Gprc6a Cas9-KO Strategy

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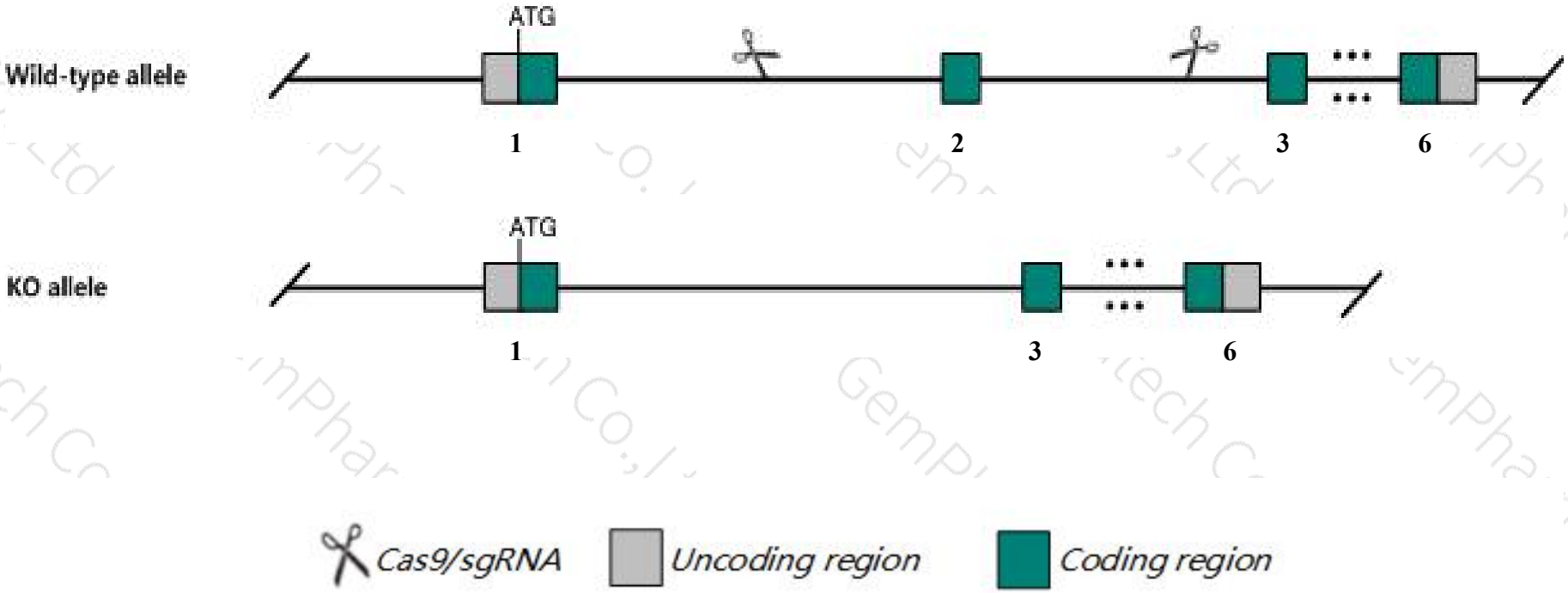
Project Overview

Project Name	***Gprc6a***
Project type	**Cas9-KO**
Strain background	**C57BL/6J**

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 of *Gprc6a-201* (ENSMUST00000020062.3) transcript is recommended as the knockout region. The region contains 304bp 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: sgRNA was transcribed in vitro.Cas9 and sgRNA were microinjected into the fertilized eggs of C57BL/6J 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/6J mice.

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 gene transcription and translation processes, all risks cannot be predicted under existing information.

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

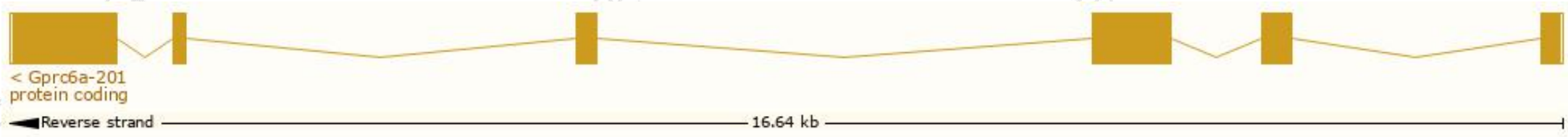
Official Symbol	Gprc6a provided by MGI
Official Full Name	G protein-coupled receptor, family C, group 6, member A provided by MGI
Primary source	MGI:MGI:2429498
See related	Ensembl:ENSMUSG00000019905
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa;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

Transcript information（Ensembl）

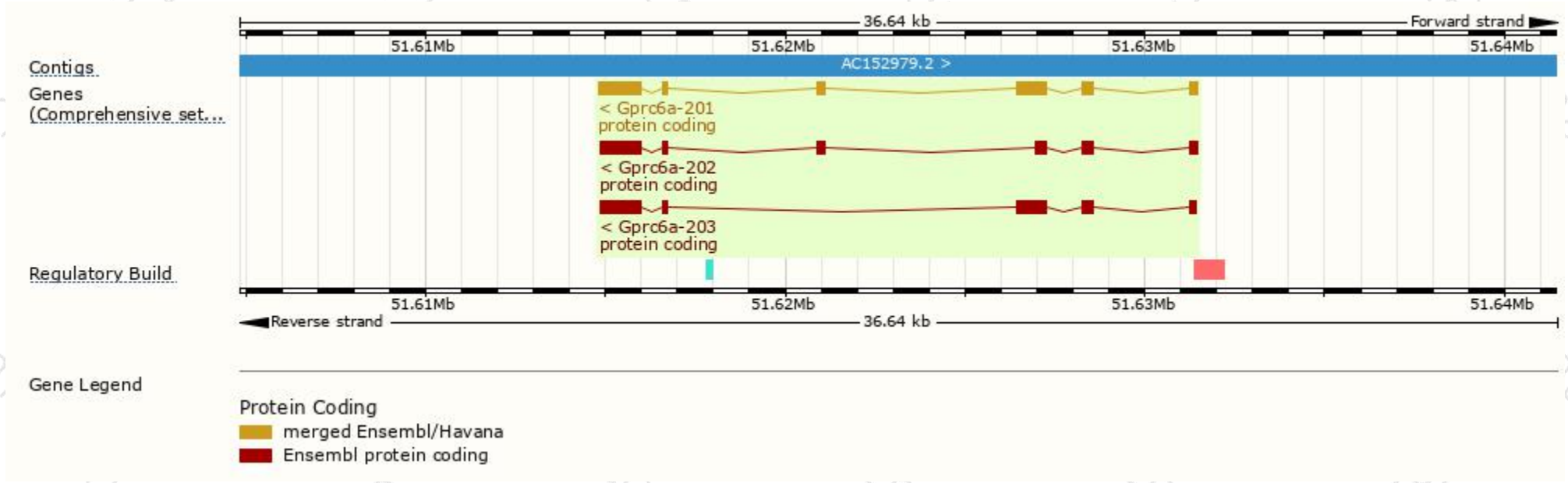
The gene has 3 transcript,all transcripts are shown below:

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

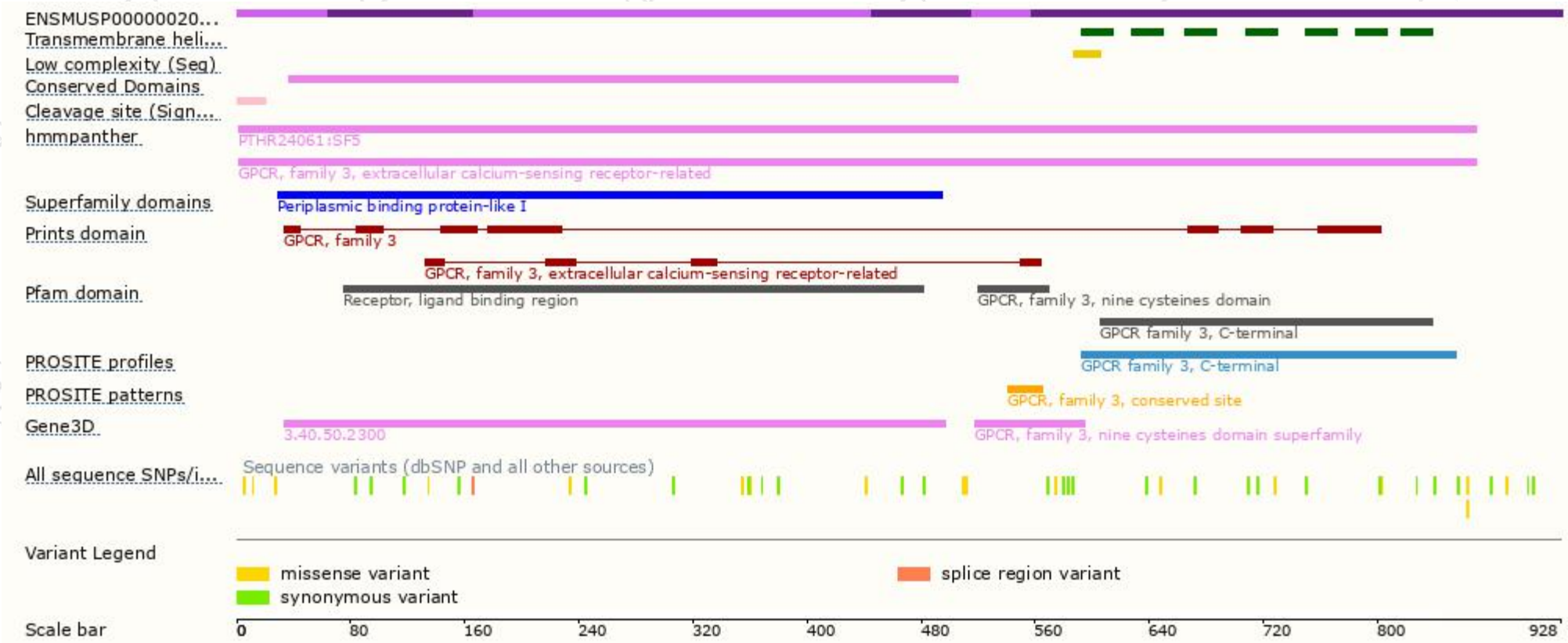
The strategy is based on the design of *Gprc6a-201* transcript, the transcription is shown below



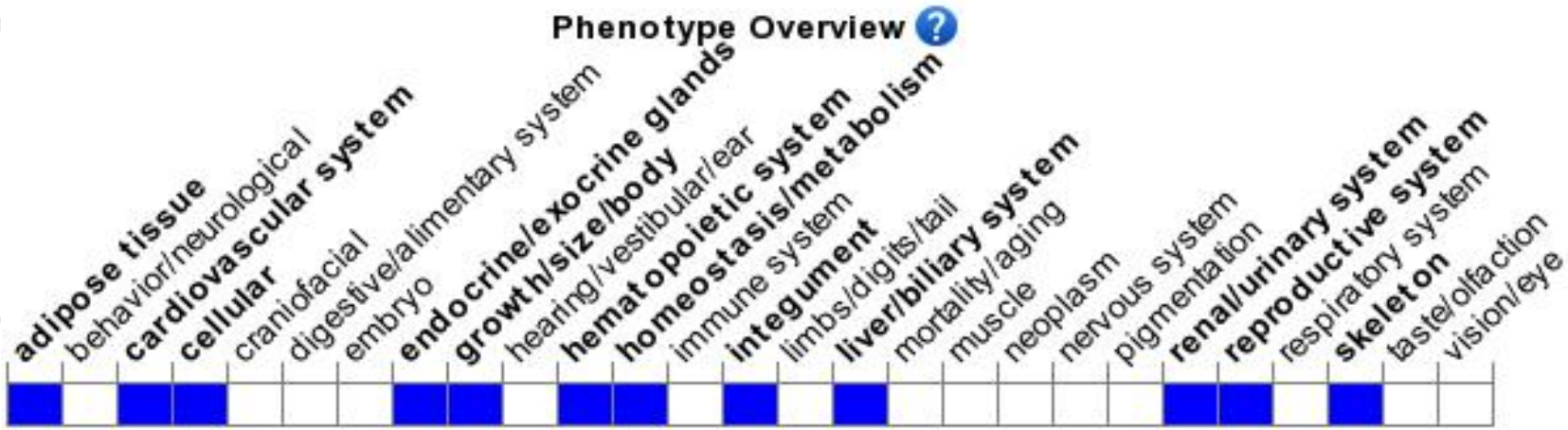
Genomic location distribution



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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