Gper1 Cas9-KO *Strategy*

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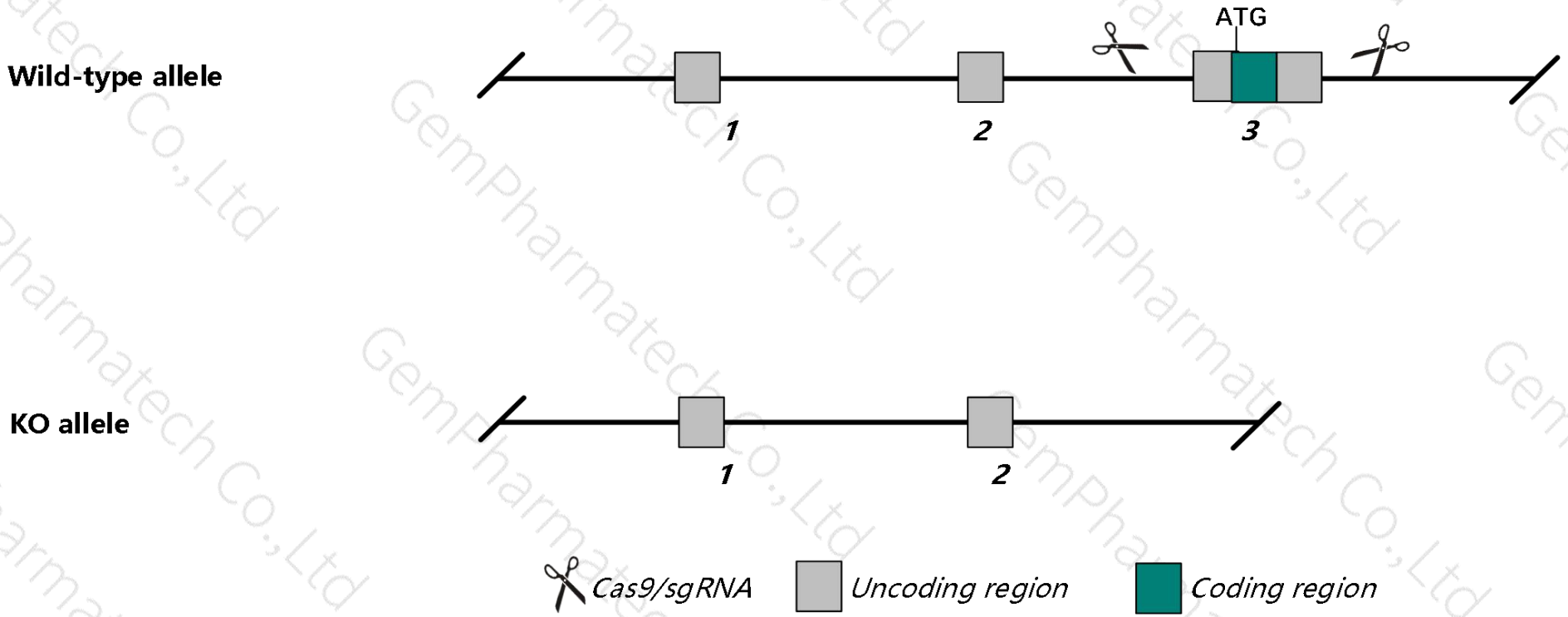
Project Overview

Project Name	***Gper1***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the ***Gper1*** gene. The schematic diagram is as follows:



Technical routes

- The *Gper1* gene has 2 transcript.According to the structure of *Gper1* gene, exon3 of *Gper1*-201 (ENSMUST00000066211.4) transcript is recommended as the knockout region.The region contains all of coding sequence.Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Gper1* gene. The brief process is as follows: sgRNA was transcribed in vitro.Cas9 and sgRNA 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 knockout allele exhibit decreased thymic atrophy,
- The KO region contains the introns of the *3110082I17Rik* gene. Knockout of this region may affect splicing of *3110082I17Rik* genes.
- The *Gper1* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information （NCBI)

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Gper1 G protein-coupled estrogen receptor 1 [*Mus musculus* (house mouse)]

Gene ID: 76854, updated on 4-Dec-2019

Summary

Official Symbol	Gper1 provided by MGI
Official Full Name	G protein-coupled estrogen receptor 1 provided by MGI
Primary source	MGI:MGI:1924104
See related	Ensembl:ENSMUSG00000053647
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	Gper; Ceprl; FEG-1; Gpr30; CMKRL2; GPCR-Br; 6330420K13Rik
Expression	Broad expression in stomach adult (RPKM 12.7), genital fat pad adult (RPKM 4.2) and 17 other tissues See more
Orthologs	human all

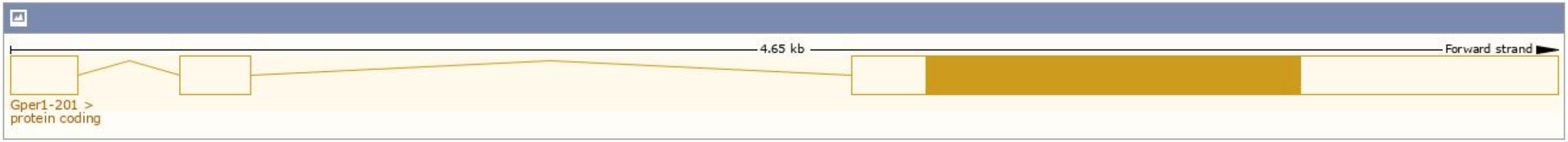
Transcript information （Ensembl）

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

Show/hide columns (1 hidden) Filter

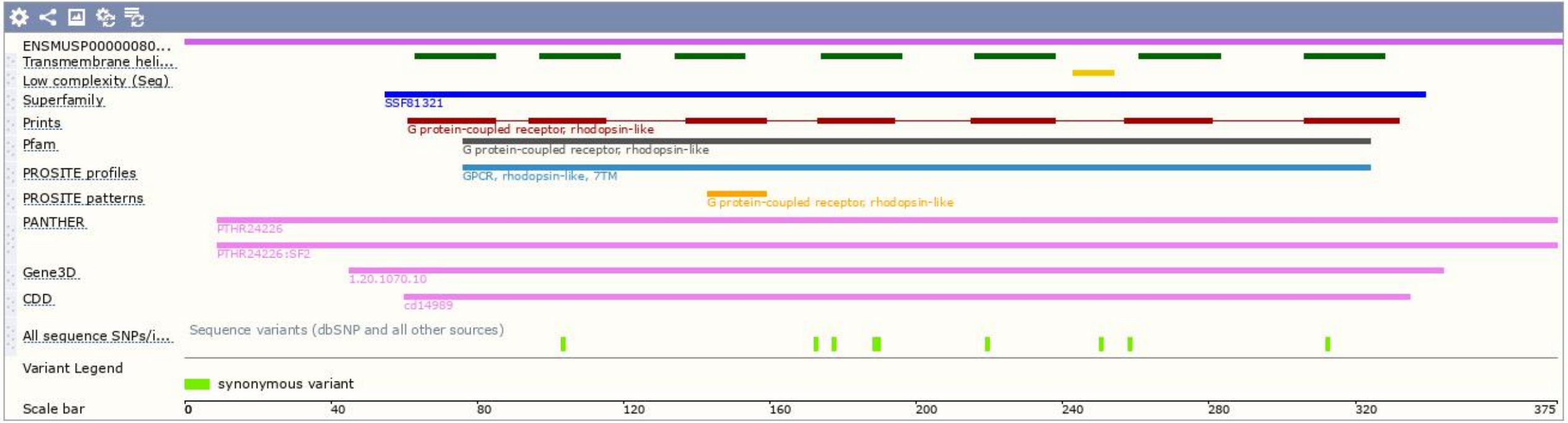
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Gper1-202	ENSMUST00000173364.1	492	No protein	lncRNA	-	-	TSL:3
Gper1-201	ENSMUST00000066211.4	2537	375aa	Protein coding	CCDS19811	Q8BMP4	TSL:1 GENCODE basic APPRIS P1

The strategy is based on the design of *Gper1* -201 transcript,The transcription is shown below

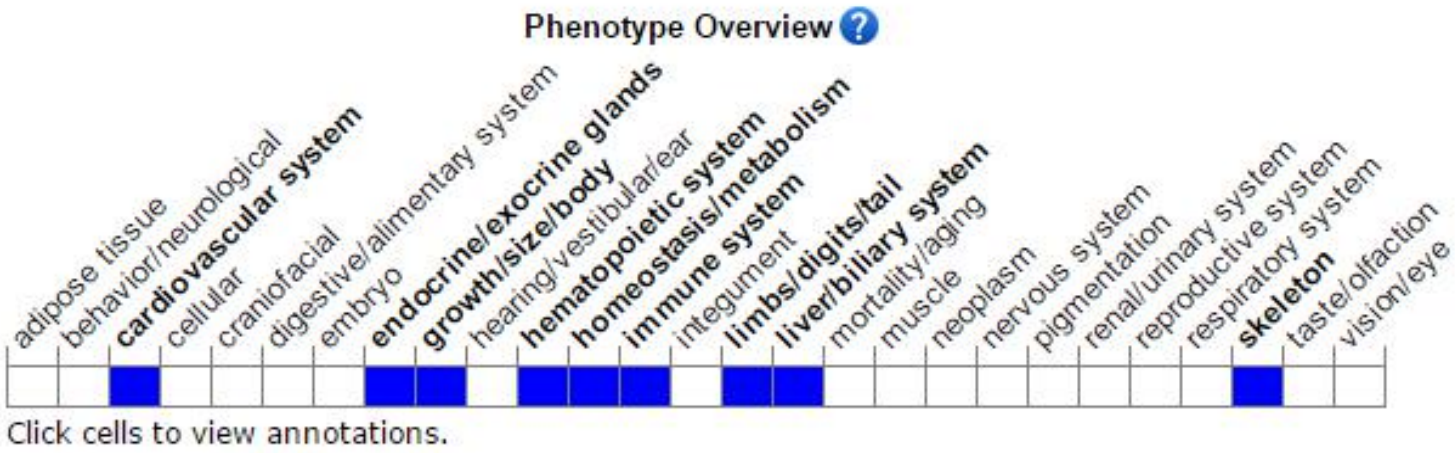


Genomic location (Ensembl)

Protein domain (Ensembl)



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 a knockout allele exhibit decreased thymic atrophy, insulin, and glucagon responses following treatment with PGE2.

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

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