

Gpr68 Cas9-KO Strategy

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Project Overview

Project Name

Gpr68

Project type

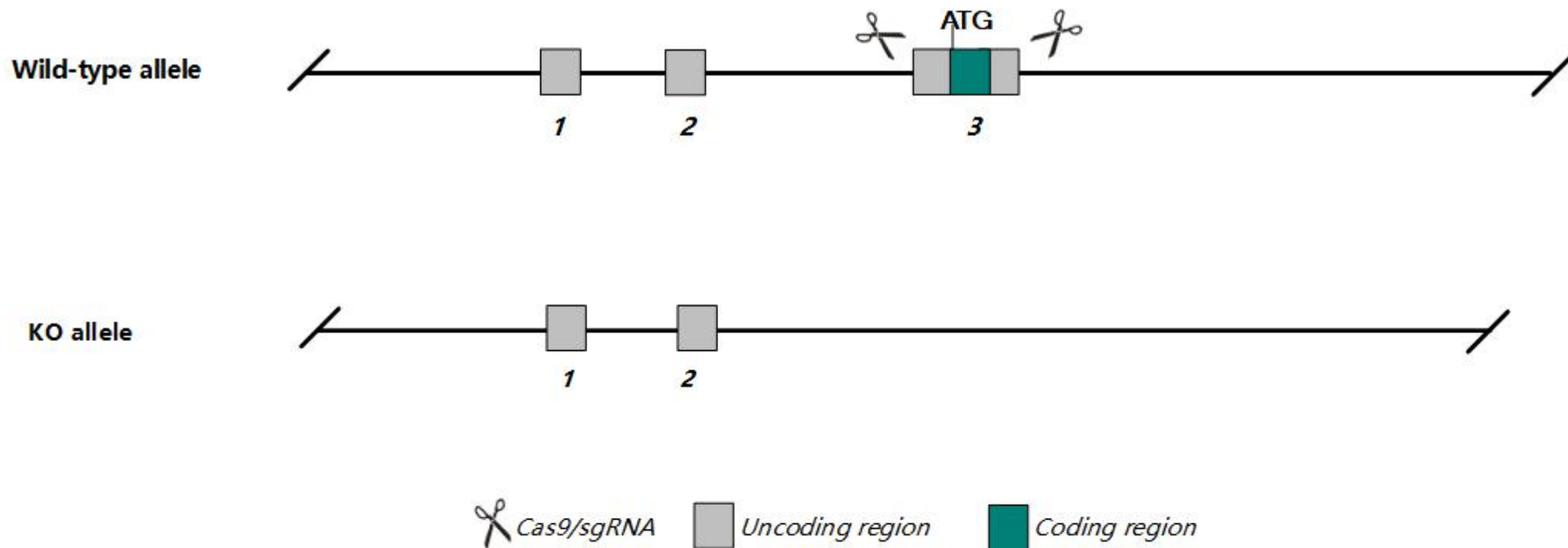
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Gpr68* gene. The schematic diagram is as follows:



- The *Gpr68* gene has 7 transcripts. According to the structure of *Gpr68* gene, exon43 of *Gpr68-203* (ENSMUST00000110066.7) transcript is recommended as the knockout region. The region contains all coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Gpr68* gene. The brief process is as follows: gRNA was transcribed in vitro. Cas9, gRNA 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.

- According to the existing MGI data, mice homozygous for a null allele exhibit decreased osteoclastogenesis, abnormal pH-sensitive osteoclast survival, and background sensitive alterations in brown adipose tissue, monocytes, and macrophages. Mice homozygous for a different allele exhibit attenuated glucose-stimulated insulin secretion.
- The *Gpr68* gene is located on the Chr12. 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.
- The KO region contains functional region of the *Dglucy* gene. Knockout the region may affect the function of *Dglucy* gene.
- 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)

Gpr68 G protein-coupled receptor 68 [*Mus musculus* (house mouse)]

Gene ID: 238377, updated on 12-Aug-2019

Summary

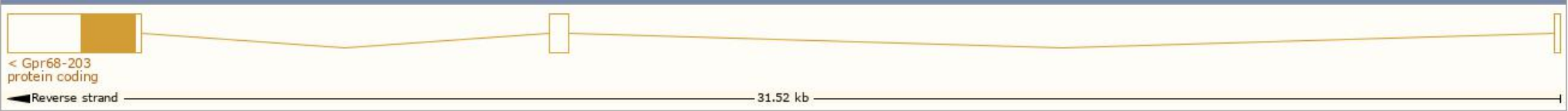
Official Symbol	Gpr68 provided by MGI
Official Full Name	G protein-coupled receptor 68 provided by MGI
Primary source	MGI:MGI:2441763
See related	Ensembl:ENSMUSG00000047415
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Ogr1; BB131428
Expression	Broad expression in spleen adult (RPKM 5.7), thymus adult (RPKM 5.5) and 20 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

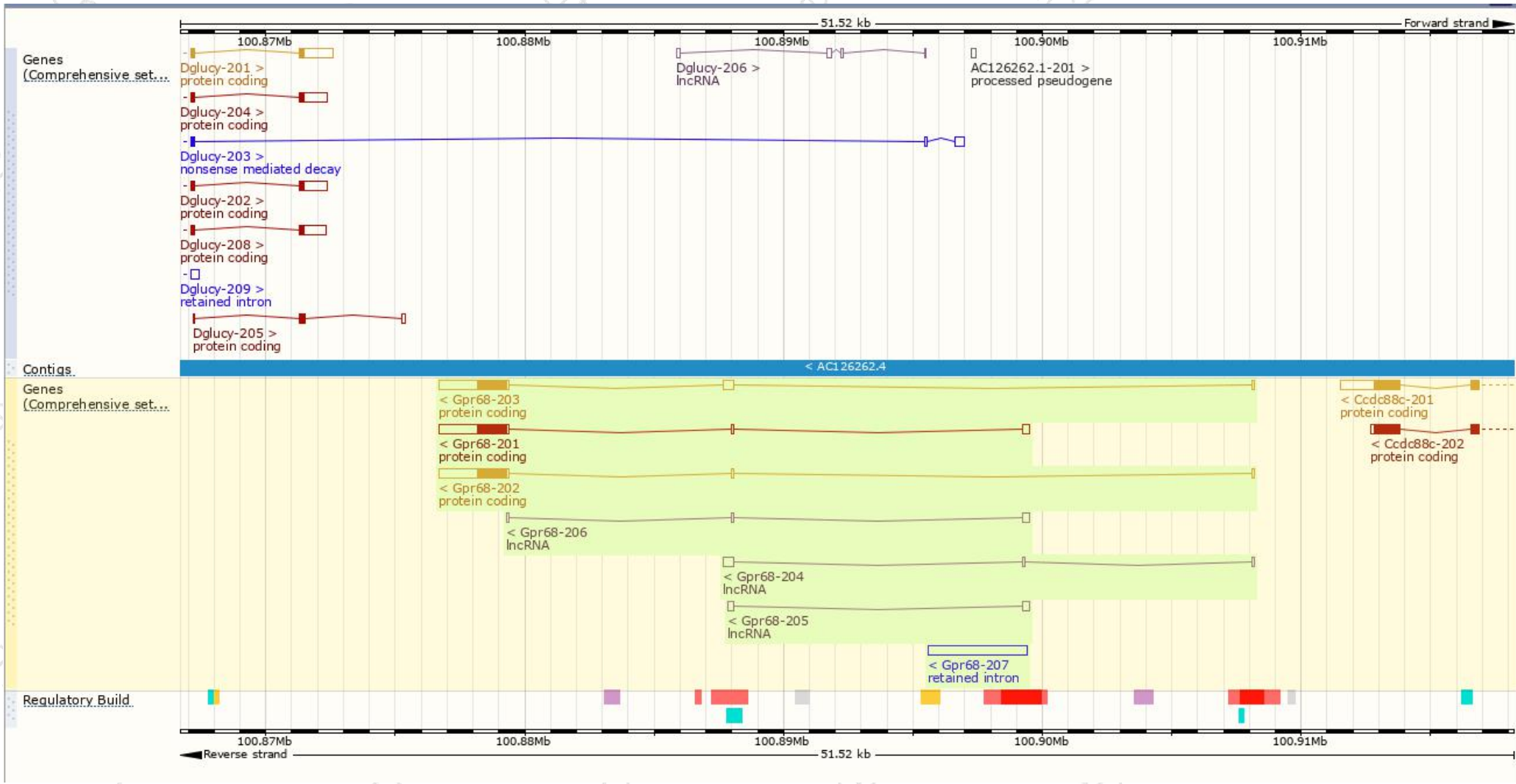
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Gpr68-207	ENSMUST00000222453.1	3817	No protein	Retained intron	-	-	TSL:NA
Gpr68-206	ENSMUST00000135684.1	444	No protein	lncRNA	-	-	TSL:2
Gpr68-205	ENSMUST00000128306.1	483	No protein	lncRNA	-	-	TSL:2
Gpr68-204	ENSMUST00000124459.1	567	No protein	lncRNA	-	-	TSL:3
Gpr68-203	ENSMUST00000110066.7	3223	365aa	Protein coding	CCDS26109	Q8BFQ3	TSL:3 GENCODE basic APPRIS P1
Gpr68-202	ENSMUST00000110065.7	2900	365aa	Protein coding	CCDS26109	Q8BFQ3	TSL:1 GENCODE basic APPRIS P1
Gpr68-201	ENSMUST00000053668.9	3099	365aa	Protein coding	CCDS26109	Q8BFQ3	TSL:2 GENCODE basic APPRIS P1

The strategy is based on the design of *Gpr68-203* transcript,The transcription is shown below

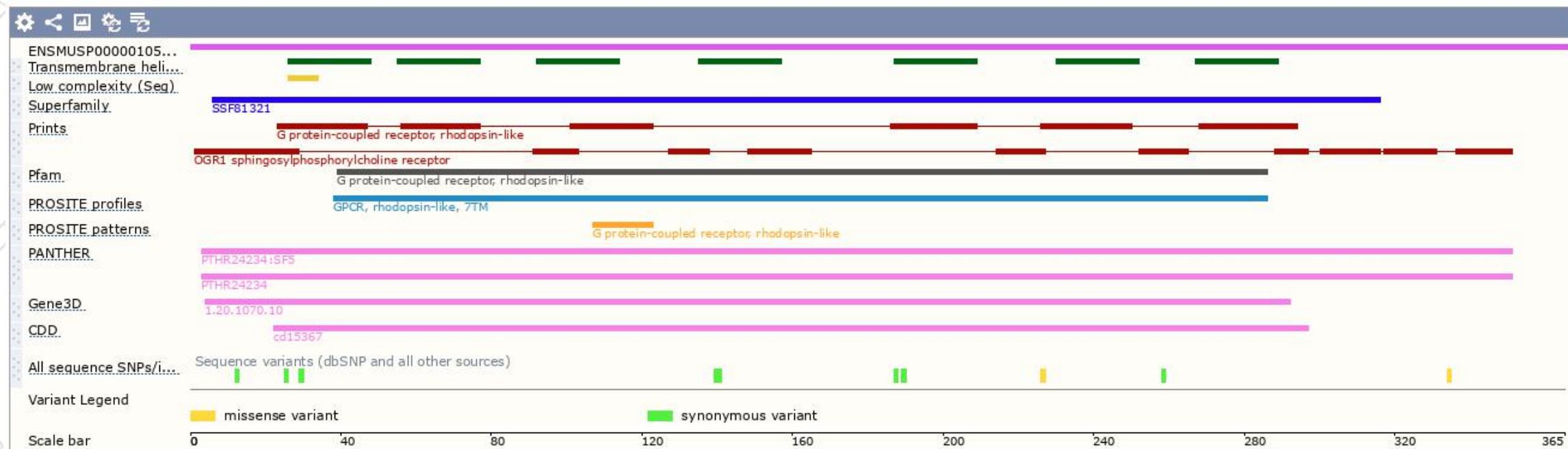


Genomic location distribution



Protein domain

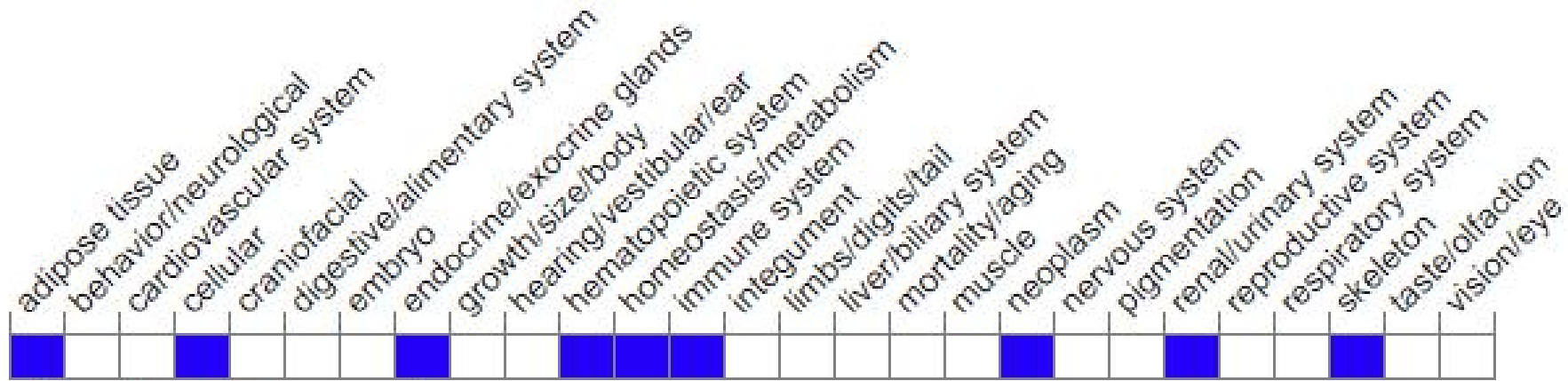
Protein domains for ENSMUSP00000105693.1



Statistics

Ave. residue weight: 112.901 g/mol
Charge: 9.0
Isoelectric point: 7.6935
Molecular weight: 41,208.84 g/mol
Number of residues: 365 aa

Mouse phenotype description(MGI)



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

Mice homozygous for a null allele exhibit decreased osteoclastogenesis, abnormal pH-sensitive osteoclast survival, and background sensitive alterations in brown adipose tissue, monocytes, and macrophages. Mice homozygous for a different allele exhibit attenuated glucose-stimulated insulin secretion.

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

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