

Gpr50 Cas9-CKO Strategy

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Project Overview

Project Name

Gpr50

Project type

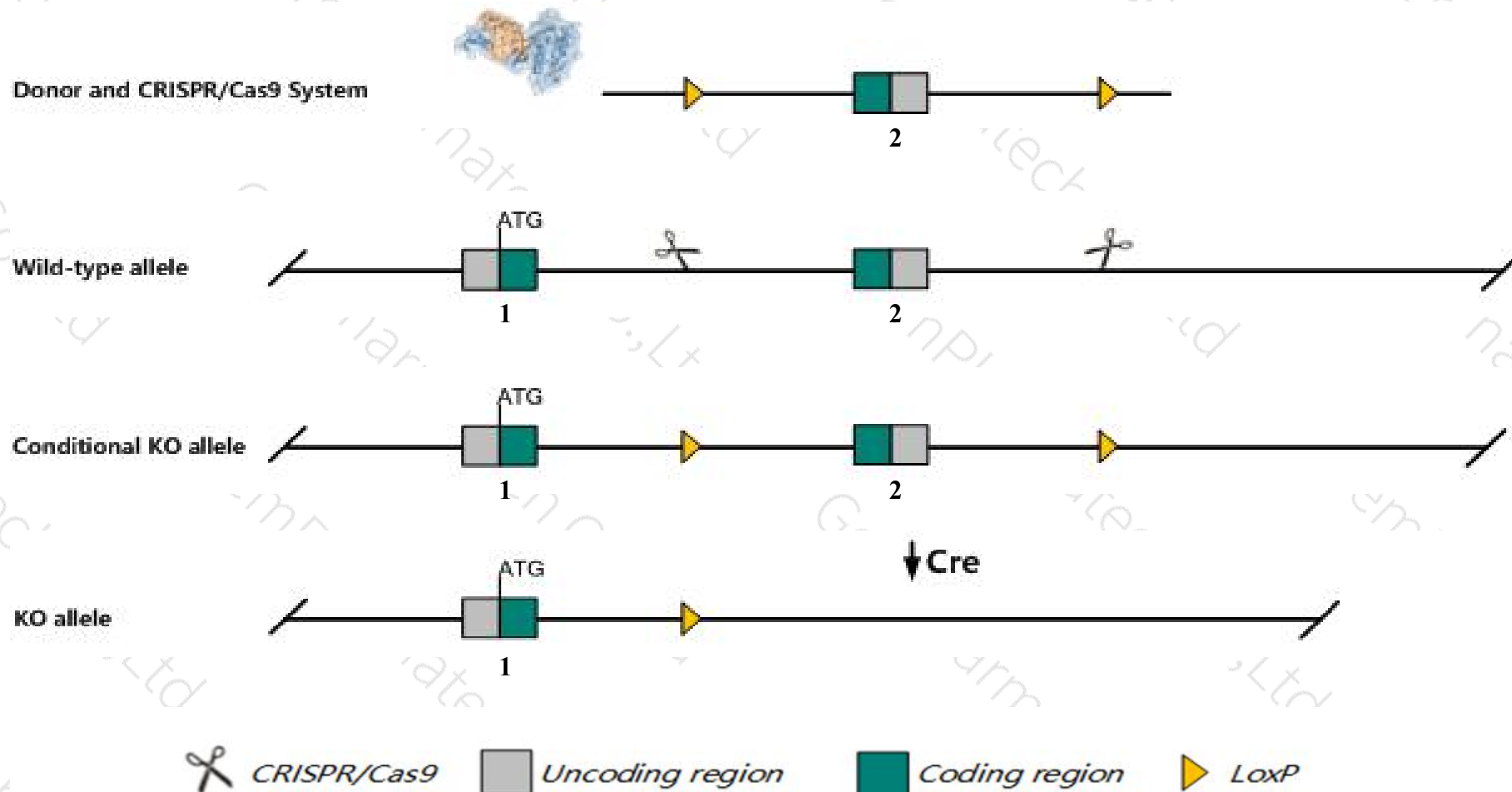
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Gpr50* gene. The schematic diagram is as follows:



- The *Gpr50* gene has 3 transcripts. According to the structure of *Gpr50* gene, exon2 of *Gpr50-201* (ENSMUST00000070449.5) transcript is recommended as the knockout region. The region contains 1565bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Gpr50* gene. The brief process is as follows: CRISPR/Cas9 system 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 will be 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.

- According to the existing MGI data, Mice homozygous for a targeted disruption of this gene display alterations in energy balance and metabolism.
- The *Gpr50* gene is located on the ChrX. 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)

Gpr50 G-protein-coupled receptor 50 [Mus musculus (house mouse)]

Gene ID: 14765, updated on 3-Feb-2019

Summary



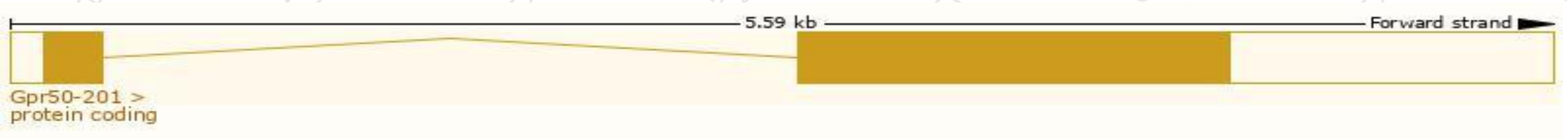
Official Symbol	Gpr50 provided by MGI
Official Full Name	G-protein-coupled receptor 50 provided by MGI
Primary source	MGI:MGI:1333877
See related	Ensembl:ENSMUSG00000056380
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	H9
Summary	This gene encodes a multipass membrane protein that is thought to act as a G protein-coupled receptor. Activity of this protein may be important in neurotransmitter and glucocorticoid signalling. Mutation of this gene causes a decreased ability to maintain a constant body temperature, resulting in torpor, as well as an increased metabolic rate. Alternative splicing results in multiple transcript variants. [provided by RefSeq, May 2015]
Expression	Biased expression in placenta adult (RPKM 5.5), whole brain E14.5 (RPKM 1.0) and 7 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

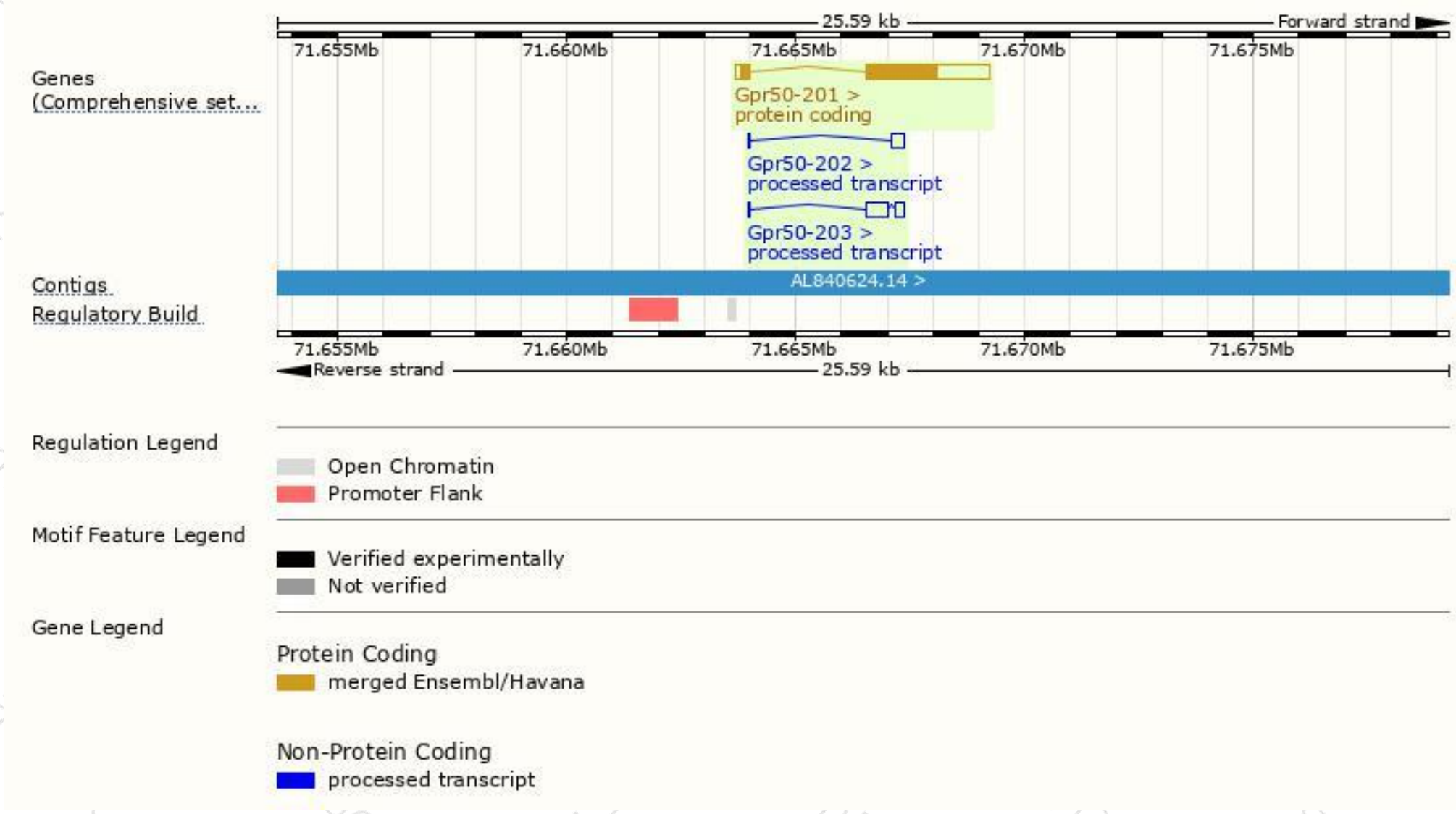
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Gpr50-201	ENSMUST00000070449.5	3069	591aa	Protein coding	CCDS30181	Q88495	TSL:1 GENCODE basic APPRIS P1
Gpr50-203	ENSMUST00000144712.6	754	No protein	Processed transcript	-	-	TSL:5
Gpr50-202	ENSMUST00000131554.2	350	No protein	Processed transcript	-	-	TSL:5

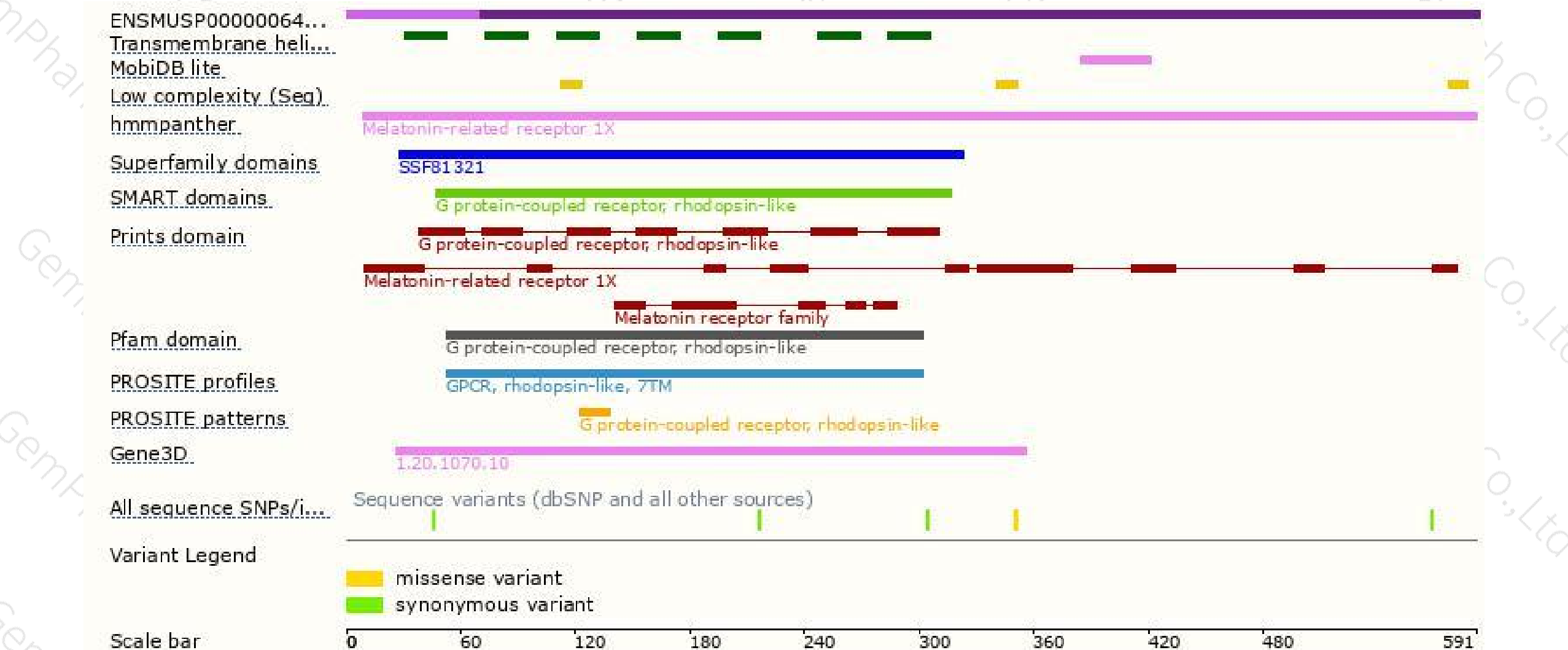
The strategy is based on the design of *Gpr50-201* transcript,The transcription is shown below



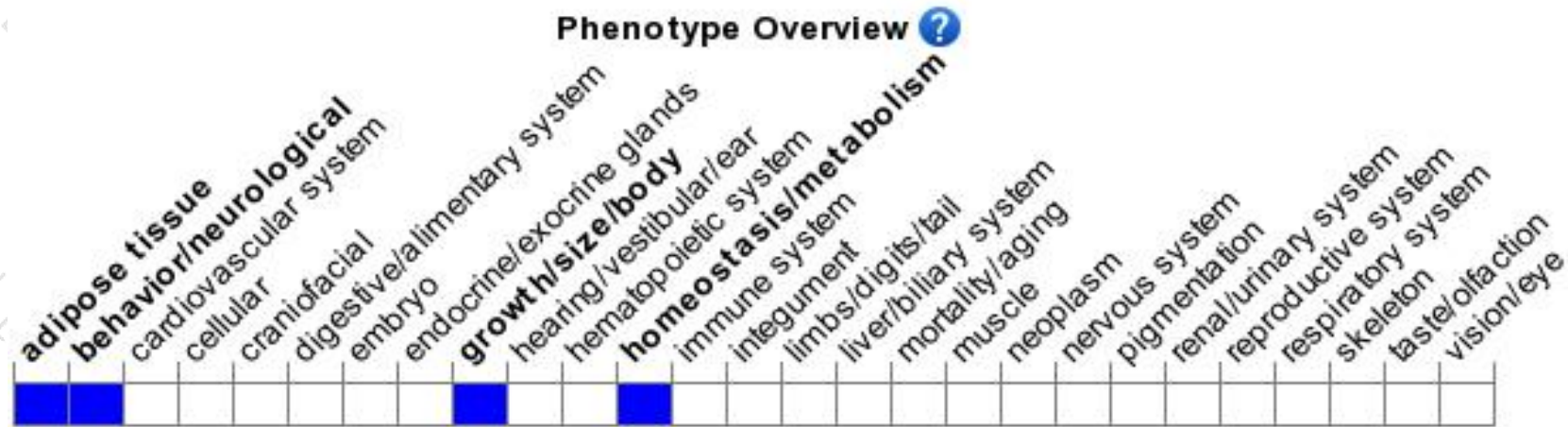
Genomic location distribution



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 a targeted disruption of this gene display alterations in energy balance and metabolism.

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

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