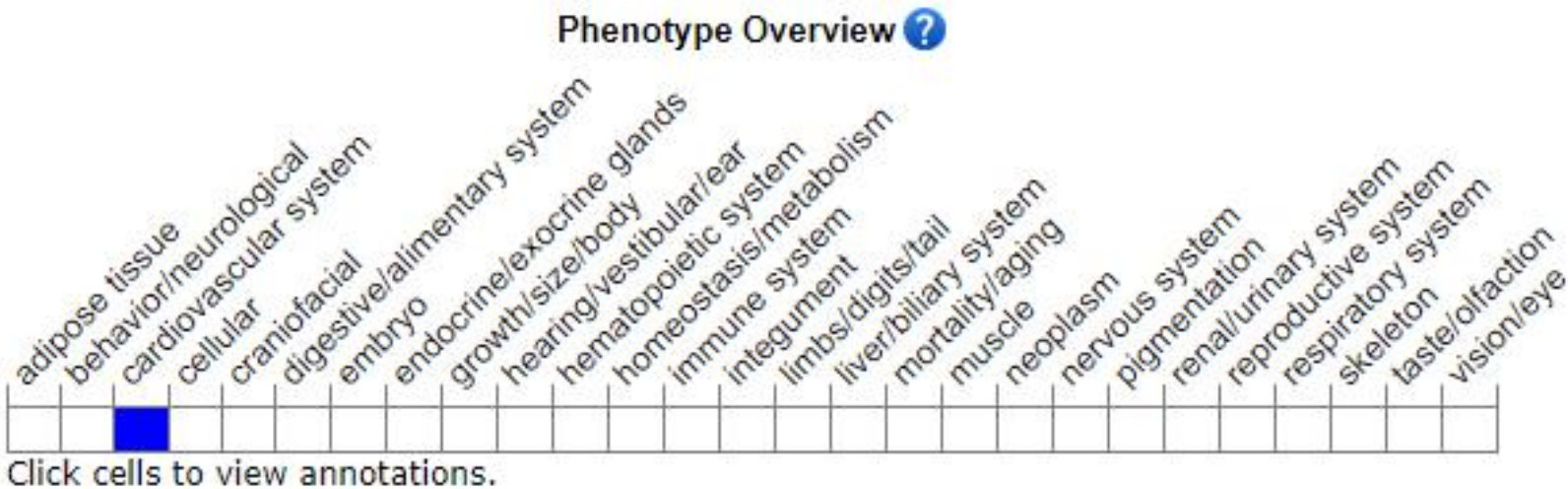◀━ Reverse strand ━━━━━━━━━━━━━━━━━━━━━ 43.86 kb ━━━━━━━━━━━━━━━━━━━━━
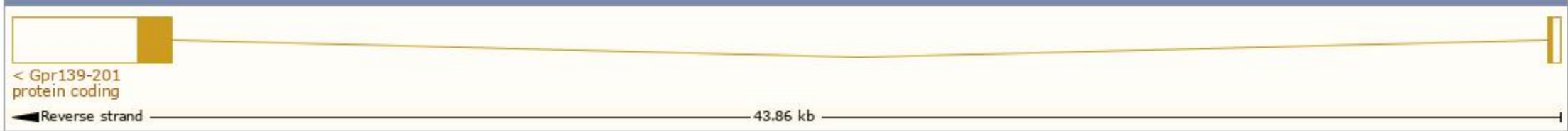
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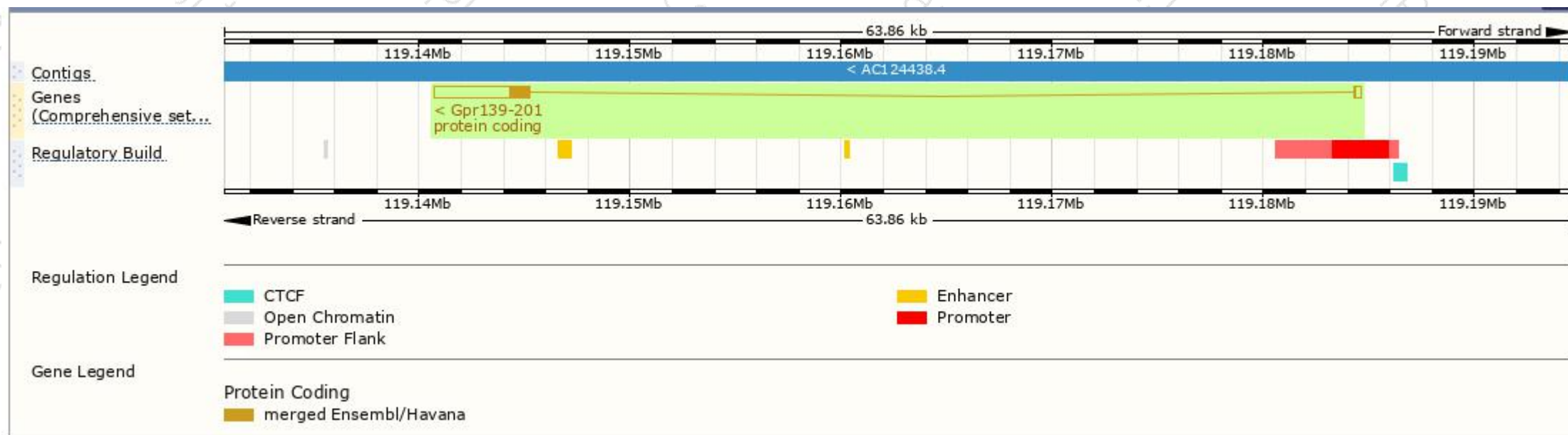
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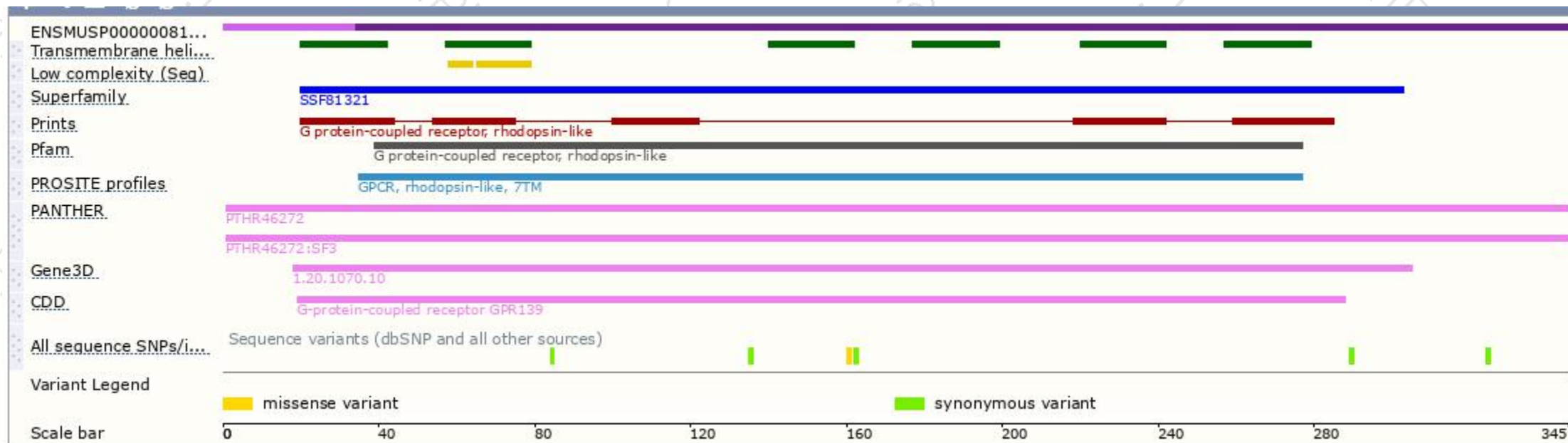
Mouse phenotype description(MGI)

Phenotypes affected by the gene are marked in blue.Data quoted from MGI database(http://www.informatics.jax.org/).

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