Gprc6a Cas9-CKO Strategy

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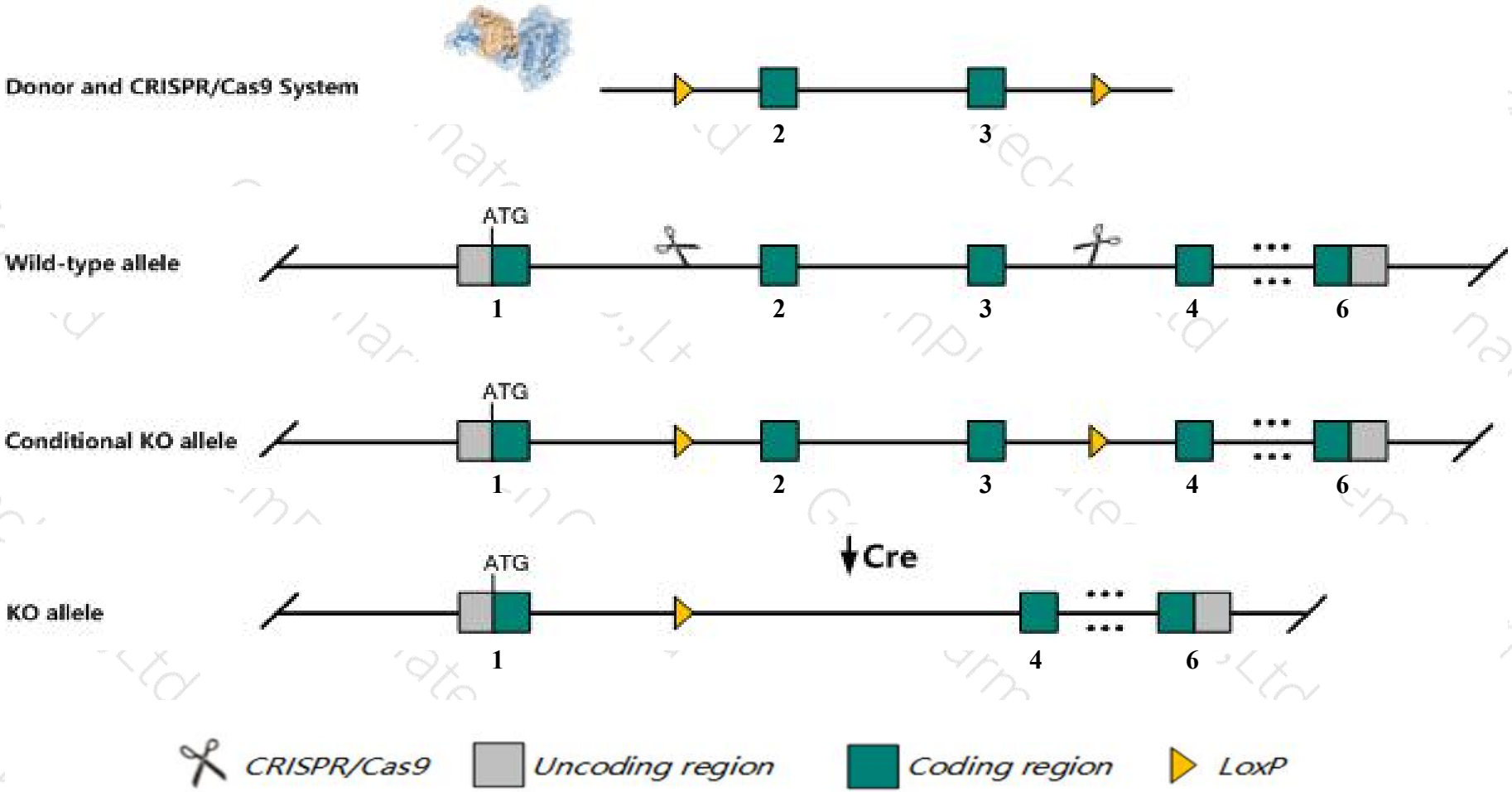
Design Date:2019-12-24

Project Overview

Project Name	***Gprc6a***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Gprc6a* gene. The schematic diagram is as follows:



Technical routes

- The *Gprc6a* gene has 3 transcripts. According to the structure of *Gprc6a* gene, exon2-exon3 of *Gprc6a-201* (ENSMUST00000020062.3) transcript is recommended as the knockout region.The region contains 1141bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Gprc6a* 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.

Notice

- According to the existing MGI data,Mice homozygous for a knock-out allele show a metabolic syndrome characterized by impaired bone mineralization, increased fat mass, abnormal renal handling of calcium and phosphorus, fatty liver, glucose intolerance, testicular feminization and abnormal steroidogenesis.

- The *Gprc6a* gene is located on the Chr10. 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）

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Gprc6a G protein-coupled receptor, family C, group 6, member A [Mus musculus (house mouse)]

Gene ID: 210198, updated on 5-Mar-2019

Summary

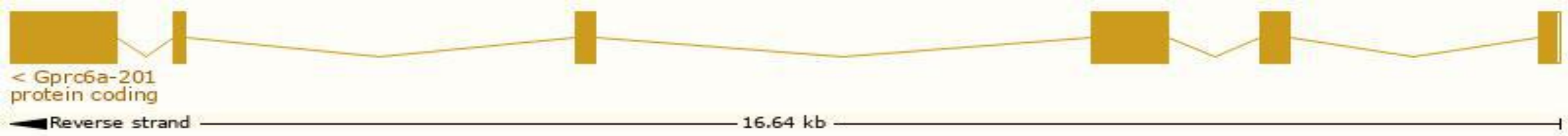
Official Symbol	Gprc6a provided by MGI
Official Full Name	G protein-coupled receptor, family C, group 6, member A provided byMGI
Primary source	MGI:MGI:2429498
See related	Ensembl:ENSMUSG00000019905
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Expression	Low expression observed in reference datasetSee more
Orthologs	human all

Transcript information（Ensembl）

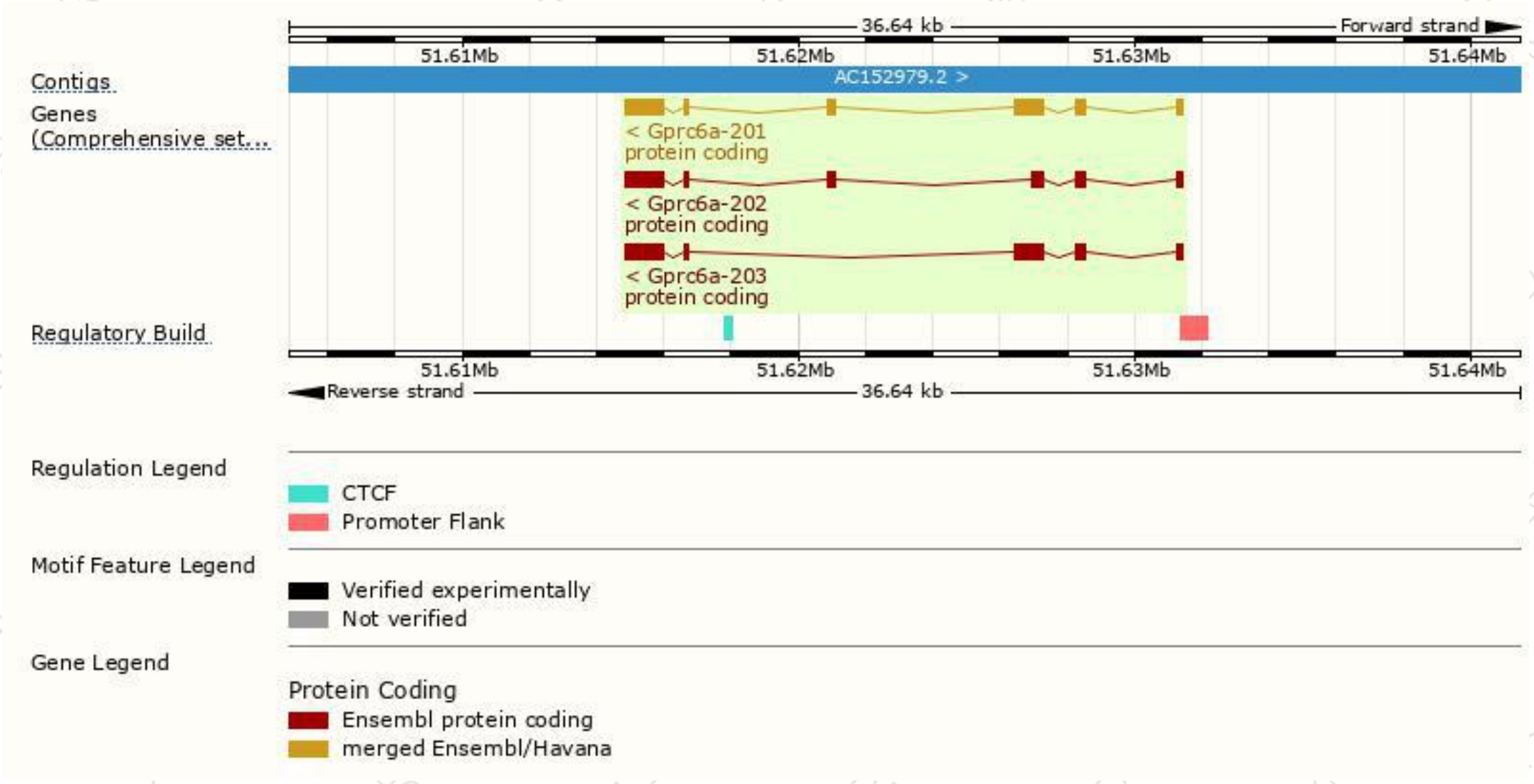
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Gprc6a-201	ENSMUST00000020062.3	2856	928aa	Protein coding	CCDS23834	Q8K4Z6	TSL:1 GENCODE basic APPRIS P2
Gprc6a-203	ENSMUST00000219286.1	2574	857aa	Protein coding	-	Q8K4Z6	TSL:1 GENCODE basic
Gprc6a-202	ENSMUST00000218684.1	2292	753aa	Protein coding	-	Q8K4Z6	TSL:1 GENCODE basic APPRIS ALT2

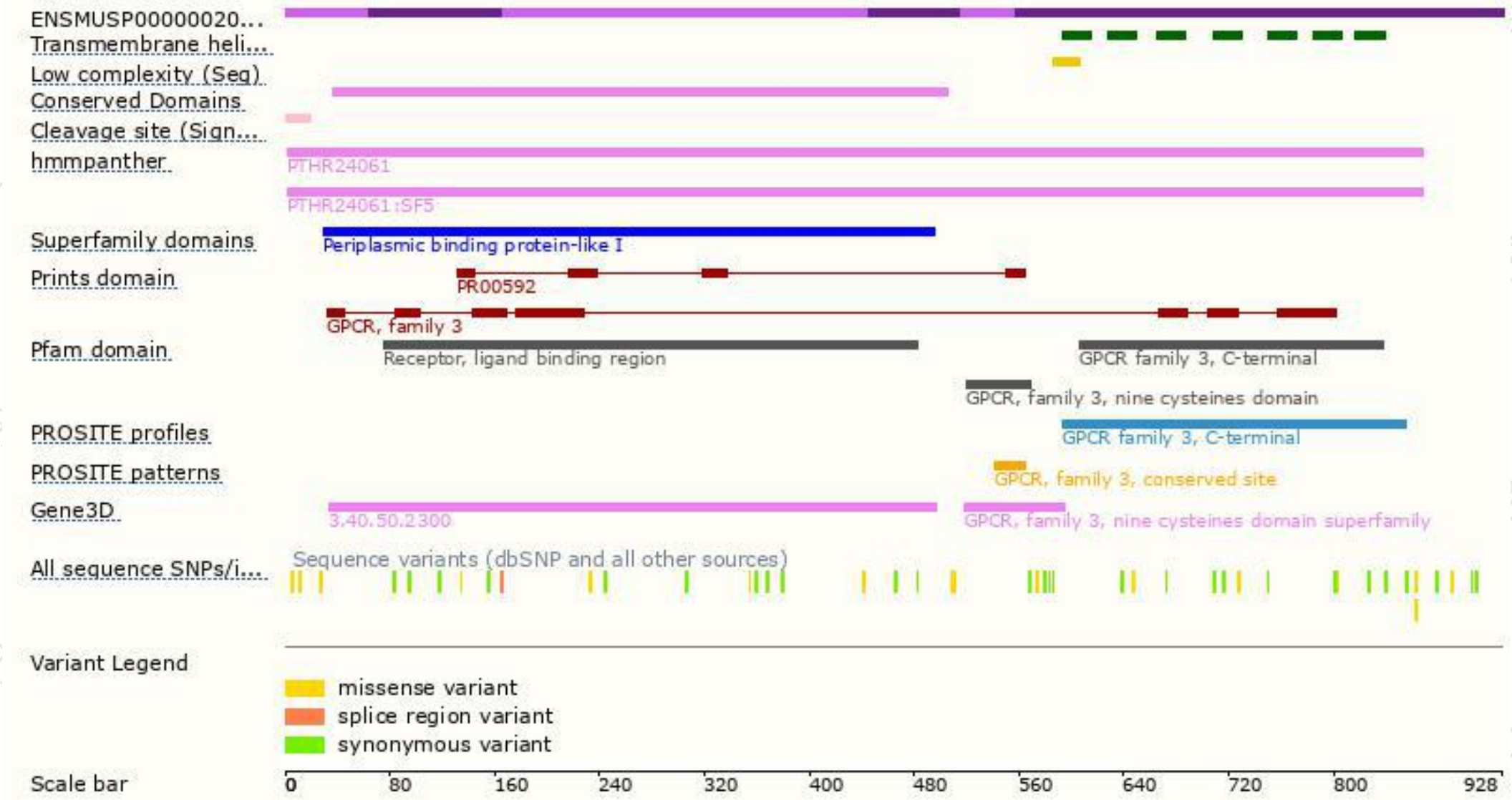
The strategy is based on the design of *Gprc6a-201* transcript,The transcription is shown below



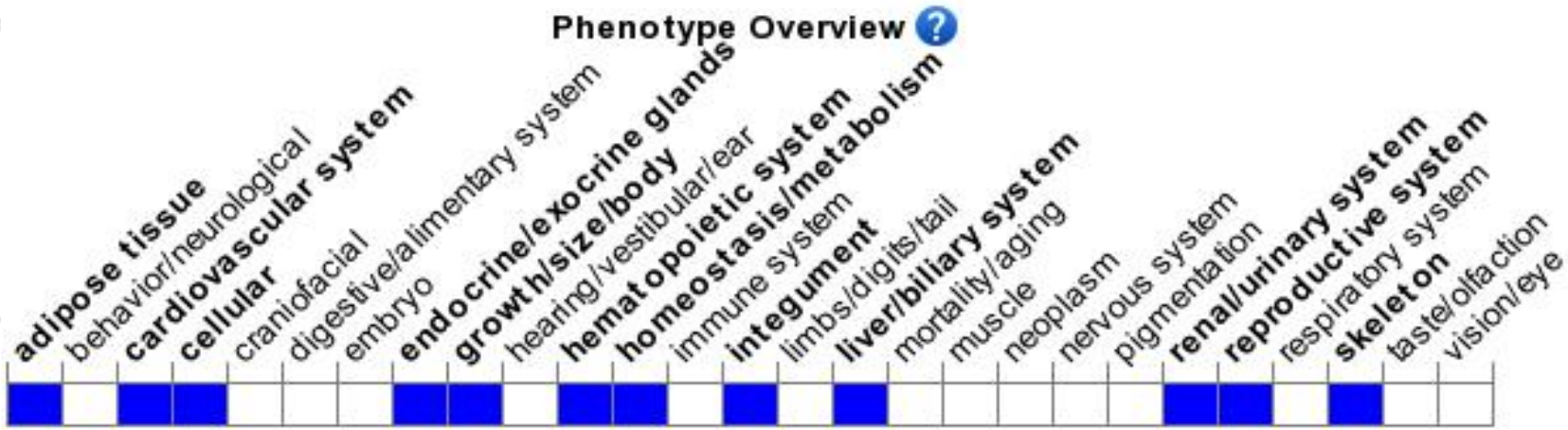
Genomic location distribution



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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